CRANFIELD UNIVERSITY

EREN SEZGEN

DEVELOPMENT and VALIDATION of an AIRLINE-SPECIFIC CUSTOMER-BASED BRAND EQUITY SCALE

School of Aerospace, Transport and Manufacturing
Transport Systems

PhD
Academic Year: 2017 - 2020

Supervisor: Keith J. Mason
Associate Supervisor: Robert Mayer
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This thesis is submitted in partial fulfilment of the requirements for the degree of PhD

ABSTRACT

A brand is a feature that distinguishes one product or service from another. Having a strong brand can therefore provide competitive advantages to airlines which is key in today's highly competitive environment to achieve sustainable growth and profit. One of the critical aspects of strategic brand management is the assessment of the health of the brand. Therefore, the brand equity concept introduced the 1980s that, in general represents added value derived from customer perceptions of the brand versus the product/service itself, enables researchers and marketers to evaluate and understand brand successes and failures. However, there is little agreement in the literature on the concept, its measurement or its key dimensions. Having reliable measures is one of the prerequisites in management since it is difficult to manage something without measuring it appropriately. Therefore, the aim of this study is to systematically develop a valid, reliable and parsimonious scale to measure customer-based brand equity of airlines. Following well-established scale development procedures, this study first adopts a range of qualitative studies to construct an airline-specific customer-based brand equity scale. The scale construction established through a review of literature, airline marketing expert interviews, and a data-mining study on passenger reviews. The construction is followed by stepwise passenger surveys to test, validate and to assess its reliability. The results support the validity, reliability and the scale's predictive capability. Therefore, the result revealed six main dimensions of the ACBBE (Airline Customer-based Brand Equity) scale namely: awareness, service performance (functional and technical performance), credibility, differentiation, value and loyalty (brand intention and brand premium). This study provides a diagnostic tool for the airline marketing professionals to track, audit and assess the performance and health of their brands. The academic contribution of this research is twofold. It introduces a valid, reliable and psychometrically robust measurement tool by considering dynamics of the industry and, therefore, this study may lead as a point of departure to develop more sophisticated airline brand equity valuation methods.

Keywords: Brand Equity, Brand, Management, Airline Marketing, Passenger Reviews

DEDICATION

This thesis dedicated to my wife, Berna. It would not be possible without her support and encouragement to achieve this thesis.

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PUBLICATIONS

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Conferences

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LIST OF ABBREVIATIONS

ACBBE	Airline Consumer-Based Brand Equity
CBBE	Customer-based Brand Equity
CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
FBBE	Financial-based Brand Equity
FSC	Full-service Carrier
LCC	Low-cost Carrier
LSA	Latent Semantic Analysis
HTMT	Heterotrait-Monotrait Ratio
PLS-SEM	Partial Least Squares-Structural Equation Modelling
SEM	Structural Equation Modelling
SQ	Service Quality
NPS	Net Promoter Score
NLP	Natural Language Processing
VSA	Vector Space Model
WOM	Word-of-Mouth

1 INTRODUCTION

In this chapter, first, the rationale of the study and research problem were explained. Second, in the light of the background and the research problem, research aim, and objectives were highlighted and an overview to methodological approach to reach the aim and objectives in question were provided. Finally, the structure of thesis was given.

1.1 Background of the Study

Kotler & Keller define brand as " a product or service whose dimensions differentiate it in some way from other products or services designed to satisfy same need. " As in any product or service category, branding is significant for the development of airlines in increasingly competitive environments. The competitive environment in the liberalised airline industry has been reshaped by low-cost carriers (O'Connell & Williams, 2005). Consequently, a strong brand is necessary for an airline's success and survival , especially in markets where LCCs have become significant players.

Brand differentiation – demonstrating a brands ability for creating perceptions of distinctiveness in the eyes of customers against competitive offerings (Aaker, 1996) – is rather challenging for airlines, particularly in competitive markets since they operate essentially in a common environment, with virtually identical aircraft and similar airports (Driver, 1999). As a result, a commodity situation can be seen in the industry, where competing products offered show uniformity (Laming & Mason, 2014). Additionally, increasing costs, downward pressure on price and fluctuation in passenger demand required airlines to find diverse ways to increase profitability. Particularly, airlines found new revenue sources by unbundling flight experience which hinder the delivery of differentiation of the services and impeccable passenger experience difficult (Aaker, 2014).

Shaw (2007) suggests that the commodity situation can be abolished by achieving brand strength. However, powerful brands are rarely achieved when the brand foundations are only based on tangible differentiators since these differentiators may enable a company to take only a temporary advantage due to their easy adaptability from

competitors. Airlines have easily-matched tangible brand values such as seating comfort and catering standards. The power of a brand comes from intangible brand values that cannot be easily adopted by competitors.

The airline industry has become ultra-competitive because of the pressure of rising costs and consumer's lower price expectations (Ross, 2009). It is inevitable that airlines must comprehend the requirements and desires of its customers to be able to sustain more profit and to survive in fierce competition (Lin, 2015).

More than ever before, it is now essential for airlines to develop strong brands (Ross, 2009). However, a relatively small number of them can be assessed as genuinely powerful brands (Keller, 2001). There may be some reasons which make the creation of a strong brand more complicated in the airline industry. These reasons may reveal from some industry-specific factors or service industry challenges since airlines are affected by service industry complexities within a highly turbulent environment (Riwo-Abudho, Njanja, & Ochieng, 2013). The importance of branding in service industries is critical since customers require a high level of trust achieved through a strong brand for an invisible purchase. Furthermore, the essence of a strong brand enables customers to visualise and to discover intangible products better and therefore they can minimise perceived monetary, social and safety risks prevalent in service purchase (Berry, 2000). With regards to companies, the entity of a strong brand facilitates them to secure future demand as a means of loyal consumers and to augment revenue since the brands may be the indicator of a substantial level of quality (Keller, 2013).

Keller (2001) gives airlines and banks as examples of sectors where most companies cannot create strong brands in real terms. Brands in these categories have not been able to generate positive responses and deep and active loyalty. He explains the reason basically that the brand meaning of these brands does not have adequately strong, favourable and unique brand associations. As a result, this causes failure in achieving resonance with their customers.

Although various authors and industry experts have acknowledged the difficulties and challenges in creating strong airline brands, there are successful carriers – Southwest

Airlines for example – that have been able to create resonance with their customers by establishing relevant brand meaning through well-designed and executed marketing activities (Keller, 2001).

Strategic brand management, related to the design and implementation of marketing programs and actions to construct, measure and manage brand equity (Keller, 2013), emerges from customer-goods specialisation (Leek & Christodoulides, 2011) and initiates various opportunities for the building, management and measurement of airline brands.

One of the crucial aspects of strategic brand management is the measurement of equity of a brand. There different approach available to measure brand equity: customer-based, company-based and financial-based (Keller & Lehman, 2006). However, the methods used to measure brand equity in the different approaches differ significantly. The most common and significant approach to measure brand equity in the literature is the customer level measurement of brand equity.

Customer-based brand equity concepts try to quantify present thoughts, feelings and behaviour of actual and potential customers. Therefore, these thoughts, feelings and behaviour will affect what they will think and feel and therefore buy tomorrow (Ambler, 2003).

Brand equity measurement may play a marshalling role in the development of airline brands since they enable researchers and marketers to evaluate and interpret brand failures (Keller, 2001). Based on a fundamental management perspective, it is necessary to measure something to manage it (Rust et al., 2004; Aaker, 1996). However, brand managers have strived to find the correct approach to measure brand equity (Rust et al., 2004). The reason of this may originate from the divergence of academic views regarding the measurement of brand equity since there is little agreement on the concept of brand equity and its establishing dimensions (Christodoulides & de Chernatony, 2010; Veloutsou, Christodoulides, & de Chernatony, 2013).

Developing a customer-based brand equity scale tailored to the needs of the airline industry may allow airlines:

- To measure dimensions relevant to airlines which in turn enables accurate diagnostic information for marketing managers to monitor and to audit equity of their brand. Managers may understand clearly which area of the brand succeeds or fails, what drives brand success and to what extent by assessing the relevant dimensions of airline brand equity. Thus, they can make an efficient allocation of resources to maintain a balance among the brand equity dimensions.

- If airline marketing professionals use this scale to monitor the performance of their brand over time, they may clearly understand which are areas of failure or success. Therefore, this type of tracking enables an understanding of their long-term efforts to build and enhance the equity of their brand and to take action regarding service failures.

- Brand equity measurement can be linked with a business performance like financial results which would lead to a better understanding of their effort in terms of effecting business performance

- The tool can also be used in times of crisis such as accidents, strikes, adverse weather conditions, system failures etc., to apply necessary steps to reduce the impact of the crisis and to enhance the resilience of airlines.

- Airlines can use the scale to assess brand equity of their competitors and benchmark themselves against others and make adjustment on their positioning strategies.

All in all, a customer-based brand equity scale specific to airlines would allow management of airline brands strategically, therefore this type of management would allow to improve airline brands, to create strong brands resistant to the competition and to establish a steady revenue stream through loyal customers.

1.2 Research Problem

In airline marketing literature, research regarding brand equity and its sources has not received enough attention. Despite airlines' efforts to establish and maintain their brand equity, clear measurement of such equity is still lacking (Chen & Chang, 2008). Academic interest regarding airline branding has emerged (i.e. Chen & Chang, 2008; Uslu, Durmuş, & Kolivar, 2013) recently so there is a limited number of airline branding research available in the literature about the drivers of a brand and suggested measurement methods. Airline brand equity research is mostly an adaptation of either specific industry conceptualisation or empirical analysis of Aaker`s (1991) conceptualisation. It is likely to because of the deficiency of research in terms of the development of a valid and reliable airline industry-specific brand equity measurement. However, plenty of research highlights that principles of product branding research do not apply to service industry directly (de Chernatony, Harris, & Christodoulides, 2004).

Branding research has been widely focusing on the branding of products (de Chernatony & Dall'Olmo Riley, 1999). However, the increasing importance of branding in service industries has attracted the attention to the branding of services. Even though service branding receives increasing attention, there are only a few valuable service brands. This may originate from the deficiency of services branding knowledge and the unfavourable use of product-based branding advice (de Chernatony & Segal-Horn, 2003). This unfavourable use of this advice may be realized in airline brand equity research. Although there is a limited number of airline brand equity research available, the brand equity of airlines has been measured by a range of different perspectives and conceptualisations. It is acknowledged that none of the brand equity approaches has been accepted universally (de Chernatony et al., 2004) or the universal models attempted to develop for various products (Yoo & Donthu, 2001) are found less practical in terms of providing deep understanding about particular industry or categories (Anselmsson, Johansson, & Persson, 2007). It is also argued that although the concept of the brand is universally accepted, it is necessary to make adjustments based on the specific context applied (Leek & Christodoulides, 2011**;** Aaker, (1996). In this sense, various attempts have been put forth to develop industry-specific scales to measure

brand equity such as financial services (de Chernatony et al., 2004), online brands (Christodoulides, de Chernatony, Furrer, Shiu, & Abimbola, 2006), destinations (Konecnik & Gartner, 2007), business-to-business (B2B) (Jensen & Klastrup, 2008), hotels and restaurants (Nam et al., 2011; Hsu, Oh, & Assaf, 2012), and grocery products (Anselmsson et al., 2007). However, to the best of knowledge, no systematic attempt has been put forward to develop a valid and reliable airline customer-based brand equity scale. Particularly no research has been conducted to develop CBBE scale which address needs of different airline business models.

Although a few studies examined brand equity in airline context (i.e. Chen & Tseng, 2010; Uslu et al., 2013), their main purpose was not developing a robust customer-based brand equity measure specific for airlines. However, one of the most important elements of strategic brand management is to have reliable and robust measures which allow to assess the performance and the health of a brand (Keller, 2013). As this type of reliable and robust measure may provide airlines a diagnostic information about their brands as well as a clear understanding of which area of their brand succeeds or fails. Accurate diagnosis may enable airlines to produce a pointed treatment which in turn lead to an efficient use of their resources. In academic perspective, airline customer-based brand equity measure may allow a better theoretical understanding of airline brand equity formation and measurement. Especially, developing a CBBE scale by considering different business models (Full-service and Low-cost Carriers) in airline industry both allows a cross-service level assessment of the scale and would allow a tailored assessment to understand driving dynamics of the different airline brands focusing on different business models. Therefore, this theoretical understanding may lead to develop better theories in airline branding/marketing studies

By considering the lack of research on an airline customer-based brand equity measurement and by adopting well-established scale development procedures in the marketing studies, this study pursues the following aims and objectives:

1.3 Research Aim and Objectives

Aim

The aim of this study is to systematically develop a valid, reliable and parsimonious scale to measure the customer-based brand equity of airline brands.

This study also follows the principles related to the development of customer-based brand equity scale (CBBE) suggested in Marketing Science Institute (MSI) workshop 1999 on brand equity metrics (MSI (1999) in Ailawadi, Lehmann, & Neslin, 2003). Similar principles were also suggested by Keller (2001) and Aaker (1996) to develop a better brand equity measurement scale. Within these principles, the brand equity scale for airlines aims to be practical in terms of guiding marketing strategy and tactical decisions, evaluating the effectiveness of marketing decisions, diagnostic and reflecting all dimensions of airline customer-based brand equity to provide useful insight and guidelines. It is robust, reliable, and stable over time, and able to reflect real changes in brand health.

Objectives

- To identify dimensions of customer-based brand equity which are relevant to the airline industry.
- To identify the most suitable set of measures for the determined brand equity dimensions.
- To establish the validity, reliability and psychometric properties of the scale.
- To examine the predictive capabilities of the scale.

1.4 Research Scope

Brand equity can be assessed from several perspectives such as financial, company based, and customer-based, and within each approach various methods can be adapted to measure brand equity. However, this research considers brand equity solely from the customer perspective and uses a passenger survey. This study also focused on brand

equity measurement of airlines so the scale developed in this study may not be applied to other sectors.

1.5 Overview of Methodology

This research follows exploratory sequential research design and scale development procedures suggested by Churchill, 1979; DeVellis, 2017; Gerbing & Anderson, 1988; Netemeyer et al., 2003, as well as measurement validation and reliability assessment procedures (e.g. Diamantopoulos & Winklhofer, 2001; Hair, Hult, Ringle, & Sarstedt, 2017; Hair, Risher, Sarstedt, & Ringle, 2019; Sarstedt, Ringle, Smith, Reams, & Hair, 2014). The exploratory sequential research design constitutes two levels . In the first level, several exploratory pieces of research conducted to construct airline customer-based brand equity scale (ACBBE), and in the second phase, development and validation stage, the scale is subjected to quantitative analysis through stepwise surveys. The research took place as follow in detail:

In the first level of the research, the domain of the construct is identified as Airline Customer-based brand equity. In conjunction with the literature, the content domain is first further explored through thirteen semi-structured interviews with airline marketing experts which lead to the identification of the scale dimensions relevant to the airline industry. Then, each measure was critically reviewed in the literature in conjunction with expert interview findings and measurement theories. A composite measurement approach (using formative and reflective measures) was found to be appropriate in the light of findings and literature. Within this approach, each dimension of ACBBE is conceptualised, defined and items reflecting these dimensions were identified based on a review of literature, brand equity theories and expert interviews. A further study of airline passenger reviews posted on social media was examined to tap further to the measurement item pool.

In the second level of the research, the item pool was given to a panel of experts to identify the most relevant items reflecting the constructs. This assessment leads to a passenger survey. Firstly, a pre-test survey was conducted to the passengers of low-cost

carriers and full-service carriers to assess initial reliabilities of the scale and to identify the factor structure (Exploratory Factor Analysis (EFA)) and to refine items which does not meet certain psychometric criteria. Then, a second passenger survey was conducted with both passenger groups again. First, a number of statistical analysis were conducted EFA, Confirmatory Factor Analysis (CFA) and Partial Least Squares Structural Equation Modelling (PLS-SEM). The dimensions of ACBBE were clearly and consistently established among different passenger groups. The measures were evaluated for their reliability, and content, convergent, discriminant validity. Therefore, the validity and reliability of the ACBBE was scale established across airline business models. In the final step, the predictive capabilities of the scale were established. This assessment both allowed for the nomological assessment of the scale and the predictive relevance of each dimension which in turn demonstrated how the scale can be used in practice as a diagnostic and strategic tool for airline marketing.

1.6 Thesis Structure

This thesis is organised in seven chapters. The first chapter explains the background of the study, research problem, aim and objectives and finally, the structure of the thesis explained as follow:

Chapter two: The second chapter builds the theoretical foundations of this thesis commencing with the meaning of branding and brand equity concepts. Then, brand equity measurement approaches are introduced and by focusing on customer-based brand equity, both the conceptual level and empirical studies, as well as consultancy-based approach, were investigated thoroughly. In the final section, airline branding and consumer behaviour literature were reviewed critically.

Chapter three: In the third chapter, the research methodology is discussed. The chapter starts with the philosophical research paradigm and justifies the philosophic position adopted for this research. Furthermore, scale development procedures followed for this study are explained in detail. Both qualitative and quantitative methods are utilised for

scale development. In the final part of this chapter, the methodological approach followed for each research element is explained with its reasoning.

Chapter four: This chapter focused on the qualitative phase of the research in which the construction of an Airline Customer-Based Brand Equity (ACBBE) scale takes place. The chapter commences with specifying the domain of the construct. The CBBE dimensions that are relevant to airlines are identified through qualitative research (expert interviews). Then, the scale conceptualisation is realised through expert interviews and the literature. The conceptualisation phase is further supported with a data mining research to establish the final conceptualisation of the dimensions of the ACBBE scale and the initial item pools to be used to measure the intended constructs. In the final section, an ACBBE model is proposed.

Chapter five: The constructed scale is subjected to scale development and validation in this chapter. First, the initial items pool is evaluated by experts, and the scale pre-tested through a passenger survey. Based on initial reliability estimates, the final scale items are reached. A further passenger survey is conducted to evaluate the scale. Based on this study, first, the proposed constructs (reflective constructs) are refined through several statistical analyses. Second, the measurement model is subjected to various reliability and validity tests to establish psychometric properties of the proposed scale. In the final part of the chapter, the ACBBE scale predictive capabilities are assessed.

Chapter six: In this chapter, the ACBBE scale, whose psychometric properties were established, is discussed in conjunction with the relevant literature and the relevancy of each measure in the airline context is explained.

Chapter seven: This chapter provides information about the contribution of the thesis at theoretical, methodological and managerial level. Next, the limitations of the study are explained and some direction to future studies is provided.

2 LITERATURE REVIEW

This chapter commences by introducing brand, branding and brand equity concepts. Brand equity measurement approach and techniques used to assess brand equity were explained comprehensively. Then, the literature review concentrated on customer-based approach to brand equity (CBBE). Theoretical perspectives to CBBE, and research aiming to develop scales to measure CBBE and consultancy based CBBE models were critically examined. Next, the review emphasised on the brand equity measurement on air transport industry and the related studies in airline consumer behaviour literature were reviewed as well.

2.1 Brands and Branding

Branding exists to separate goods of one producer from those of another. The word brand is derived from the old word “brandr” which means “to burn”. In the past, brands were used to mark animals so that they could be identified (Keller, 2013). Its function remained the same when product manufacturers adopted brands to secure the quality of their goods (Laforet, 2010) and to put their mark on a widening range of products to show their source (McLaughlin, 2011).

There are many different definitions of the brand in the literature as in common with other marketing research areas (de Chernatony & Dall’Olmo Riley, 1998). The American Marketing Association (AMA) defines the brand as a "name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers.” However, the contemporary branding approach does not only consider the conventional perspective of the brand concept, including visible features or functional product attributes, but also pays attention to the psychologic aspects such as consumer subjectivism and utility expectation (Davcik, Vinhas da Silva, & Hair, 2015) since emerging lifestyles, consumption trends and sophisticated customers have led to a shift from functional value considerations to hedonic and symbolic consumption (Laforet, 2010).

Kotler & Keller (2012) explain a brand as "a product or service whose dimensions differentiate it in some way from other products or services designed to satisfy the same need.**"** They point out that the differentiation either might take place as a result of functional or rational product performance of a brand, or it might be more symbolic or emotional depending on what brand stands for (Kotler & Keller, 2012).

Both consumers and companies take advantage of the value provided by brands. With regards to companies, brands render excessive returns alongside customer confidence and loyalty (Laforet, 2010). This loyalty allows companies to anticipate and secure future demand, and generates barriers for the competitors to penetrate the market (Keller, 2013). Brands may be a fundamental competitive differentiator for products, services and firms that enhance the future relationship with customers (Laforet, 2010) and thus companies can offer premium prices and maintain additional profit through their brands (Keller, 2013). Brands also promote the efficiency and effectiveness of marketing programs (Aaker, 1996).

From the customer perspective, brands also render value to the customers. Particularly in the service industries, brands stimulate customer trust for non-tangible purchases that enables the customer to have better visualisation and understanding about the product (Berry, 2000) as well as there are many risks relevant to service purchase which is hard to comprehend before purchase. Thus strong brand essence reduces customer`s functional, physical, financial, social, and psychological risks (Keller, 2013).

2.2 Brand Equity Concept

Brand equity is one of the most popular and potentially significant marketing concepts that emerged in the 1980s (Keller, 2013). However, no consensus has been reached on its meaning and context, nor its measurement in the literature (Christodoulides & Chernatony, 2009; Keller, 2013; Pappu, Quester, & Cooksey, 2005). Various definitions of brand equity have been suggested. Aaker (1991) defines brand equity as *" a set of brand assets and liabilities linked to a brand, its name and symbol, that add to or subtract from the value provided by a product or service to a firm and/or to that firm's customers."*. Simon & Sullivian (1993 p. 29) defines brand equity as *"the incremental*

cash flows which accrue to branded products over and above the cash flow which would result from the sale of unbranded products." Keller (1993 p.69) defines brand equity *"as the differential effect of brand knowledge on consumer response to the marketing of the brand."*

Although the various definitions of brand equity have been suggested, Farquhar`s (1989 p. 24) definition - "added value" endowed to a product by a brand - is generally acknowledged in the literature. Based on his definition, Farquhar (1989) – conceptualised brand equity into three categories: a brand can deliver added value to the company, to the trade and to the consumer when it is considered from different perspectives.

Marketing research regarding brand equity has mainly focused on customer-oriented measurement rather than firm-based brand equity considering financial valuation which gives slightly practical information for brand executives. Customer-based paradigm propounds understanding about customer behaviours which can be converted into actionable branding strategies (Keller, 1993 in Christodoulides & de Chernatony, 2004). This approach seems relatively practical because of the information gained offers a vision about customer behaviour that can be used for the generation of branding strategies (Kim, Jin-Sun, & Kim, 2008)**.**

2.3 Brand Equity Measurement Approach

According to Keller & Lehman (2006), there are three distinct approaches to measure brand equity: at customer level, which focuses on the evaluation of the customer-based sources of brand equity; at product market level; and at financial market level which focuses on the outcomes or net benefit that a company obtains from the equity of its brand (Ailawadi et al., 2003).

2.3.1 Financial-Based Brand Equity (Financial-Market Level)

In this perspective, brands are seen as assets which can be bought and sold similar to a plant or equipment that a company owns (Keller & Lehman, 2006). The financial markets perspective, broadly called Firm-Based Brand Equity (FBBE), considers financial value

generated by brand equity to the firm (Christodoulides & de Chernatony, 2010). The purpose of estimating financial brand value is for accounting purposes, as well as mergers, acquisitions and, divestiture purposes (Keller, 1993) and for discounted cash flow valuations of licensing fees and royalties (Ailawadi et al., 2003). Accounting companies advocate brand valuation in financial term because:

- It allows to strengthen the presentation of a company's accounts.
- The intangible assets of the firm can be demonstrated to the shareholders of the company and, as a result, earnings ratio can be improved by enhancing a firm's shareholder's fund.
- It forms the basis to evaluate the performance of the company by management and investors,
- Suitable brand strategies can be developed by revealing comprehensive information about the strength of the brand.

However, including the brand value in the firm's balance sheet as an intangible asset will lead to an increase in the asset value of the firm (Keller, 2013).

There are several techniques available or being used by firms to estimate brand equity (Simon & Sullivian, 1993). In general, companies can adopt three approaches for brand valuation in an acquisition or merger: the cost, market and income approaches.

- In the first approach, the value of brand equity is counted as the amount of money which would be required to reproduce or replace the brand. The costs include research and development, test marketing, advertising etc.
- In the market approach, brand equity is regarded as the amount an active market would allow in which the asset could be exchanged between a buyer and seller who are willing.
- In the income approach, brand equity regarded as discounted future cash flow from future earnings flow for the brand. The assessment of the brand can be done into three perspectives in this approach: royalty earnings can be capitalised from brand name, premium profit can be capitalised by comparing the performance of a branded product with an unbranded product, the actual

profitability of a brand can be capitalised by considering the cost of sustaining of a brand and the impact of taxation (Keller, 2013).

One significant research on the measurement of brand equity in the financial term was conducted by Simon & Sullivian (1993). In this research, the company`s brand equity is estimated through the financial market value of the firm and fundamentally, the value of brand equity is deducted from the value of the other assets of the company. Their technique consists of two parts: in the macro approach, the brands of a company is allocated an objective value, and the determinants of brand equity and this value are associated. The other part is the micro approach in which brand equity changes are isolated at the individual-brand level. This is achieved by evaluating how brand equity respond to significant marketing decisions (Simon & Sullivian, 1993).

There are various approaches available for the valuation of brands and therefore the inclusion of brands on the balance sheet is a controversial topic and so far no approach has been accepted universally (Keller, 2013).

2.3.2 Company-Based Brand Equity (Product-Market Level)

Company/sales-based measures of brand equity are also referred to as “residual” approach in which brand equity is estimated through self-reported choices in conjoint and survey data (i.e. Park & Srinivasan, 1994) and from actual brand choices and sales registered in the scanner data (e.g. data collected in supermarket scanners) (i.e. Russell & Kamakura, 1993) (Datta, Ailawadi, & Van Heerde, 2017). The logic behind product-market measures is that the performance of the brand in the marketplace should be demonstrated in brand equity. The price premium is a widely used measure in this respect. Price premium refers to how a brand can charge a higher price compared to unbranded equivalent products.

2.3.2.1 Multi-Attribute Attitude Models

Park & Srinivasan (1994) and Srinivasan (1979) advocate a multi-attribute-based approach as a point of departure to measure brand equity. For instance, Srinivasan (1979) estimates brand equity by comparing observed preferences which are obtained from actual choice behaviour with consumer preferences obtained from the multi-

attribute conjoint analysis. Therefore the difference between this comparison translates into a monetary scale (Christodoulides & Chernatony, 2009; Park & Srinivasan, 1994). However, this method does not allow to understand the sources of brand value as is any kind of direct measurement approach (Christodoulides & Chernatony, 2009)

Park & Srinivasan (1994) further suggested a new survey-based method to measure brand equity at the individual consumer level again by using multiattribute preference model. In this model, the authors obtain overall brand preferences and multiattribute preferences based on objectively measured attribute levels of each individual by using a survey method. Once preference measures are converted into dollar metrics, multiattributed brand preferences are subtracted from overall brand preference to find out individual-level measures of brand equity.

Additionally, in this approach, to understand sources of brand equity, brand equity is divided into attribute-based components (aim to capture the difference between subjectively and objectively measured attribute levels) and non-attribute-based components (aim to capture brand associations which are not related to product attributes). This approach suggests a relative measure of brand equity since it explains the magnitude of one brand against the other. Therefore it does not conceptually explain the magnitude of one brand in absolute terms (Park & Srinivasan, 1994).

2.3.2.2 Scanner Panel

In comparison to Park & Srinivasan (1994) and Srinivasan (1979), Russell & Kamakura (1993) use scanner panel choice data to obtain segment-level estimates (Datta et al., 2017). In this research, the authors' approach to estimate brand equity was based on actual purchase behaviour of customers which is obtained from supermarket checkout scanners. In this way, the value assigned to each brand by a customer is estimated, and differences in the net price and brand salience because of short-term advertising effect is also considered which in turn is used as a proxy of brand value (Christodoulides & Chernatony, 2009; Russell & Kamakura, 1993).

Ailawadi et al. (2003) proposed a revenue premium as a brand equity measure. Similar to Russell & Kamakura (1993), they used panel data sets for the consumer packaged

goods industry. The data includes weekly price, promotions, sales and retail margin data for various categories. Therefore, they calculated revenue premium based on this data as an estimation of brand equity.

2.3.2.3 Choice Experiments

Swaiť, Erdem, Louviere, & Dubelaar (1993) suggested a measurement approach to brand equity through choice experiments that account for the brand name, product attributes, brand image and consumer heterogeneity effects. The method for quantifying brand equity is called Equalisation Price. This measure is based on total brand utility that the level of brand equity consumers associate with a brand name is estimated. The Equalisation Price demonstrates the utility difference (attributed to a brand by consumers) in the market condition where brand differentiation is available against a market without brand differentiation.

Residual approaches are useful to obtain a financially oriented understanding or if it is needed to obtain approximations of brand equity and enables a useful benchmark to evaluate brand equity (Keller, 2013). However, these types of measures, in some cases, rely on customers' responding to hypothetical scenarios rather than actual purchase data. Conjoint based studies are conducted by using sophisticated statistical techniques; consequently, they take time to conduct and make it impractical to monitor regularly. In some cases, some of the product-market measures may lead to incorrect conclusions. For instance: a brand may obtain a market share through discounted prices while some other brands may not command price premium which does not necessarily mean they do not have brand equity (Ailawadi et al., 2003).

2.3.3 Customer-Based Brand Equity

The roots of the concept of consumer-based brand equity have mainly emerged from cognitive psychology and information economics. The mainstream research heavily relies on cognitive psychology, emphasising on memory structure (Aaker, 1991; Keller, 1993 in Christodoulides & Chernatony, 2010). The focus on the economic view is to the extent to which marketers can have an impact on the brand value creation by using conventional marketing mix elements whereas, in the cognitive psychology approach,

the brand is understood in the mind of the consumer. Therefore, the customer is the central interest in this approach. In other words, from a brand management perspective, brand value creation is emphasised from an inside-out (from firm to consumer) perspective in the economics view while cognitive psychology approach views brand value creation in an outside-in (from consumer to firm) perspective (Heding, Knudtzen, & Bjerre, 2009). Both approaches view brand equity formation over time through consumer learning and decision-making processes (Erdem & Swait, 2016). The consumer is understood with different lenses (firm or consumer) based on theories adapted from cognitive psychology and information processing theory of consumer choice (Heding et al., 2009). Therefore, they both are consumer-centric constructs regardless of their perspectives and they can capture the complementary nature of brand equity (Erdem & Swait, 2016).

2.3.3.1 Cognitive Psychology Perspective

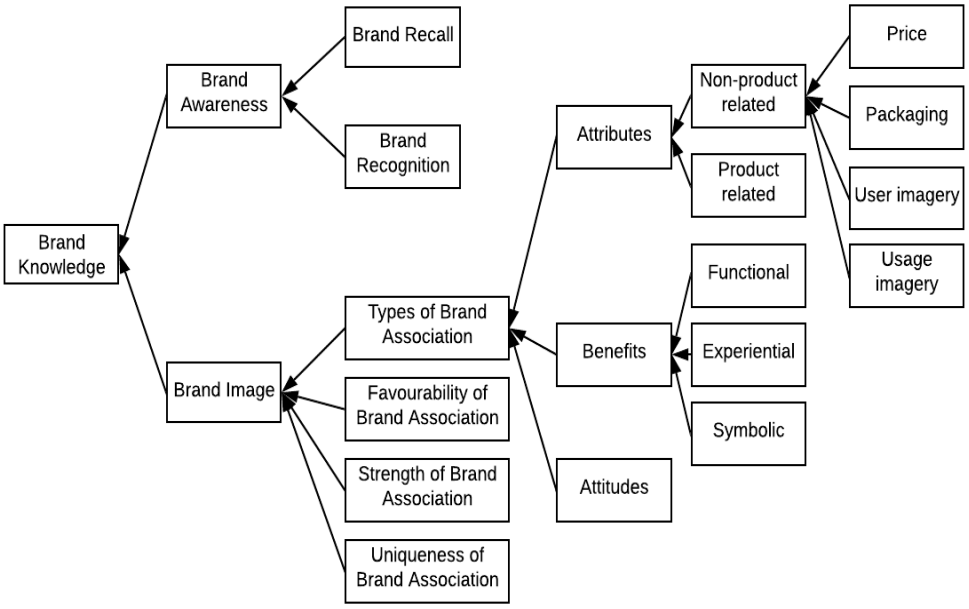
Keller (1993) considers CBBE strictly from consumer psychology (Christodoulides & Chernatony, 2009) and he suggests that brand knowledge is the key which forms brand equity. He explains brand knowledge formation in the consumer's memory through the associate-network memory model. In this model, memory is viewed as having a network of nodes and connecting links. Nodes in the memory represent stored information or concepts whereas the strength of associations between the information and concepts are represented with links. In the associate network memory model, he explains brand knowledge as a node in the memory and a number of associations linked with this node.

Two concepts are related to brand knowledge (see Figure 1): brand awareness and image. Brand awareness demonstrates the strength of brand node in the memory while brand image/associations represent consumer's perceptions about the brand; in other words, brand associations represent other informational nodes linked to the brand node. Brand knowledge is grounded into memory principles and structure in cognitive psychology (Heding et al., 2009).

Keller (1993) suggests that CBBE reveal if customers have a high level of awareness and familiarity to a brand as well as if they have strong, favourable and unique associations for a brand in their memory.

Keller (1993) suggests that brand recognition and brand recall are the two components of brand awareness. The former related to the ability of the consumer to truly discriminate a brand which is seen or heard before, and the latter is related to if a consumer can retrieve the brand when the product category or any other type of information is provided as a cue.

Figure 1 Keller's Brand Knowledge model



Source: Keller (1993)

Keller (1993) categorises brand associations into three groups: attributes, benefits, and attitudes. Attributes represent the descriptive features characterising a product or service and demonstrate the knowledge of the customer about what the product/service is or has. He categorises those attributes based on their relationship of with product/service performance. Therefore, product-related attributes describe physical characteristics of product or service's requirements (or factors requires to perform the product or service function) and they differ based on product or service

category; whereas non-product related attributes (e.g. price information, packaging) refer to external aspects of product and service which reveal from its purchase or usage (Keller, 1993). Benefits in his conceptualisation refer to personal values and understanding of customer's that customer associate with the attributes of the product/service. Direct experience of the customer with product/service is the most influential in terms of creating these associations related to attributes and benefits which in turn affect customers' decisions. Besides, word-of-mouth (WOM) may be influential especially for services (Keller, 2013). The last association is brand attitudes which shows customers' overall evaluations of a brand. The bases of consumer behaviour generally reveal from customer judgements towards a brand which make them critical (Keller, 1993). In addition to three types of associations (attributes, benefits and attitudes), their strength, favourability and uniqueness can be different among those associations. Therefore, he argues that positive brand responses can be obtained by achieving successful results in these three dimensions of associations (Keller, 1993, 2001).

2.3.3.2 Information Economics Perspective

In a different perspective, Erdem & Swait, (1998) explained brand equity generation through signalling theory in information economics. The theory is practical for describing behaviours when two parties (individuals or organisations) have access to different information. Generally, the sender must decide the way of communication (or signal), and the receiver must select how to interpret the information (or signal) (Connelly, Certo, Ireland, & Reutzel, 2011).

Their signalling perspective considers the imperfect and asymmetrical information structure of the market and the approach addresses the role of credibility – specified by the communication between companies and customers - as the fundamental determinant of CBBE (Erdem & Swait, 1998). According to the authors, if there is uncertainty for customers about the product attributes, brands (brand name) can be used to inform customers about product positions and the credibility of their product. In other words, customer value can be created by a credible brand signal; in turn, this

increases perceived quality, decreases perceived risks and information cost. Thus, they identified CBBE as "*the value of the brand signals to customers"* (Erdem & Swait, 1998).

2.4 Measurement of Customer-Based Brand Equity

2.4.1 Conceptual Studies on CBBE

Aaker's (1991) and Keller's (1993) conceptualisations of brand equity have been influential, but they did not develop a valid and a reliable metric/scale (Christodoulides & Chernatony, 2009; de Chernatony et al., 2004). However, they proposed a set of measures based on their initial frameworks which could be applied to various products/services and guide marketing managers and academics to develop credible and sensitive measures or set of measures to track health of brand equity. Aaker's (1996) Brand Equity Ten, and Keller's (1993) CBBE measures, which then evolved into the CBBE pyramid, are the most influential brand equity approaches in the literature (Datta et al., 2017).

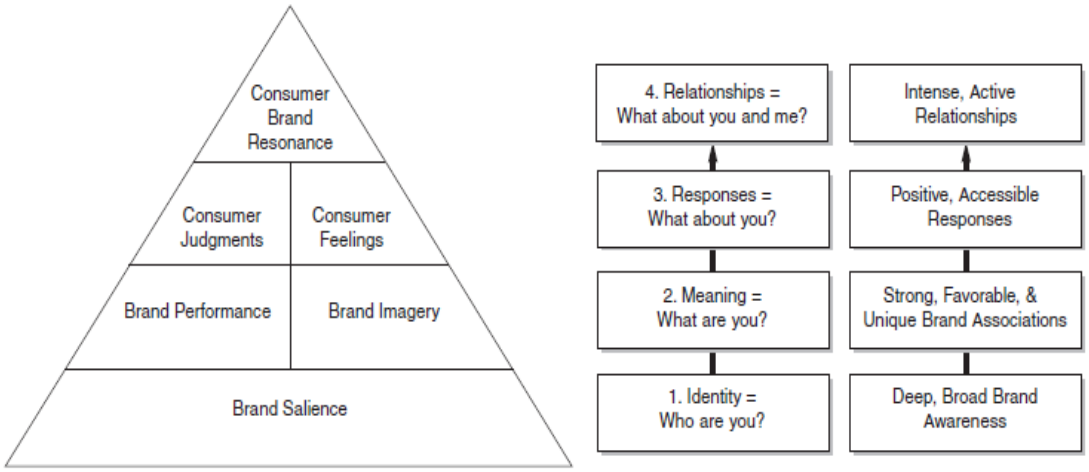
2.4.1.1 Keller's Customer-Based Brand Equity Pyramid

Initially, Keller's approach to CBBE was underpinned brand knowledge model having two components; brand awareness and brand image (Keller, 1993). He further suggested a more complete version of his approach in his CBBE pyramid (see Figure 2) that he developed as a yardstick which enables to understand what brand equity is and how it should best be built, measured, and managed (Keller, 2001).

In his brand-building system, construction of a strong brand is realised into four sequential steps. Each step depends on the successful completion of the previous steps, and all steps require achieving certain objectives with both existing and potential customers. The first step is related to customer identification of the brand and an association of the brand in the mind of the customer together with a customer need or a certain product class. The next step is related to brand meaning in the mind of the customer which reveal from tangible and intangible brand associations. The third level is corresponding to customer responses to brand identity and meaning. In the last step,

customer judgements lead to or convert into active and intense loyalty. These four steps can also be achieved through six brand building blocks (Keller, 2001):

Figure 2 Customer-Based Brand Equity pyramid



Source: Keller (2001)

1. Brand Salience: it is related to different aspects of brand awareness such as the top of mind, recognition and recall. Salience is the foundational aspect of the brand pyramid, and it has three significant functions. First, it affects brand association formation and their strength. Second, it influences the possibility of a brand to involve in the consideration set among those brands having serious consideration for purchase. Third, brand salience may be important for purchase decision for low involvement product or services.

2. Brand Meaning: Although the brand salience is an important step for brand equity, it is not sufficient. Therefore, brand meaning, or image has become important in most circumstances. Keller (2001) considers brand meaning into two dimensions: brand performance and brand imagery;

Brand Performance: it is related to how a product or service meets the customer's functional needs. He suggested that although the attributes and benefits differ significantly by category, generally five types of attributes and benefits related to brand performance: primary characteristics and secondary features, product reliability,

durability and serviceability, service effectiveness, efficiency and empathy, style and design, price.

Brand Imagery: it is related to extrinsic characteristics of a product or service and the extent to which a brand meets the psychological and social needs of customers. Similar to performance, various intangibles may be related to brand imagery, but, four categories are important: user profiles, purchase and usage situation, personality and values, history, heritage and experiences.

3. Brand Responses: It is related to the customer's thoughts and feelings about the brand and how customers respond to the brand as well as its marketing activities and other information sources. He divides brand responses as brand judgements and feelings.

Consumer judgements: Consumers consider different brand performance and imagery associations and form different judgements. There may be various judgements, but four of them are significant: perceived quality, brand credibility, brand consideration, brand superiority.

Brand feelings: the other brand responses related to emotional responses of the customers to the brand. Six important types of feelings are generally related to this dimension: warmth, fun, excitement, security, social approval, self-respect.

4. Brand Resonance: It is related to the nature of the relationship between brand and customers and psychological bond the customers have with the brand. Brand resonance is divided into four categories: behavioural loyalty, attitudinal attachment, sense of community, active engagement.

2.4.1.2 Aaker's Brand Equity Ten

Aaker (1996) introduced a set of candidate measures for different brand categories by considering four dimensions of his conceptualisation (awareness, associations, perceived quality and loyalty) under the name of the "Brand Equity Ten" to be able to measure brand equity of various products and services. He suggested Brand Equity Ten, not as an optimum set of measures applicable to all context, rather he suggested

modifications or even supplemented by additional measures to fit the measures to a particular context. The measures were categorised under five categories; the first four groups correspond to customer perceptions of a brand; the fifth category correspond to market behaviour measures which could be obtained from market-based information rather than directly from customers.

Table 1 The Brand Equity Ten

Loyalty Measures
1. Price Premium
2. Satisfaction/Loyalty
Perceived Quality/Leadership Measures
3. Perceived Quality
4. Leadership/Popularity
Associations/Differentiation Measures
5. Perceived Value
6. Brand Personality
7. Organisational Associations
Awareness Measures
8. Brand Awareness
Market Behaviour Measures
9. Market Share
10. Market Price and Distribution Coverage

Source: Aaker (1996)

1. Loyalty Measures: According to Aaker (1996), loyalty is the core measure of brand equity. He suggested two measures for brand loyalty: Price premium and Satisfaction/Loyalty. Price Premium refers to the customer's willingness to pay for the brand in comparison with another brand offering the same or fewer benefits. He suggested that price premium is the best single measure of brand equity because if the customer is loyal, they should be willing to pay a premium price. Otherwise, the loyalty level of the customer is shallow.

The second loyalty measure is satisfaction (or liking) which is a direct measure of customers' willingness to stick to a brand. Especially for a service business, satisfaction is a powerful measure where loyalty occurs as a result of cumulative experiences. One of the problems with satisfaction is, it is not appropriate for non-consumers.

2. Perceived Quality/Leadership Measures: Perceived quality is one of the key constructs in the brand equity which directly affects Return on Investment (ROI). Perceived quality may be insensitive to the innovations of competing brands. In this case, Aaker (1996) suggest the Leadership/Popularity measure. He suggests that Leadership has three dimensions: category leader, growing more popular and respected for innovation. Based on Young & Rubicam's Brand Asset Valuator model (consulting-based measurement), Aaker (1996) suggested "Esteem" measure which is the combination of perceived quality and leadership.

3. Associations/Differentiation Measures: Value is one of the brand association measures providing a summary indicator of a brand's success in terms of generating a value proposition. Brand personality is the second measure related to associations. Personality enables the link to the brands emotional and self-expressive benefits and the basis for customer-brand relationship and differentiation. This measure requires a specific set of measures unique to the brand. However, brand personality is not relevant for all brands since not all brands may have a personality. Therefore, using personality as a measure of brand strength may not be relevant for all brands. Another measure is organisational associations. This measure particularly may be useful for brands that their attribute-level offerings demonstrates similarities in the market, in which case the organisation is visible as a service business. The final measure is differentiation which is a bottom-line characteristic of a brand. Brands which are not perceived as being different may encounter difficulties in creating a premium price or a sufficient price to sustain attractive margin (Aaker, 1996).

4. Awareness Measures: Brand presence in the mind of consumers can be assessed with awareness. Awareness can be measured from different levels: Recognition, recall, top of mind, brand dominance, brand familiarity and brand knowledge or salience (Aaker, 1996).

5. Market Behaviour Measures: Many brand equity measures are related to customer perception; thus, they require survey studies which can be expensive, inconvenient and hard to implement. Aaker (1996) offers two market behaviour measures: market share

and market price and distribution coverage. Market share generally provides valid and sensitive assessment about the condition of the brand. However, market share may not be a useful measure when market share rises through discounted price or promotions. Hence, measuring the relative market price is significant. Distribution coverage can be assessed by calculating the proportion of stores carrying the brand or the proportion of people having access to the brand.

Although Aaker's and Keller's conceptualisations are customer-oriented and put emphasise on brand awareness and brand associations, there are some differences between frameworks. While Keller (1993) suggests a knowledge-based framework for creating brand equity, Aaker (1991) lists four major customer-related assets of brand equity; brand-name awareness, brand loyalty, perceived quality and brand associations (Agarwal & Rao, 1996). In addition to the four main dimensions of brand equity, he also delivers the fifth asset which refers to cover assets such as channel relationships and patents that are linked to the brand (Aaker, 1996). The fifth dimension of Aaker's brand equity model consider market-based information instead of getting information directly from consumers. Thus it may be inappropriate for consumer-based brand equity measurements (Christodoulides & Chernatony, 2009). Keller's framework strictly focuses on consumer and their brand knowledge structure with regards to Aaker's conceptualisation. Aaker considers both the customer's and the firm's benefits and outlines overall guidance for the dimensions of brand equity. Keller explains brand equity formation and measurement in a step by step process in a more detailed way and explains the relationship among dimensions in terms of a sequence of steps (Moisescu, 2005).

2.4.1.3 Berry's Service Branding Model

Berry, (2000) suggests a service branding model which is formulated based on interviews with high-performance service companies. He argues that branding is especially significant for service companies because it increases customer trust for the intangible purchase. Strong brands help customer to better visualise and understand intangible products. He explains service branding, its sources and consequences. Brand awareness and brand meaning are the components of brand equity. Brand meaning refers to a

customer's dominant perceptions of the brand. Three dimensions affect brand equity: company's presented brand, external brand communication and customer experience with the company. The presented brand refers to a company's controlled communication about the identity and purpose of the company. External brand communication related to the information that the customer obtains about both the company and its service through the communication which is not under control of the company such as word-of-mouth and, publicity. Therefore, he argues that customer experience with the brand directly affects brand meaning. Company's presented brand directly affects brand awareness and indirectly brand meaning. External brand communication impact both on awareness and brand meaning.

2.4.2 Empirical Research on the Development of CBBE

As discussed, neither Aaker (1991) nor Keller (1993) has operationalised their scales (Christodoulides & Chernatony, 2009). Therefore, various empirical research has been conducted mostly based on Aaker's(1991) conceptualisation to develop a valid CBBE scale. Table 2 demonstrates the summary information about conceptual and empirical research conducted on CBBE measurement.

Table 2 Key research on the customer-based brand equity scale development

Authors	Category	Base Conceptualisation	Dimensions	Type
Aaker (1992)	General	N/A	Awareness, Perceived Quality, Brand Associations, Loyalty	Conceptual
Keller (1993)	General	N/A	Brand Awareness, Brand Image/Associations	Conceptual
Erdem and Swait (1998)	Jeans and Juices	N/A	Brand Credibility	Conceptual/ Empirical
Lassar, Mittal, & Sharma (1995)	TV and Watches	N/A	Performance, Social Image, Value, Trustworthiness, Attachment	Conceptual/ Empirical
Berry (2000)	Services	N/A	Brand Awareness, Brand Meaning	Conceptual
Yoo & Donthu (2001)	Athletic shoes, cameras, and TVs	Aaker (1992); Keller 1993	Brand loyalty, perceived quality, brand awareness/associations.	Empirical
Washburn & Plank (2002)		Yoo & Donthu (2001)	Brand loyalty, perceived quality, brand awareness/associations.	Empirical
Vázquez, del Río, & Iglesias (2002)	Sports shoes	Kamakura and Russell (1991); Cobb-Walgren et al. (1995)	Product functional utility, product symbolic utility, brand name functional utility, brand name symbolic utility	Conceptual/ Empirical

Table 2 Key research on the customer-based brand equity scale development

Authors	Category	Base Conceptualisation	Dimensions	Type
Netemeyer et al. (2004)	Cokes, Toothpaste, Athletic Shoes, Jeans	Aaker (1992); Keller 1993	Perceived quality, perceived value for the cost, uniqueness, and the willingness to pay a price premium	Conceptual/ Empirical
de Chernatony et al. (2004)	Financial services	N/A	Brand loyalty, consumer satisfaction and reputation	Conceptual/ Empirical
Pappu et al. (2005)	Cars and TVs	Aaker (1992); Keller 1993	Brand awareness, brand associations, perceived quality, brand loyalty	Empirical
Grace & O'Cass (2005)	Retail stores and banks	N/A	Brand evidence, consumer satisfaction, attitude, behavioural intentions	Conceptual/ Empirical
Christodoulides et al. (2006)	Online brands	N/A	Emotional connection, online experience, responsive service nature, trust, and fulfilment.	Conceptual/ Empirical
Konecnik & Gartner (2007)	Destinations	N/A	Awareness, image, quality, and loyalty	Conceptual/ Empirical
Burmann, Jost-Benz, & Riley (2009)	General	N/A	Brand benefit clarity, Perceived brand quality, Brand benefit uniqueness, Brand sympathy, Brand trust,	Conceptual
Boo, Busser, & Baloglu (2009)	Destinations	N/A	Brand awareness, brand image, brand quality, brand value, brand loyalty	Conceptual/ Empirical
Nam et al. (2011)	Hotel and Restaurants	Aaker (1992); Ekinci et al. (2008)	Physical quality, staff behaviour, ideal self- congruence, brand identification and lifestyle-congruence	Conceptual/ Empirical
Hsu et al. (2012)	Hospitality	Aaker (1992); Keller (1993)	Brand Awareness, Perceived Quality, Brand Image, Management Trust, Brand Reliability, Brand Loyalty, Brand Choice Intention	Conceptual/ Empirical
Veloutsou et al. (2013)	General	N/A	Consumers' understanding of the brand, affective response, evaluation and consumers' behaviour	Conceptual
Baalbaki and Guzman (2016)	Smartphones	N/A	Quality, preference, social influence, sustainability	Conceptual/ Empirical
Tasci (2018)	Destinations	Aaker (1992); Tasci, (2016)	Familiarity, image, quality, brand value, consumer value, and loyalty, satisfaction	Empirical

Note: N/A: Not available. Source: Own elaboration

Lassar, Mittal, & Sharma (1995) developed a customer-based brand equity scale based on Martin and Brown (1990) conceptualisation having five dimensions: performance, social image, value, trustworthiness, and attachment. The performance is defined as customer's judgements about the brand's durability and fault-free operation and

faultlessness of physical structure of the product. Social Image is considered as consumer's perception of the esteem. Value is considered as a perceived utility with regards to its cost. Trustworthiness aiming to measure the extent to which consumers have the confidence to the firm and its communications and to what extent the firm's actions are in the consumer's interest. Finally, attachment focuses on the relative strength of consumer's feeling about the brand.

Lassar et. al. (1995) generated 83 measurement items for the measures of brand equity. Through expert judgements and multiple surveys, they narrowed down the scale to 17 items for five dimensions. They tested the final scale on two categories; television monitors and watches. They conducted various Exploratory Factor Analysis and Confirmatory Factor Analysis. Their scale demonstrated good discriminant and convergent validity.

One of the most influential and very first attempts on the development of CBBE scale having rigorous psychometric properties and cross-culturally validated scale was conducted by Yoo & Donthu (2001). The authors also criticised previous brand equity scale development studies for deficiency of rigorous psychometric tests. Therefore, they developed the brand equity scale based on Aaker's (1991); and Keller's (1993) conceptualisation with four dimensions, including, brand awareness, brand associations, brand loyalty and perceived quality. The CBBE scale is having cognitive and behavioural components focusing on individual consumer level via a consumer survey. They conceptualised brand loyalty as an intention to buy the brand as a main choice and awareness refer to consumer's ability to recognise and recall the brand from the product category. Perceived quality conceptualised as consumer' judgements about the excellence of a product. Brand association referred to the overall perceptual strength brand associations. They conducted multiple surveys to a sample of American, Korean American and Korean participants (students) over 1500 responses and considered 12 brands from three product categories (athletic shoes, film for cameras and colour TV sets). Initially, 48 candidate items reduced to 10 items through a number of exploratory and confirmatory factor analyses measuring three dimensions of brand equity; brand awareness/associations, perceived quality and brand loyalty. They examined their

model among different participants to establish cross-cultural validity therefore multistep psychometric tests revealed the reliability and validity of the scale and generalisability of it to several cultures and product categories.

However, in their CBBE scale, although brand awareness and brand associations are theoretically distinct constructs, their exploratory factor analysis (EFA) did not produce distinct factor structure among them. Therefore, they merged brand awareness and associations.

In an attempt to test the robustness of Yoo & Donthu's (2001) CBBE scale, Washburn & Plank (2002) conducted a study with Yoo & Donthu's (2001) brand equity scale in the context of co-branded products. They tested the scale with six samples and found an acceptable level of fit, composite reliability and variance extracted across the samples; however, the model was subjected to significant residual problems. Therefore, they concluded that there is room for further improvement in their scale. Particularly, they emphasise on the inability of the model to discriminate brand awareness and brand association constructs, although there is enough theoretical support focusing on their distinctiveness. They criticised the items selected to measure these constructs as they may cause the discrimination problem.

Another CBBE scale development was conducted by Vázquez, del Río, & Iglesias (2002). The authors defined brand equity as "the overall utility that the consumer associates to the use and consumption of the brand; including associations expressing both functional and symbolic utilities." Through a review of literature, they separated the product utilities from the utilities related to the brand name and they concluded that consumer brand associations can be conceptualised under four categories; product functional utility, product symbolic utility, brand name functional utility and brand name symbolic utility. To identify measurement items for the four constructs, they conducted a focus group with sports shoes users, in-depth interviews with distributors in the sector and reviewed previous studies. Then the scale was refined through expert judgements, pre-test survey to reach final 22 items.

Further test on user surveys (six athletic shoe brands) involving, Confirmatory Factor Analysis, reliability, validity assessments were made to establish psychometric properties of the 22-items scale. Therefore, the scale demonstrated good reliability and validity. However, the scale calibrated only in the sports shoe sector; therefore, it requires further adaptation and assessment in a different context. Pre-purchase utilities were not considered in the scale. It focused on only after purchase utilities of a brand.

With the criticism of lack of distinction between dimensions (i.e. brand awareness and associations) and the usage of non-discriminant items in the measurement scales and the usage of student samples on the previous CBBE scale development attempts, Pappu et al. (2005) conducted a further study to improve the measurement of CBBE. Pappu et al. (2005) criticised both Washburn & Plank (2002) and Yoo & Donthu (2001) for using student sample for the scale assessment and the usage of less discriminant items for the constructs of CBBE. Therefore, by building on previous research (i.e. Washburn & Plank, 2002; Yoo & Donthu, 2001), they identified more discriminant items for the CBBE having four dimensions; brand loyalty, perceived quality, brand associations and brand awareness. The authors conducted the study on the users of car and televisions over six brands for Australian consumers. Their findings revealed that brand equity is a multidimensional construct having four distinct aforementioned dimensions on the contrary to Washburn & Plank (2002) and Yoo & Donthu (2001).

Drawing from various CBBE frameworks, Netemeyer et al., (2004) identified core/primary assets of CBBE including perceived quality, perceived value for the cost, uniqueness and willingness to pay a price premium for a brand. Then, they developed a CBBE scale by following advocated scale development procedures. The study covered over 1000 responses examining 16 different brands for six product categories. Their study involved focus groups, literature review to identify items aiming to measure core facets of CBBE. Following, expert judgements, pre-test studies, exploratory and confirmatory factor analysis, dimensionality assessment and various validity assessments (i.e. nomological, predictive), they concluded the core CBBE scale with three dimensions; perceived quality/perceived value for the cost, uniqueness and willingness to pay a price premium. Although the scale demonstrated consistent

reliability and validity across categories, similar to previous studies, their research focused on products only. They also merged perceived quality and perceived value dimensions due to lack of discriminant validity across studies although they are theoretically distinct concepts.

Most of the initial attempt on the development of CBBE scale focused on the goods. However, later research focused on industry-specific measurement of brand equity. Therefore, a significant number of studies have attempted to develop industry-specific CBBE scales.

In their research, Chernatony et al. (2004) developed a brand performance measure for financial services. They identified a lack of universal brand equity measures and particularly brand performance measures for financial services and diversity of metrics between business sectors. They also put emphasis on the business performance measures emerged from goods rather than service-oriented businesses, therefore, criticised the exclusion of distinctive characteristics of services. From this notion, they first conducted interviews with brand consultants to identify dimensions of CBBE for financial services. They further followed scale development procedures established by Churchill (1979) and earlier CBBE development research efforts (i.e. Yoo & Donthu, 2001). They established three dimensions of CBBE scale for financial services including brand loyalty, reputation and satisfaction.

Similarly, Christodoulides et al. (2006) conducted a scale development study due to the lack of brand equity measurement scale addressing issues of brand equity measurement on-line retail/service brand equity. Therefore, they identified five distinct dimensions of CBBE through expert interviews and focus group research; emotional connection, online experience, responsive service nature, trust, and fulfilment. Through reliability and validity assessment, they established a 12-item measurement scale for on-line brands.

Grace & O'Cass (2005) suggests that the existing branding literature focusing on physical goods branding, whereas very little emphasis has been put forward on branding of services. They also argue that existing research lacks empirical testing, consumer validation and not considering services. The authors suggested service brand verdict

model which is derived from previous branding studies (i.e. Berry, 2000; de Chernatony & Dall'Olmo Riley, 1998b; Keller, 1993) and consumer behaviour research and then confirmed through interviews with service consumers. The model includes five main constructs; brand verdict, brand attitude, satisfaction, brand evidence (brand name, price/value for money, service escape, core service, employee service, feelings, self-image congruence) and brand hearsay (advertising, promotion, WOM, publicity). They conducted a survey study on users of banks and retails to test their model and the hypothesised relationship among the dimensions. The study focused on retail store brands and banking brands. Therefore, it may not be applied to other services or may need modifications to the dimensions based on the context applied. Their scale was considerably long including over 70 items.

Similarly, Konecnik & Gartner (2007) conducted a scale development study to uncover if CBBE measurement techniques can be applied to destination brand management. They suggested CBBE for destinations with four dimensions in line with Aaker's (1991) conceptualisation; awareness, image, quality, and loyalty. Different than previous studies, they examined brand equity dimensions within the cognitive-affective-conative paradigm to examine the relationship between the dimensions. They developed several scale items relevant to destinations through some qualitative studies (e.g. interviews with managers and tourists) after which they conducted a survey to test the reliability and validity of the scale.

Nam et al. (2011) put forward a CBBE model for the hotel and restaurant industry to examine CBBE within a satisfaction framework. Their model is developed based on Aaker's (1991) conceptualisation and Ekinci et al.'s (2008) customer satisfaction model. Therefore, they suggested five dimensions of CBBE for hotels and restaurants namely; physical quality, staff behaviour, ideal self- congruence, brand identification and lifestyle-congruence. They linked CBBE with loyalty through the mediating role of customer satisfaction.

Another research in the hospitality setting, Hsu et al. (2012) conducted a CBBE scale development study. They conducted a focus group with travellers, both to confirm the

traditional dimensions of CBBE, and to find any potential dimensions. Therefore, in addition to measures of brand equity (brand awareness, perceived quality, brand image and brand loyalty), they suggested two new measures relevant to hospitality industry namely, management trust and brand reliability as well as brand choice intention as an outcome variable of brand equity. Through a consumer survey, they established the reliability and validity of their scale.

Baalbaki & Guzman (2016) criticised the previous CBBE scale development studies as they build on Aaker's (1991) and Keller's (1993) conceptualisations and using student or convenience sampling. Based on this criticism, they developed a consumer perceived CBBE scale solely from customer perspective. Therefore, they identified the dimensions of the scale through qualitative research on the smartphone users which is followed by a survey on the users of smartphones to test the reliability and validity of the scale. They identified four dimensions of CBBE namely, quality, preference, sustainability and social influence.

2.5 Consulting-Based Brand Equity Measurement

In addition to academic research, customer-based brand equity has been constructed and measured by various marketing and advertising consulting companies. Some of the prominent consulting bodies are; Young & Rubicam's (Brand Asset Valuator (BAV)), Millward Brown's (Brand Dynamics), and Interbrand. The consulting bodies use a large volume of consumer surveys to collect data about brand perceptions of consumers together with a range of dimensions (Datta et al., 2017). These models show similarities with some of the principles and philosophy of the customer-based brand equity approach (Keller, 2013).

Young & Rubicam's Brand Asset Valuator (BAV), one of the prominent ones, examines brand equity into four pillars: Differentiation, Relevance, Esteem and Knowledge. Each pillar is originating from various measures related to diverse aspects of consumer's brand perceptions. Differentiation: The measure of how different a brand is seen from others and it captures the direction and momentum of a brand. Relevance: The measure

of the appropriateness and meaningfulness of a brand to the consumer. Esteem: The measure of how a brand is respected and how well a brand delivers its promises. Knowledge: People's level of understanding of a brand. The pillars of the BAV also plotted into two categories on the power grid to capture the relationship of the pillars as Stature (Esteem and Knowledge) and Strength (Differentiation and Relevance). In the power grid, five-zone specified: "New or Unfocused", "Niche or Unrealised", "Momentum Leadership", "Mass Market" and "Eroded". Companies are ranked in the power grid based on data obtained from the performance indicator ("Brand Asset Valuator," 2018; Keller, 2013).

Another marketing research agency Millward Brown's BrandDynamics model investigates brand equity under six dimensions: Meaningful, Different, Salient, Power, Premium and Potential. "Meaningful" is measures to what extent brands meet functional needs and to what extent they build an emotional connection. "Different" is the measure of how brands position themselves apart from their category through their offering either tangible or intangible. "Salient" is the measure of how quickly and easily the brands come to mind. These three measures also link with three outcome measures. "Power" is the measure of the consumer's tendency to choose the brand over others. "Premium" is the measure of the consumer's tendency to pay more compared to other brands. All measures are survey-based apart from "Potential" in which indicates the likelihood of future value share growth (Alagon & Samuel, 2011).

Contrary to other consultants, Interbrand examines brands into three perspectives and calculates the overall brand value:

- Financial Analysis which is a measure of the overall financial return to a company's investor or the company's economic profit.
- Role of Brand (Role of the Brand Index) measures the portion of the purchase decision attributable to the brand against factors such as price, convenience etc.

Brand Strength (Customer-related measure) in which related to the brand's ability to create loyalty. This measure is examined under ten strength factors including internal and external dimensions.

Internal Dimensions: Clarity: Internally what the brand stands for in terms of its values, positioning and proposition. Commitment: internal commitment to the brand and the belief in the importance of the brand. Governance: the measure of if an organisation has the required skills. Responsiveness: Organisational ability to evolve the brand and business in response to changes.

External Dimensions: Authenticity: a measure of the extent to which a brand is based on internal truth and capability. Relevance: how a brand meets with customer needs, desires throughout different demographics. Differentiation: to the extent to which consumer perceive the brand to have a differentiated proposition. Consistency: brand's ability to deliver its promises across all touchpoints. Presence: how a brand feels omnipresent and talked about it positively through conventional and social media. Engagement: how consumers/customers' demonstrates a deep understanding of, active participation in, and a strong sense of identification with the brand ("Interbrand," 2019).

2.6 Airline Branding Research

A limited number of studies have attempted to measure airline brand equity. Brand equity is mostly examined secondarily in airline consumer behaviour research. The first attempt to measure airline CBBE is conducted by Chen & Tseng (2010). The study used Aaker`s (1991) conceptualisation consisting of brand awareness, brand loyalty, perceived quality and brand image/associations. The authors examined the causal relationship among the dimensions in the Cognitive-Affective-Conative approach in line with Konecnik & Gartner (2007) work. In addition to four dimensions of the conceptualisation, the authors used the overall brand equity dimension which was proposed by Yoo & Donthu, (2001). They identified items intended to measure brand equity through a review of literature by considering specific characteristics of the airline industry. The perceived quality, image and loyalty constructs were mostly derived from Park (2007); Park, Robertson, & Wu (2004) in which the authors developed airline-specific service quality measurement based on SERVQUAL model. Perceived quality incorporates six dimensions: in-flight service, reservation-related service, airport

service, reliability, employee service and flight availability. Although this research is a significant attempt to measure airline brand equity, it follows a deductive approach that the dimensions of scale derived from Aaker's initial conceptualisation and did not considers any other potential measures may be relevant to airlines both suggested by Aaker (Brand Equity Ten) and Keller (Brand Pyramid) or other measures suggested in the literature.

Uslu, Durmuş, & Kolivar (2013) conducted another empirical research to identify whether there is a difference in the brand equity assessments of Turkish and Japanese customers by taking Turkish Airlines as a case study. In this research, CBBE includes three dimensions in line with Yoo & Donthu, (2001): brand loyalty, brand awareness/ associations and perceived quality. It is found that brand awareness/ associations are the most important dimension in the generation of CBBE and they are more important for Turkish customers than Japanese ones. However, the three-factor brand equity scale introduced by Yoo & Donthu, (2001) was criticised since it combines brand awareness and associations into one dimension although they are theoretically two different constructs of brand equity (Christodoulides & Chernatony, 2009).

From an information economics perspective, two studies examined brand credibility. Jeng (2016) investigated the relationship between brand credibility and its influence on decision convenience, affective commitment and purchase intention. Wang, Kao, & Ngamsiriudom (2017) examined how celebrity endorsement affects brand credibility, brand attitude and purchase intention.

Sarker, Mohd-any, & Kamarulzaman (2019) suggested a conceptual CBBE scale for airlines. They argue that the extant brand equity models are not quite adaptable to the airline industry. They conducted a systematic review of the literature and suggested a conceptual model called "Consumer-based Service Brand Equity". In this model, both the company perspective and consumer perspective included. The authors argue that direct service experience and brand consistency creates brand equity that they directly affect brand equity components (brand awareness, brand meaning and perceived value). Therefore, brand equity components directly influence service brand equity

which is an overall behavioural outcome. Their conceptual model mostly derived from Berry's (2000) service branding model. Therefore, this is a conceptual study which is not validated.

2.6.1 Antecedents and Consequences

Although the main concern in brand equity research is conceptualisation and measurement of brand equity, most of the studies focused on antecedents and consequences of brand equity in airline consumer behaviour research.

In considering brand equity for airlines, Chen & Chang (2008) examined the relationship between brand equity, brand preference and purchase intentions for international airline passenger in Taiwan. The authors used four dimensions of CBBE; brand awareness, brand loyalty, perceived quality and brand associations to measure airline brand equity. Therefore, they examined the relationship between brand equity and brand preference and purchase intent. They found that brand equity has a positive impact on both brand preference and purchase intent. The authors neither reported what items they used, nor the definition of dimensions and very limited information is being provided for the validity and reliability of the scale.

Lin (2015) examined the relationship between innovative brand experience, brand equity and brand satisfaction in the air transport industry. The author used Nam, Ekinci, & Whyatt's (2011) brand equity scale that they conceptualised brand equity for hotel and restaurant brands under five dimensions including physical service quality, staff behaviour service quality, ideal self-congruence, brand identification and life-style congruence. However, life-style congruence dimension was not included in airline brand equity. The study found that innovative brand experience has a positive effect both on brand equity and brand satisfaction. In another study, by using the same measurement scale, Lin & Ryan (2016) examined the relationship between the mission statement and brand equity and brand trust. They found a positive relationship between the dimensions.

Grundy & Moxon (2013) examined the impact of British Airways` crisis management on the brand equity of the company when the company encountered a crisis. The authors

monitored the change in the brand equity of the company in crisis time through YouGov "BrandIndex" data which measures perceptions of consumers daily for global brands by embracing perceived quality, value, satisfaction, corporate reputation, recommendation and general impression of the brand.

Seo & Park (2018) investigated the effects of social media activities on brand equity and customer response to those activities. The study uses a survey of airline passengers who used social media managed by airlines. They measured airline brand equity into two dimensions: brand awareness and brand image, with six items. They found that airline social media activities significantly affect brand awareness and brand image. Similarly, Santos de Oliveira & Caetano (2019) examined the relationship between Brazilian Airlines' marketing strategies that the authors suggested the strategies into four categories: innovation in the services, price promotions, non-price promotions, sponsorship of events and their relationship with the dimensions of customer-based brand equity. They used Yoo & Donthu's (2001) three-factor scale (brand awareness with associations, perceived quality and brand loyalty). They conducted a passenger survey and examined the variables with structured equation modelling. Authors found that marketing strategies are significant to improve brand equity.

2.6.2 Other Approaches to Examine Airline Brand Equity

Although it is not directly addressing airline branding, one of the most influential study was conducted by Brodie, Whittome, & Brush (2009). The authors examined service branding in the customer value creation perspective and assessed how brand perceptions affect customer value-loyalty framework (see Figure 3). The brand perceptions consist of brand image, company image, employee trust and company trust.

Figure 3 Types of marketing and their influence on the perceptions of the service brand

Source: Brodie (2009); Brodie et al. (2009)

In their framework, they examined service brands from three perspectives; customer, employee and organisational perceptions. These perceptions are created through external, internal and interactive marketing. In their empirical research, they focused on two aspects: external marketing which is about making promises that create the brand image and company image, and interactive marketing which is about delivering promises related to employees and company trust. Their empirical research on airline passengers demonstrated that all aspects of brand perceptions (brand, company image, employee, company trust) have a direct effect on customer value and have an indirect effect on customer value through service quality as shown in Figure 3.

So, King, Sparks, & Wang (2016) evaluated service brands from a customer engagement perspective for hotels and airlines. The authors defined customer engagement as a "customer's personal connection to a brand as manifested in cognitive, affective, and behavioural responses outside of the purchase". They suggested five dimensions of the construct, including enthusiasm, attention, absorption, interaction, and identification. The authors specify service brand engagement into three dimensions: service quality, perceived value and customer satisfaction. Then, they investigate how service brand evaluations and customer engagement affect brand trust in turn, brand loyalty.

From a different perspective, Kurtuluş & Dirsehan (2018) investigated airline brand associations through qualitative and quantitative methods. The main purpose of the

research was to find out airline brand images in consumer's minds as a network structure. The authors first identify airline brand associations for four airlines through interviewing passenger at an airport. Then, through a passenger survey, those associations were investigated. Therefore, the authors mapped brand associations for each airline to capture their strength and favourability. This approach to understanding brand associations may be a good tool for airlines to determine the core aspects of their brand image.

2.7 Airline Consumer Behaviour Research

Customer-based brand equity and related studies in the airline context were discussed. However, the number of studies on airline branding is sparse. Literature is mostly focused on airline consumer behaviour and loyalty formation. Therefore, in addition to brand equity research, the key (relevant) studies (see Table 4) were visited as a supplement to enhance the understanding of passenger behaviour. Most of the studies have focused on service quality, satisfaction and customer value and their impact on loyalty formation.

In the airline passenger behaviour literature, some of the individual components of customer-based brand equity have been examined by researchers (e.g. service quality, brand loyalty). Fundamentally, the three theoretical approaches dominate the literature. Perceived service quality which is mostly based on SERVQUAL, perceived value, customer satisfaction and their impact on loyalty formation.

2.7.1 Service Quality

2.7.1.1 Service Quality Conceptualisation

Perceived quality is advocated as a principal measure of brand equity by Aaker (1996) in his brand equity model. Keller (1993) consider perceived quality as a brand judgement in his brand pyramid. Zeithaml (1988) defines perceived quality as the consumer's judgment about the superiority or excellence of a product or service. Perceived quality can be measured more objectively for goods by assessing the durability and the number of defects etc. However, unique aspects of services such as intangibility, heterogeneity and inseparability of production and consumption make perceived quality more abstract

concept compared to goods (Zeithaml, 1988; Zeithaml, Parasuraman, & Berry, 1985). For this reason, service quality frameworks were suggested to measure perceived service quality that they have been developed either based on the American School of thought's SERVQUAL model developed by Parasuraman et al.'s, (1988) that examine customer perceptions under five dimensions: reliability, responsiveness, empathy, assurance and tangibles or the Nordic School of Thought, Grönroos's (1984) two-factor framework; technical (is related to what customer get in the service encounter) and functional quality (how service is delivered) (Brady and Cronin, 2001; Nam et al., 2011).

A range of service dimensions which could be technical and/or functional creates service perceptions of customers (Grönroos, 1984). The multidimensionality of the concept of service quality is broadly agreed. However, both its content and its dimensions are controversial (Nam et al., 2011) and in fact it has been the most controversial topic in the service marketing literature. Various unsuccessful replication and/or integration attempt for the SERVQUAL/SERVPERF into a different industry has been done and no conclusion has been reached (Brady & Cronin, 2001).

Three important considerations of service quality are revealed from conventional service quality literature. First, service quality (SQ) emerges from the comparison of actual service performance with expected service. However, from a measurement perspective, there are some considerations of measuring expected service and perceived service and considering SQ as a set of gap scores. The second issue is the dimensionality of SERVQUAL. The dimensions of SERVQUAL (reliability, responsiveness, assurance, empathy and tangibles) widely capture the domain of SQ. However, there is a long debate on whether SQ has five distinct dimensions. The final consideration is the strong relationship among customer assessment of SQ and perceived value and behavioural intention (Parasuraman, Zeithaml, & Malhotra, 2005) which is emerged from the means-end chain approach. The theory argues that consumers have the product information in memory at several levels of abstraction (Zeithaml, 1988).

2.7.1.2 Service Quality Measurement in Airline Customer Behaviour Literature

Perceived service quality concept has been a controversial topic in the airline customer behaviour research as well. Many empirical research in the airline customer behaviour literature examined service performance/quality to understand consumer decision making (i.e. Zins, 2001; Park et al., 2004; Mikulić and Prebežac, 2011) as well as it is examined in the brand equity research (e.g. Chen and Chang, 2008; Chen and Tseng, 2010).

In the airline consumer behaviour literature, some researcher considers SQ as a set of gap scores or measured both service expectation and perceptions (e.g. Chiou & Chen, 2010; Curry & Gao, 2012; Hussain, Nasser, & Hussain, 2015; Park et al., 2004). The appropriateness of SERVQUAL in terms of expectation and perceptions gaps is criticised by Cronin & Taylor (1994, 1992), as the authors suggested performance-based measurement of service quality without considering expectation namely SERVPERF. This approach is embraced in the airline consumer behaviour literature (i.e. Leong, Hew, Lee, & Ooi, 2015; Singh, 2015).

A large number of studies discussed the dimensionality of SQ construct as they suggested airline-specific dimensions in addition to five existing dimensions of the SQ (e.g. An & Noh, 2009; Hussain, 2016; Hussain et al., 2015). There is also a significant number of studies suggested new dimensions of SQ specific to airlines (e.g. Ahn, Kim, & Hyun, 2015; Chang & Yang, 2008; Han, Hyun, & Kim, 2014; S. Kim, Kim, & Hyun, 2016; Mikulić & Prebežac, 2011). Airline-specific service quality measures were suggested, namely AIRQUAL (Ekiz et al., 2006; Nadiri et al., 2008; Alotaibi, 2015). Others examined passenger experience through different touch points such as; in-flight, ground services, reservation, airport, employee service, flight attendants (Park, 2007; Mikulić and Prebežac, 2011; Han et al., 2014; Ahn et al., 2015; Kim et al., 2016) or some authors examined SQ with key service attributes (Zins, 2001; Brodie et al., 2009; Vlachos and Lin, 2014) or overall examination of SQ (So et al., 2016).

2.7.1.3 Service Quality Attributes

In addition to diversity of the conceptualisation of service quality, various service attributes used to assess service quality frameworks—SERVQUAL, AIRQUAL, and SERVPERF— and to investigate the relationship among airline service quality, and satisfaction, and loyalty (Chiou & Chen, 2010; Chen, 2008; Park et al., 2004; Ekiz et al., 2006; Basfirinci and Mitra, 2015; Hussain et al., 2015; Rajaguru, 2016) and to assess antecedents and drivers of airline passenger satisfaction and loyalty (Forgas, Moliner, Sánchez, & Palau, 2010; Mikulić & Prebežac, 2011; Akamavi, Mohamed, Pellmann, & Xu, 2014; Vlachos & Lin, 2014) and/or airline service attributes (Vlachos & Lin, 2014; Medina-Muñoz, Medina-Muñoz, & Suárez-Cabrera, 2018) have also been investigated by a number of researchers (Table 3). Besides, institutions like American Customer Satisfaction Index and The International Air Transport Association (IATA) incorporates a great number of service attributes to assess service performance and satisfaction of airline passengers for example; IATA provides a passenger satisfaction benchmarking study called Airs@t. The scale incorporates 70 travel attributes including pre-flight, in-flight and post-flight attributes of overall travel experience (IATA, 2018). However, there is no agreement reached in the literature neither on which service attributes establishes service quality and satisfaction (Medina-Muñoz, Medina-Muñoz, & Suárez-Cabrera, 2018) nor on the conceptualisation of service quality. Table 3 demonstrates frequently used service attributes both in the literature and attributes used by institutions to assess airlines service performance and customer satisfaction (i.e. IATA Airs@t and ACSI).

Table 3 Service attributes used in the literature

Services Attributes	ACSI	IATA(Airs@t)	Literature
Cabin/Aircraft		Number of attributes	
Seat comfort	✓	✓ (6)	Medina-Muñoz et al. (2018); Forgas et al. (2010); Han et al. (2014); Chen and Chao (2015); Kim and Park (2017)
Cabin (interior)		✓ (7)	Vlachos and Lin (2014); Han et al. (2014); Chen and Chao (2015)
In-flight baggage space			Medina-Muñoz et al. (2018); Kim and Park (2017)
Odour, temperature, air quality, noise			Han et al. (2014)
Airline tangibles			Suki, 2014; Kim et al. (2016); Kos Koklic et al. (2017); Leong et al. (2015); Calisir et al. (2016); Rajaguru, (2016)
Aircraft type			Chen and Chao (2015)

Table 3 Service attributes used in the literature

Service attributes	ACSI	IATA	Air@sat	Literature
Environment and facilities				Ahn et al. (2015)
In-flight entertainment		✓	✓ (11)	Ahn et al. (2015); Medina-Muñoz et al. (2018); Kim et al. (2016); Han et al. (2014); Chen and Chao (2015)
Ground				
On-time arrival		✓	✓	Forgas et al. (2010); Suki (2014); Vlachos and Lin (2014); Chen and Chao (2015)
Baggage handling		✓	✓	Ahn et al. (2015); Medina-Muñoz et al. (2018); Chen and Chao (2015)
Boarding (ground services)		✓	✓ (4)	Medina-Muñoz et al. (2018); Chen and Chao (2015); Kim and Park (2017)
Check-in		✓	✓ (6)	Ahn et al. (2015)
Airport				Forgas et al. (2010); Suki (2014)
Lounge			✓ (7)	Ahn et al. (2015)
In-Flight				
Food and beverages			✓ (7)	Ahn et al. (2015); Medina-Muñoz et al. (2018); Vlachos and Lin (2014); Kim et al. (2016); Chen and Chao (2015)
Duty-free items				Chen and Chao (2015)
Reservation				
Flight schedule		✓		Ahn et al. (2015); Medina-Muñoz et al. (2018); Vlachos and Lin (2014); Chen & Chao (2015); Kim and Park (2017)
Frequency				Vlachos and Lin (2014)
Direct-connecting flight				Chen and Chao (2015); Kim & Park (2017)
Call centre		✓		
Website		✓	✓ (4)	Chen & Chao (2015)
Staff				
Flight attendant's attractiveness				Ahn et al. (2015); Kim et al. (2016)
Service performance				Ahn et al. (2015); Kim et al. (2016)
The flight crew (courtesy, helpfulness and friendliness)		✓	✓ (7)	Vlachos and Lin (2014); Chen and Chao (2015); Kim and Park (2017)
Professionalism of staff				Forgas et al. (2010)
Assurance (courtesy/ knowledge)				Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016)
Other				
Loyalty programs (FFP)		✓	✓ (4)	Ahn et al. (2015); Vlachos and Lin (2014); Chen and Chao (2015)
Safety / reliability				Medina-Muñoz et al. (2018); Forgas et al. (2010); Vlachos and Lin (2014); Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016); Chen and Chao (2015)
Price				Medina-Muñoz et al. (2018); Forgas et al. (2010); Vlachos and Lin (2014); Calisir et al. (2016); Chen and Chao (2015)
Reputation				Vlachos and Lin (2014); Calisir et al. (2016); Chen and Chao (2015)
Empathy				Leong et al. (2015); Calisir et al. (2016); Rajaguru, (2016)
Responsiveness				Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016); Chen and Chao (2015)
Communication				Chen and Chao (2015)
Additional charges				Kim and Park (2017)

Source: Own elaboration. *Note: ACSI: American Customer Satisfaction Index.*

2.7.1.4 Differences in the Service Attributes based on Business Model and Service Class

Airline service offerings may vary among business models, although distinguishing airlines from one another in terms of their business models, and describing them by using a uniform formulation is difficult, especially considering the dynamic nature of the industry (Mason & Morrison, 2009).

However, from the customer's point of view, expectations before purchase, and perceptions after consumption of airline service may differ based on the airline's business model due to the nature of service and products offered by low-cost carriers (LCCs) and full-service carriers (FSCs). Passengers may form different expectations for low-cost carriers, as opposed to full-service carriers, which then translates into dis/satisfaction based on their overall assessment of service performance and expectations from the airline.

Forgas, Moliner, Sánchez, & Palau, (2010) conducted a survey on passengers of three airlines, operating the Barcelona-London city-pair, to find out the antecedents of passenger loyalty based on the low-cost carrier (LCC) versus full-service network carrier (FSC) business models. They found that satisfaction and trust are the main antecedents of passenger loyalty for both types, whereas there are significant differences in the antecedents of satisfaction based on business types. While service quality and monetary cost are the main attributes that create satisfaction for LCC passenger, the professionalism of the staff is the key satisfaction attribute for FSCs. Similarly, the effect of value for money and service quality on customer satisfaction and behavioural intention on both airline types is examined by Rajaguru, (2016) through a survey on 15 FSCs and 6 LCCs customers. It is found that value for money is the main determinant to achieve satisfaction and behavioural intention for LCCs, whilst the balance between value for money and service quality attributes is important for FSC passengers.

Similarly, Kos Koklic, Kukar-Kinney, & Vegelj, (2017) found a strong positive relationship between customer satisfaction and quality of staff and airline tangibles (seat comfort, leg room and extra offers) for FSCs than LCCs. Lee et al.'s (2018) results also support

previous research that they found significant differences in service expectations, satisfaction and loyalty formation of LCCs and FSC passenger. On the other hand, Loureiro & Fialho, (2017) in their study, based on 304 airline passengers' flight experience in Europe, in which they examined how in-flight ambience (temperature, odour etc.), space/function (seat configuration/comfort, in-flight amenities etc.) and crew attributes lead to satisfaction, trust, affective commitment, and finally behavioural intention. They did not find significant differences in the antecedents of satisfaction for FSCs and LCCs.

Similarly, different products of an airline (economy/premium) may also form different passenger expectations and perceptions, which lead to dis/satisfaction based on service delivered. Consumer utility expectations may increase proportionality to the amount they pay. Since value is a trade-off between what you give and what you get, value perceptions form customer expectations and perceptions, and so their satisfaction towards the different service classes (Zeithaml, 1988). Economy and premium passengers may value different service attributes differently and therefore their satisfaction level would differ since passengers' level of service expectation regarding service class would determine their level of satisfaction (Laming & Mason, 2014).

Previous research shows that passenger perceptions differ based on the service class. Park (2007) conducted a survey to analyse the purchase behaviour of airline passengers in different segments with 11 factors for both Korean and Australian passengers. He found that business/first-class passengers rate value of service, in-flight service and overall service quality higher than economy passengers. Similarly, An & Noh (2009) in their study found that six attributes are important for premium passengers respectively; alcoholic beverage and non-alcoholic beverage, responsiveness and empathy, reliability, assurance, presentation style of food, and food quality, whereas five attributes are observed as important for economy passenger in descending order; responsiveness and empathy, food quality, alcoholic beverage, non-alcoholic beverage, and reliability. Vlachos & Lin (2014) in their research, specified ten key attributes based on a review of literature and interviews. Their survey of 462 business passengers found a relationship between attributes and loyalty of business passengers. Reputation, in-flight service,

frequent flyer program, and aircraft were found to be the main attributes driving business passengers loyalty. Similarly, Dolnicar, Grabler, Grün, & Kulnig (2011) found that loyalty programs are key to business passengers' loyalty.

Most of the previous research on airline passenger behaviour confirms the difference of the drivers of passenger satisfaction and loyalty for different airline business models and cabin class, and they emphasise on the difference of passenger expectations. However, there is no consensus reached in the literature which service attributes or set of attributes are establishing passenger satisfaction and SQ for different business models and cabin class. Therefore research used or identified the service attributes (generally with a small number of passengers through focus group studies) for a particular region or markets or they are validated for a particular market (e.g. Lee et al., 2018; Forgas et al., 2010). Therefore, there is no consistency among the attributes used in the literature.

2.7.2 Perceived Value

Perceived value is another concept examined in the consumer behaviour research. Zeithaml (1988) identified four aspects of value from consumer expressions: value is low price, value is whatever I want in a product, value is the quality I get for the price I pay, and value is what I get for what I give. Therefore, she suggested an overall definition of capturing all aspects of perceived value as "consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given". This approach to perceived value is widely accepted in the literature (i.e. Han et al., 2014; Park, 2007; Park et al., 2004; Zins, 2001). Some authors considered value as price only (i.e. Akamavi, Mohamed, Pellmann, & Xu, 2015; Etemad-Sajadi, Way, & Bohrer, 2016). Different to others, Forgas, Moliner, Sánchez, & Palau (2010) examined value in a wider multidimensional concept including service quality dimensions (airport installations, aircraft installations, professionalism of personnel, company's service), monetary aspects (monetary costs, non-monetary costs – time and waiting, non-monetary costs – distance) and emotional and social value.

2.7.3 Satisfaction

Satisfaction is another concept widely examined in the passenger loyalty framework. Oliver (1980) approach customer satisfaction as a function of expectation and

expectancy disconfirmation. In other words, the customer's comparison of their expectation with the attribute performance leads to disconfirmation (satisfaction and dissatisfaction). Oliver (1997 p. 8) defines overall satisfaction as *"a judgement that a product or service feature or the product or service itself, is providing a pleasurable level of consumption-related fulfilment, including levels of under or over fulfilment.* Oliver (1993) argues two different levels as satisfaction: attribute bases of satisfaction and overall satisfaction. Overall satisfaction has been investigated in airline passenger loyalty research.

Additionally, there is various structural construct incorporated to examine passenger loyalty such as airline image borrowed from brand equity theory or other concepts from relationship marketing theory: trust and commitment. And some authors included customer complaints and recovery as an antecedent of passenger loyalty (see Table 4).

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Zins (2001)	Airline Image	Outcome from accumulated attitude derived from experience and/or direct or indirect market communication	Passenger Survey Business Class	SEM	The corporate image of the service provider is, along with service quality and customer satisfaction, a powerful and illustrative component for explaining future customer loyalty.
	Service Quality	Treated strictly as a relativistic, cognitive, product-related, post-purchase evaluation of getting components (Comfort, service and catering).			
	Value	The customer's trade-off between quality perception and the monetary and non-monetary sacrifices			
	Satisfaction	Overall, post-consumption affective response			
	Loyalty	Willingness to recommend the service provider or the service to other people			
Park et al. (2004)	SERVQUAL (Service expectation and perceptions)	Consumer's overall impression of the relative efficiency of the organisation and its services.	Passenger Survey	SEM	Service value, passenger satisfaction, and airline image are each found to have a direct effect on air passengers' decision-making processes.
	Service Value	Overall assessment of the utility of a product based on perceptions of what is received and what is given.			
	Airline Image	Perceptions of an organisation reflected in the associations held in consumer memory.			
	Passenger Satisfaction	Judgement made based on a specific service encounter			
	Behavioural Intentions	Willingness to use and recommend			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Park (2007)	Service Quality	In-Flight Service, Reservation-Related Service, Airport Service, Reliability, Employee Service, Flight Availability	Passenger Survey	ANOVA & T-test/CFA	Significant differences of passenger perceptions by airlines, seat classes, and usage frequencies for both Korean and Australian international passengers.
	Perceived Price	N/I			
	Airline Image	Corporate image			
	Overall Service Quality	N/I			
	Perceived Value	The value represents perceptions of the monetary and non-monetary attributes associated with the acquisition and use of a service or product			
	Passenger Satisfaction	Feeling based on the service experience of a passenger's most recent flight			
Chang & Yang (2008)	Setting	Items related to space and facilities for the delivery of service, including the facility layout, facilities provided, and service environment cleanliness.	Passenger Interview	Rasch Measurement (Critical incident technique)	The performance of four airlines evaluated under three dimensions.
	Service Staff	Items related to those who interact with passengers and contribute to service delivery, including clothing and appearance, attitude and behaviour, their ability to serve the passengers, and their commitment to passengers			
	Performance	Those items which relate to the quality of service, including the price of airline transport, timeliness, on-time reliability, and service processes and system design			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
An & Noh (2009)	Service Quality	Based on SERVQUAL including three additional dimensions (reliability, responsiveness, assurance, empathy, food quality, alcoholic beverage quality, non-alcoholic beverage quality)	Passenger Survey Business and Economy Class	EFA and Regression Analysis	Different factors of in-flight service quality that are important based on passenger class
	Satisfaction	Customers' perception of service quality and performance, which is an emotional response			
	Loyalty	The desire to reuse the service of the company, which includes the willingness to use and recommend.			
Saha & Theingi (2009)	Service Quality	A focus-group discussion with seven experienced customers of LCC services; and the SERVPERF instrument (tangibles, schedule, flight attendants, ground staff)	Passenger Survey LCCs	EFA/CFA/ SEM	Passenger satisfaction and service-quality dimensions is found to be very important in explaining behavioural intentions
	Satisfaction	Value-based definition of customer satisfaction; satisfaction with fare; satisfaction with services; and overall satisfaction with the airline			
	Behavioural Intention	Items for feedback, word-of-mouth, and repurchase			
Chiou & Chen (2010)	Service Expectation and Perceptions	Based on Park, Robertson, & Wu (2004) for LCCs	Passenger Survey FSC/LCC	SEM	Service perception is the most significant influence on intentions for full-service carriers but exhibits less effect for low-cost operators. Conversely, service value has a stronger impact on the intention of LCCs.
	Service Value				
	Passenger Satisfaction				
	Image				
	Behavioural Intention				

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Forgas, Moliner, Sánchez, & Palau (2010)	Satisfaction	Consumer's feeling that the consumption supplies a result against a standard of pleasure versus not-pleasure	Passenger Survey FSC/LCC	SEM	Main antecedent of conative loyalty is affective loyalty. The main antecedents of affective loyalty are satisfaction and trust
	Trust	Trust appears when one party trusts in the reliability and integrity of the other party to the exchange.			
	Loyalty (Affective, Conative)	The highest level of commitment, implying the transition from a favourable predisposition (affective loyalty) to a repeated purchase commitment (conative loyalty)			
	Perceived Value	The judgment or evaluation made by the customer of the comparison between the advantages of, or the utility obtained from, a product, service or relationship and the perceived sacrifices or costs (Airport installations, Aircraft installations, Professionalism of personnel, Company's service, Monetary costs, Non-monetary costs – time and waiting, Non-monetary costs – distance, Emotional value, Social value)			
Mikulić & Prebežac (2011)	Service Quality	The offer of flights and destinations; ticket purchase experience; airport experience; flight experience; and service reliability	Passenger Survey FSC/LCC	PLS-SEM	Service quality has a stronger impact on image for FSCs than LCCs. Price has a stronger effect on image for LCCs than FSCs. Image affect loyalty formation for both airline passengers.
	Image	N/I			
	Price	N/I			
	Loyalty	N/I			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Curry & Gao (2012)	Service Quality	The differences between expectation and performance	Passenger Survey LCC	EFA and Regression Analysis	Service quality and customer satisfaction have a positive influence on repurchase intentions, and customer satisfaction is a much stronger driver in influencing repurchase loyalty than service quality
	Satisfaction	Customer's cumulative post-purchase affective evaluation based on the most recent services consumption experience			
	Loyalty	Customer's likelihood of using low-cost airlines for their next flight			
Yang, Hsieh, Li, & Yang (2012)	Service quality	N/I	Passenger Survey LCC	SEM	Service quality has a significant positive effect on customer value, airline image and behavioural intentions, airline image does not significantly influence behavioural intentions
	Customer value	N/I			
	Airline image	N/I			
	Behavioural intention	N/I			
Chen & Hu (2013)	Service Quality (SERVQUAL)	N/I	Passenger Survey	SEM	Service quality has a positive impact on relational benefit and customer loyalty. Relational benefit influences customer loyalty directly.
	Relational Benefit (confidence benefit, social benefit, special treatment benefit, and respect benefit)	N/I			
	Customer Loyalty	Passengers' price sensitivity, intention to repurchase, and willingness to recommend			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Han et al. (2014)	Perceived in-flight core-service performance	Service/product performances refer to the perceived amount of service-/product-attributes outcomes received by an individual	Passenger Survey LCC	CFA/SEM	The in-flight encounter-service performance was prominent, and value, satisfaction, and trust had a significant mediating impact
	Perceived in-flight encounter-service performance				
	Perceived value	The customer's overall assessment of the utility of a product based on perceptions of what is received and what is given			
	Customer satisfaction	The customer's fulfilment response			
	Trust in the airline	The perception of confidence in an exchange partner's reliability and integrity			
	Loyalty to the airline				
Vlachos & Lin (2014)	Operational Factors (Core factors: Safety, punctuality and aircraft)	Cognitive evaluation of a set of key attributes of airline services, i.e. attribute-level performance perception or satisfaction	Passenger Survey Business Class	Hierarchical regression analysis	Reputation, in-flight service, frequent flyer program, and aircraft have the greatest influence in driving airline loyalty
	Competitive Factors (attributes that influence passengers' choice of airlines: frequency, FFP, schedule, price and reputation)				
	Attractive Factors (attributes that are not normally expected: in-flight food and drinks, in-flight staff service)				

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Akamavi, Mohamed, Pellmann, & Xu (2015)	Service Recovery		Passenger Survey LCC	EFA/CFA/ SEM	Efficacious service employees positively influence service recovery price and enhance passenger trust. Service employee self-efficacy boosts passenger satisfaction. Service employee self-efficacy, service recovery and passenger trust have a impact on passenger satisfaction. Passenger satisfaction is the uppermost driver of passenger loyalty enhancement.
	Passenger Trust	Customer' confidence in a company' reliability and integrity			
	Passenger Satisfaction				
	Service Employees Self Efficacy	"Extra mile" to meet expected outcomes and satisfy passengers			
	Price				
	Passenger Loyalty				
Singh (2015)	Service Quality (SERVPERF)	N/I	Passenger Survey FSC	EFA/CFA/ SEM	Convenience and promptness with reliability dimension of SQ have a direct influence on perceived image, perceived value and passenger satisfaction and behavioural intention. Passenger satisfaction has a direct influence on passengers' future Brand Image (BI)
	Perceived Value	N/I			
	Perceived Image	N/I			
	Satisfaction	N/I			
	Behavioural Intention	N/I			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Ahn et al. (2015)	Service Quality (In-Flight Services, Ground Services)	Perceived quality refers to "the consumer's judgment about the superiority or excellence of a product or service."	Passenger Survey First class passenger	CFA/SEM	In-flight service factors and ground-service factors are significant in the formation of passengers' brand prestige perceptions. Brand prestige had a significant effect on well-being perceptions and brand loyalty. Status consumption had a significant moderating effect on the relationship not only between brand prestige and well-being perceptions, but also on the relationship between brand prestige and brand loyalty.
	Brand Prestige	Brand prestige as a key criterion for evaluating first-class airline services as prestigious			
	Well-Being Perceptions	The extent to which the passengers perceive the first-class flight experience to be prestigious and valuable.			
	Brand Loyalty				
	Status Consumption	The motivational process by which individuals strive to improve their social standing through the conspicuous consumption of consumer products that confer and symbolise status both for the individual and surrounding significant others			
Leong et al. (2015)	Service Quality (SERVPERF)	N/I	Passenger Survey FSC/LCC	CFA/SEM artificial-neural-networks predictive analytic approach	Significant influences of SERVPERF dimensions on customer satisfaction towards customer loyalty with 63.1% and 55.6% variance explained.
	Customer Satisfaction	N/I			
	Customer Loyalty	N/I			
Hussain et al. (2015)	Service Quality (SERVQUAL)	Tangibles, reliability, responsiveness, assurance, communication, security and safety	Passenger Survey	CFA/SEM	Service quality, perceived value, and brand image have a significant positive impact on customer satisfaction, which can, in turn, lead to brand loyalty
	Customer Expectations	N/I			
	Corporate Image	N/I			
	Perceived Value	N/I			
	Customer Satisfaction	N/I			
	Customer's Complaint	N/I			
	Brand Loyalty	N/I			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Hussain (2016)	Service Quality (SERVQUAL)	Tangibles, reliability, responsiveness, assurance, communication, security and safety	Passenger Survey	EFA/CFA/ Regression	Customer satisfaction is important to retain existing passengers, acquire new ones and convert them into loyalty
	Corporate Image	N/I			
	Perceived Value	N/I			
	Customer Satisfaction	N/I			
	Brand Loyalty	N/I			
Curras-Perez & Sanchez-Garcia (2016)	Company Reputation	Stakeholder's overall evaluation of a company over time.	Passenger Survey FSC/LCC	CFA/SEM	Corporate reputation affects trust and identification; in turn, they affect commitment. In low-cost companies, customer repurchase intention and word-of-mouth (WOM) Recommendation is driven by satisfaction. FSCs, commitment plays a more important role, having a significant effect on repurchase intention and acting as the principal predictor of WOM recommendation
	Consumer Trust	The expectations held by the consumer that the service provider is dependable and can be relied on to deliver on its promises			
	Consumer Company Identification	A cognitive state of connection and proximity of the consumer to a company			
	Consumer Commitment	The attitude that reflects the desire to continue a relationship that is considered beneficial or valuable.			
	Overall Satisfaction	The overall evaluation of the consumption experience with the company			
	WOM				
	Repurchase Intention				
Rajaguru (2016)	Value for Money	N/I	Passenger Survey LCC/FSC	SEM	Perceived value for money and service quality are significant predictor of consumer satisfaction and behavioural intention
	Service Quality (SERVQUAL)	N/I			
	Satisfaction	N/I			
	Behavioural Intention	N/I			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Kim et al. (2016)	In-Flight Service Experience	Food Service, Entertainment, Physical Environment, Flight Attendants Performance, Flight Attendant's Appearance	Passenger Survey First class passenger	CFA/SEM	In-flight service designs and flight attendant performance/physical appearance had significant effects on perceived firm innovation. Advertising effectiveness moderated the effects of in-flight food services and flight attendant physical appearance on perceived firm innovativeness. Customer-centric innovativeness is a strong driver of brand loyalty.
	Advertising Effectiveness	Can be described in terms of three evaluative dimensions, namely likeability, informativeness, and clarity.			
	Customer-Centric Innovativeness	A concept related to product-oriented innovation and/or firm-focused innovativeness			
	Brand Loyalty	Consumers' tendency to purchase a particular brand repeatedly, stay with a brand in the future.			
Calisir, Basak, & Calisir (2016)	Price		Passenger Survey FSC/LCC	CFA/SEM	Loyalty is explained by image. Image is explained by satisfaction. Service quality and price are found to have positive effects on satisfaction. Compared to the price, service quality is a stronger determinant of satisfaction.
	Service Quality (SERVQUAL)	The evaluation of how performed service fulfils the expectations of the customer.			
	Satisfaction	The summary of the psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the prior feelings of the consumer about the consumption experience			
	Image	Perception of the brand on the customer's mind			
	Loyalty	A deeply held commitment to rebuy or patronises a preferred product/service consistently in the future			
Etemad-Sajadi, Way, & Bohrer (2016)	Perceived In-Flight Service Quality	N/I	Passenger Survey	CFA/SEM	Pre-flight service quality and perceived in-flight service quality are positive direct effects on airline passenger satisfaction. Perceived pre-flight service quality had positive impact on airline passenger loyalty.
	Perceived Pre-Flight Service Quality	N/I			
	Perceived Price Fairness	N/I			
	Passenger Loyalty	N/I			
	Passenger Satisfaction	N/I			

Table 4 Key research on airline passenger behaviour

Author	Dimensions	Definition	Method/ Audience	Analysis Technique	Major Findings
Kos Koklic, Kukar-Kinney, & Vegelj (2017)	Airline Tangibles	The physical condition of the carrier as well as entertainment materials provided on the flight	Passenger Survey FSC/LCC	CFA/SEM	Airline tangibles and personnel quality are important drivers of satisfaction and behavioural intentions for both low-cost and full-service airlines.
	Quality of Personnel	Respondents' perception staff regarding how qualified, aware of their tasks, and willing to help the passengers			
	Customer Satisfaction	The overall level of contentment with the service experience			
	Intention to Repurchase				
	Intention to Recommend				

Source: Own elaboration. *Note: N/I: Not indicated, EFA: Exploratory Factor Analysis, CFA: Confirmatory Factor Analysis, SEM: Structural Equation Modelling, FSC: Full-service carriers, LCC: Low-cost carriers.*

2.8 Discussion

Aaker's (1991) and Keller's (1993) conceptualisation of customer-based brand equity have dominant in the literature. Although the authors did not operationalise a valid scale (Christodoulides & Chernatony, 2009), both authors provided a set of measures which could apply to various context. However, most of the scale development studies focused on overall conceptualisation of Aaker's (1991) framework (awareness, perceived quality, brand image/associations and loyalty) without considering other potential measures suggested in the Aaker's (1996) "Brand Equity Ten" or Keller's (2001) "Brand Equity Pyramid" which both provide various measures. There are also other conceptualisations available in the literature as discussed above. Market research companies offer various dimensions to measure brand equity as Aaker's Brand Equity Ten is drawn on these measurement efforts.

Most of the effort in the development of CBBE scale focused on physical goods. Therefore, another body of literature argues the direct applicability of these measurements to the services and suggest industry-specific measures. Therefore, various attempts have been put forward to develop industry-specific brand equity measures. However, brand equity research in air transport literature is sparse. Although there are few attempts to measure airline brand equity, they are not really considering airline-specific measures as they mostly follow a deductive approach to test the overall concept of Aaker's framework or uses measures developed for different industries. Most of them used different conceptualisations. Therefore, there is a lack of research or gap in the literature which systematically develop and validate an airline customer-based brand equity scale.

In addition to airline branding literature, airline consumer behaviour research has been reviewed which is dominated by the measurement of service quality together with value and satisfaction theories and their impact on loyalty formation. Especially, the measurement of SQ is controversial in the literature as the similarities are generally at label/concept level. There are various overlaps among the theories to understand

loyalty formation as the various theoretical concepts are adopted from brand equity theories, customer engagement etc.

There are various considerations regarding studies that would be worthwhile to address. A significant number of studies lacks definition and conceptualisation of the measures that they used. Defining the domain of the construct is critical to understand what is intended to measure and to understand the borders of the measure (what is included). Usage of various definitions and conceptualisations of the constructs resulted in the lack of test-retest reliability and in turn the deficiency of theory development. Particularly, the conceptualisation of service quality is immense. Most of them focus on a particular culture or airline business model which in turn reveals a lack of agreement on this measurement. This diversity does not allow for the assessment of the construct across different cultures and customer segments.

2.9 Summary

This chapter covered various areas consisting of brand equity concept, its conceptualisation and measurement from different perspectives were investigated in general term. Then, branding research and airline consumer behaviour research were reviewed critically. This research focused on the measurement of customer-based brand equity, thus, a comprehensive review of literature conducted on its conceptualisation and measurement. Two approaches identified on the conceptualisation and measurement of CBBE: information economics and cognitive psychology approach. Within this categorisation, first, conceptual studies on CBBE were investigated then empirical studies conducted on the measurement of CBBE were reviewed. Therefore, scale development studies for physical goods, services and industry-specific conceptualisations (hospitality, destination, banking etc.) were investigated — next, consultancy-based approaches to brand equity measurement incorporated into this study. In the final section, airline branding literature and relevant studies on airline consumer behaviour research reviewed critically. The deficiency of systematic research on airline CBBE was established. In the following chapter, the methodological approach to the airline CBBE scale development will be discussed.

3 RESEARCH METHODOLOGY

In the previous chapter, brand equity research in the marketing literature, as well as airline-specific research on brand equity measurement and airline consumer behaviour research was critically examined and discussed. The research gaps and the necessity of an airline-specific measurement were established, which, in turn, reveals the four research objectives:

- To identify dimensions of customer-based brand equity relevant to the air transport industry.
- To identify the most suitable set of measures for the determined brand equity dimensions.
- To establish the validity, reliability and psychometric properties of the scale.
- To examine the predictive capabilities of the scale.

In this chapter, the research process which aims to address research objectives and the underlying reasons for methodological choices are discussed.

3.1 Philosophical Research Paradigms

Research philosophies include critical assumptions about how the researcher interprets the world. These assumptions determine underlying strategies that the researcher adopts for their research strategy and methods (Saunders, Lewis, & Thornhill, 2009).

A paradigm relates to fundamental principles which can be viewed as a set of beliefs, it also represents a worldview that an individual has about the nature of the world and his/her position in it and the possible linkages to that world and its components (Guba & Lincoln, 1994). Scientific research paradigms include three elements; epistemology, ontology and methodology (Guba & Lincoln, 1994; Healy & Perry, 2000).

Paradigms are specified by the basic beliefs which can be understood through given responses to three fundamental interrelated questions: Ontological questions “what is the form and nature of reality” and “what is there that can be known about it?” (Guba

& Lincoln, 1994). Ontology deals with the nature of reality. Therefore, researchers have a range of assumptions to understand the way the world works (Saunders et al., 2009). The epistemological question, "what is the nature of the relationship between the knower or would-be knower and what can be known?" (Guba & Lincoln, 1994). Therefore, it is related to the relationship between reality and the researcher (Healy & Perry, 2000). Lastly, the methodological question is "How can the inquirer go about finding out whatever he or she believes can be known?" (Guba & Lincoln, 1994) in other words, methodology concern with the techniques used by the researcher to find out the reality (Healy & Perry, 2000).

Scientific research paradigms are representing general conceptual frameworks where some researchers work. Four research paradigms are outlined; positivism, post-positivism, critical theory, and constructivism (Guba & Lincoln, 1994; Healy & Perry, 2000). Table 5 compares four research paradigms against ontological, epistemological and methodological questions and highlights the positions of each paradigm.

Table 5 Basic beliefs of alternative inquiry paradigms

Item	Positivism	Post-positivism	Critical Theory	Constructivism
Ontology	Naïve realism - "real" reality but apprehendable	Critical realism – "real" reality but only imperfectly and probabilistically apprehendable	Historical realism – virtually reality shaped by social, political, cultural, economic, and gender values; crystallised over time	Relativism – local and specific constructed realities
Epistemology	Dualist/ objectivist; findings true	Modified dualist/ objectivist; critical tradition/ community; findings probably true	Transactional/ subjectivist; value – mediated findings	Transactional/ subjectivist; created findings
Methodology	Experimental/ manipulative; verification of hypotheses; chiefly quantitative methods	Modified experimental/ manipulative; critical multiplism; falsification of hypotheses; may include quantitative methods	Dialogic/dialectical	Hermeneutical/ dialectical

Source: Guba & Lincoln (1994)

3.1.1 Positivism

Positivist paradigm adopts realism as an ontological position in which the reality assumed to exist and established laws and mechanism drive it (Guba & Lincoln, 1994). Only observable phenomena may reveal credible information(Saunders et al., 2009). The epistemological position being held is dualist and objectivist in which consider the independence of the researcher and the inquired object. Researchers holding this position are likely to develop hypothesis by building on available theories which in turn will be tested and will be partially/fully confirmed or disproved (Guba & Lincoln, 1994; Saunders et al., 2009).

3.1.2 Post-Positivism

Proponents of this assumption hold critical realism as an ontological position. To get closer to reality but not perfectly, reality must be critically and comprehensively examined. Epistemological views are modified by dualism/objectivism. Objectivity is considered "regulatory ideal", whereas dualism is given up because of impossibility to continue. In critical realism, there is an emphasis on the external "guardians" objectivity. For example, to the extent to which the findings meet with substantial knowledge and how the findings meet with the views of a critical community like editors, referees and professional peers (Guba & Lincoln, 1994).

Modified experimental/manipulative methodological approach is embraced. Triangulation is strongly urged to falsify hypotheses rather than confirming. The methodological approach in the critical realism seeks for adjustment in the some of the problems in the positivism by bringing research to a more natural standard which is being done by including more situational information and by incorporating discovery as a part of the research. These can be significantly achieved by including qualitative methods (Guba & Lincoln, 1994,).

3.1.3 Critical Theory

Ontological orientation is historical realism in which reality is formed into a range of structures within time through the impact of external factors such as, social, political, cultural etc. The epistemological position is transactional and subjectivist. Researcher

and the research object are assumed to be mutually associated and it is highly likely that the values of the researcher affect the research. Dialogic/dialectical methodological approach pursues the reconstruction of previously held constructions (Guba & Lincoln, 1994).

3.1.4 Constructivism

Constructivism adopts a relativism ontology. Psychologists or a researcher of organisational culture would be an example of constructivist. This perspective sees the truth as a construction. Realities emerge as multiple realities, and they are based on socially and experimentally intangible mental constructions of a person. Therefore, perceptions are the most significant reality (Perry, Riege, & Brown, 1999).

3.2 Research Approach

The relationship between theory and research is not usually straightforward. The important considerations are what form of theory is in question and if the data is collected to test or to build theories (Bryman, 2016). The design of the research is linked with the place of theory at the beginning of research since this determines whether research adopt deductive or inductive approach (Saunders et al., 2009).

In the deductive approach, the researcher develops theories based on the existing knowledge on the subject and on relevant theoretical ideas which then must be tested through empirical research similar to natural science approach where laws demonstrate the basis of explanation. The researcher must both develop a hypothesis and translate them into operational terms. The deduction is also akin to the positivist paradigm (Bryman, 2016; Saunders et al., 2009).

The development in the social sciences in the 20th century has revealed variation on the deductive approach in which the approach is criticised because of a cause-effect relationship among variables without considering the way which humans understand their social world. Therefore, in the inductive approach, a theory may build on the data collected as a result of the analysis of this data. Table 6 demonstrates the major differences between the two approaches.

Table 6 Differences between the inductive and deductive approach

Deductive Approach	Inductive Approach
• Scientific principles. • Moving from theory to data. • Need to explain the causal relationship between variables. • Collection of quantitative data. • Application of controls to ensure the validity of data. • Operationalisation of concepts to ensure clarity of definition. • Highly structured approach. • Researcher independence from what is being researched. Necessity to select samples of sufficient size in order to generalise conclusions.	• Gaining an understanding of the meanings that humans attach to events. • Close understanding of the research context. • Collection of qualitative data. • More flexible structure to permit changes in research emphasis as the research progresses. • Realisation that the researcher is part of the research process. • Less concerned with the need to generalise.

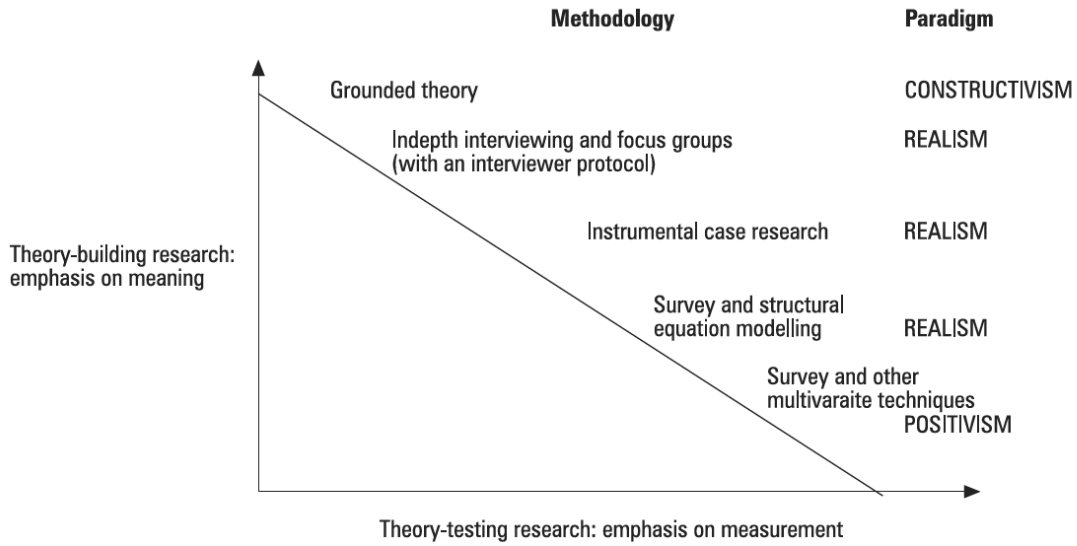
Source: Saunders et al. (2009)

3.3 Philosophical Position of the Research

In practice, a specific research question is rarely fit into one philosophical paradigm. However, it is important to clarify the philosophical position which determines the research strategy and the methods (Saunders et al., 2009). This research adopts the post-positivist/realist research paradigm which holds critical realism as ontological and modified objectivism as an epistemological position.

Realism is suggested more suitable for some marketing research than the paradigms stated above(Healy & Perry, 2000; Perry et al., 1999). Realists believe that perception is not reality which is believed to be true for constructivists and critical theorists. For the realist, perception is a window on reality, and they accept the difference between the world and the specific perception of it. Constructivists and critical theorists believe that reality is multiple, whereas realists accept reality as one but to get a better picture of reality, various perceptions need to be triangulated (Perry et al., 1999).

Figure 4 Some methodologies and paradigms within realist paradigm



Source: Healy & Perry (2000)

Healy & Perry (2000) argues (Figure 4) that realism fits most of the methodologies used by marketing researchers. As is seen in Figure 4, the grounded theory falls into constructivism in which it is not advised to read/review similar research conducted before. Realism has become an appropriate approach when moving from this very theory-building point to in-depth interviews and focus group methodologies having an interview protocol in which the researcher seeks for predetermined outside reality. Therefore, on the other end, there is the very quantitative approach; survey and structural equation modelling falls into realism paradigm. Particularly two attractive features of structural equation modelling (SEM) make it appropriate for realist research that SEM enables to model complex relationships and allows multi-item scaling and considers measurement error (Healy & Perry, 2000).

Considering critical realism as an ontological position, this research uses a multi-method approach and incorporates qualitative and quantitative research methods as well as incorporates SEM as an analysis technique to validate the scale.

This research aims to develop and validate an airline customer-based brand equity scale. This research employs an inductive research approach to reach this aim. First, customer-based brand equity dimensions relevant to airlines were identified through semi-

structured interviews in which the data analysis revealed theoretical themes. Each dimension was conceptualised in conjunction with the relevant theories. Therefore, the interview findings lead to theory.

3.4 Research Design

In order to develop and validate an airline customer-based brand equity scale, this research adopted a mixed-method approach. Creswell & Clark (2018) suggests three core research design frameworks for mixed-method approach; convergent design, explanatory sequential design, and exploratory sequential design.

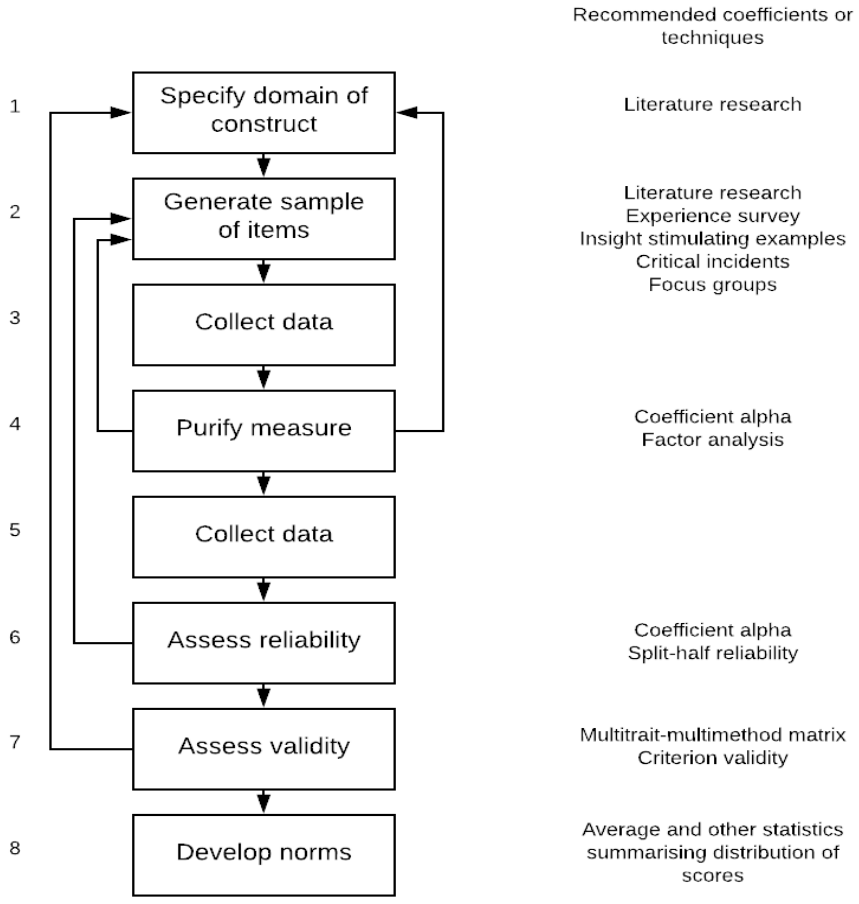
In the convergent design, the researcher studies qualitative and quantitative data together so that they can be compared and/or combined. In this way, the researcher aims to gain a better understanding of the research problem. In the explanatory research design, the research takes place in two interactive steps. First, quantitative data is gathered and analysed, which then leads to qualitative data collection and analysis to explain or to advance the research results in the second phase. In the exploratory sequential design, typically begins with qualitative data collection and analysis. By building on the qualitative research, a researcher passes on to the development level in which a quantitative study is designed based on qualitative results. In this phase, a researcher may want to develop new variables, design instruments etc. In the final phase the researcher, quantitatively tests the new feature (Creswell & Clark, 2018).

This research follows a very similar research design approach as in exploratory sequential design. The research design constitutes two main phases. In the first phase, several exploratory pieces of research are conducted to develop the scale, and in the second phase, the developed scale is confirmed quantitatively through two-step surveys. Therefore, in the following section, all scale development procedures and underlying reasons will be explained.

3.5 Scale Development Procedures

In response to criticism on the poor quality measures used in the marketing literature, Churchill (1979) suggested a range of scale development procedures to develop better measures of marketing constructs (Figure 5). In the scale development, the very first step is specifying the domain of construct in which researchers urged to clarify the conceptual specification of the construct "what is and what is not included in the domain". He suggests that it is inevitable to refer to existing literature to conceptualise the construct and to specify the domain.

Figure 5 Churchill's suggested scale development procedures



Source: Churchill (1979)

The second step is generating a sample of items. In other words, the identification of a set of items which captures the domain as defined. He suggests that incorporating

exploratory research would be very useful in this stage such as, experience surveys (interviews), insight stimulating examples and literature review which should show how the variable is defined and how many components it has. The next step is collecting data which is then subjected to reliability assessment through coefficient alpha and exploratory factor analysis. Once the items create problem in the constructs are refined, the next step is to collect a new set of data and assess the reliability and validity of the scale.

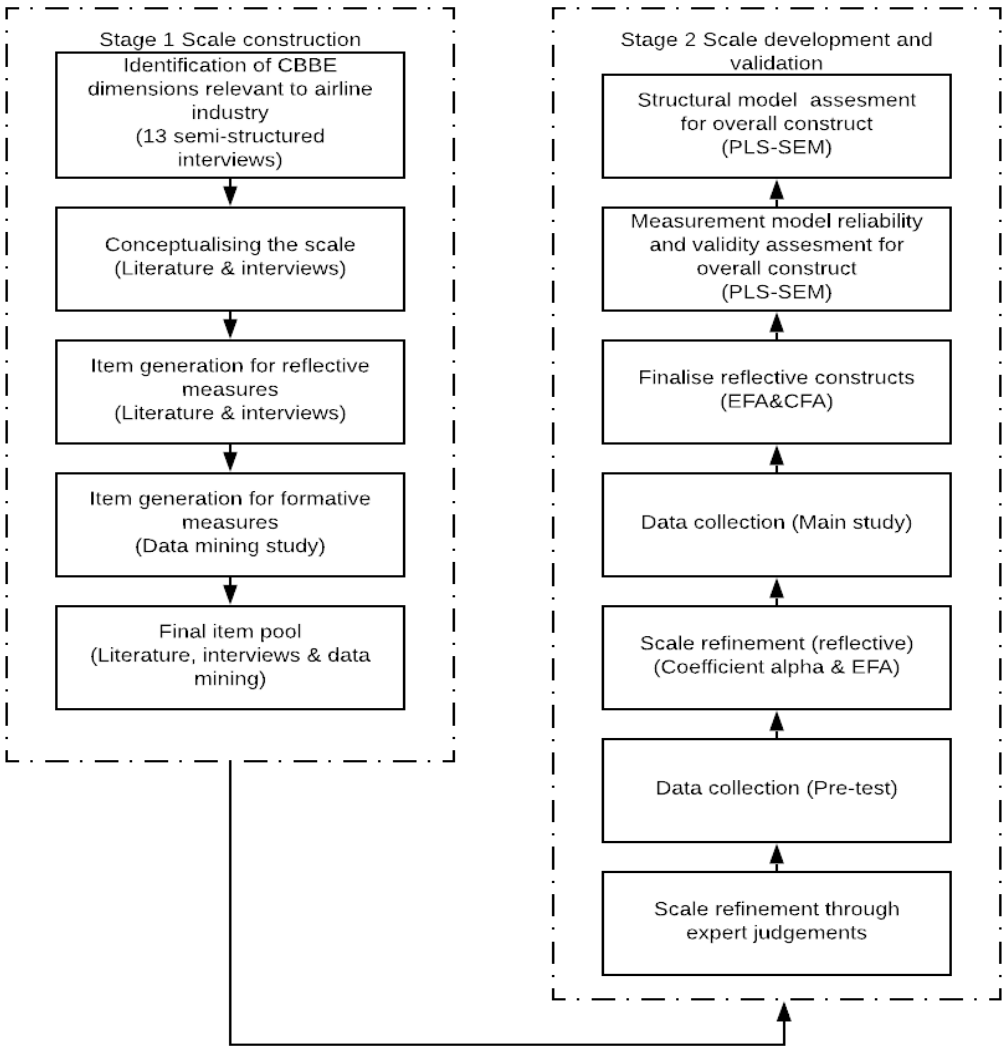
Churchill's (1979) scale development procedures have been updated over the years, especially to reflect advances in statistical analytical techniques and methodological approaches. For example, Gerbing & Anderson (1988) in their research on updated scale development procedures, advocate the usage of confirmatory factor analysis and structural equation modelling techniques to assess the unidimensionality of a scale. They agree with the usage of Exploratory Factor Analysis (EFA) and item-total correlation for preliminary analysis. The recent studies on better scale development were also followed (e.g. DeVellis, 2017; Netemeyer, Bearden, & Sharma, 2003).

However, these guidelines to develop measures mostly (e.g. Churchill, 1979; DeVellis, 2017; Gerbing & Anderson, 1988) put an emphasis on reflective measures in which the underlying constructs are reflected by items (observed variables). This conventional approach to measurement is based on classical test theory and specifically domain sampling model. The alternative approach is the use of formative (cause, casual) measures – the generation of the index rather than a scale (Diamantopoulos & Winklhofer, 2001). [1]

[1] There are two methods to measure latent variables which can either be measured reflective or formative (Hair et al., 2017). The fundamental difference between these methods is that reflective indicators are interchangeable, and an item in the construct can be removed, which does not change the nature of the construct. However, all formative indicators form the construct that removing any item is equal to removing one part of the construct (Diamantopoulos & Winklhofer, 2001; Hair et al., 2017). In reflective constructs, the latent variable or the underlying construct drives the items that these items have positive and high intercorrelations. However, this may not be the case for formative measures. They may or may not share the same theme or pattern of intercorrelation (Coltman et al., 2008).

Expert interviews and the literature review revealed that airline customer-based brand equity scale has both formative and reflective measures. Therefore, it is conceptualised as a composite scale. However, statistical analysis techniques used for reflective construct evaluation cannot be directly applied to the formative constructs that they require different treatment (Hair et al., 2017). Hence, the assessment of the composite measurement model having reflective and formative constructs have to be done separately.

Figure 6 Scale development steps for ACBBE scale



In the view of recent advances on the scale/measure development, by following previous research (e.g. Churchill, 1979; DeVellis, 2017; Gerbing & Anderson, 1988;

Netemeyer et al., 2003), as well as formative measurement development procedures (e.g. Diamantopoulos & Winklhofer, 2001; Hair, Hult, Ringle, & Sarstedt, 2017; Hair, Risher, Sarstedt, & Ringle, 2019; Sarstedt, Ringle, Smith, Reams, & Hair, 2014), an original procedures were formed for ACBBE scale (Figure 6).

Considering the lack of airline customer-based brand equity measures and scarcity of literature on this topic, in the first stage the scale needs to be developed using an exploratory design. Three different sources are incorporated into this exploratory research; airline passengers, airline marketing experts and the literature. Therefore, critical multiplism and/or triangulation is suggested methodological approach in the realist paradigm.

First, the brand equity literature has been reviewed comprehensively as survey-based customer-based brand equity measurement is determined as a domain of construct. However, it was not possible to establish (the content of the domain) which dimensions can be used to assess airline customer-based brand equity as most of the research on brand equity literature has been shown to have been conducted for goods which may not be applied to airlines directly. Research on airline brand equity was also sparse and based on the adoption of the goods-based approach in a deductive way and there is no consensus among those researchers.

3.5.1 Stage 1: Scale Construction

Stage 1.1 Identifying CBBE measures: Semi-structured interviews with 13 industry experts

Instead of dealing with a single source, airline marketing experts were approached to identify CBBE measures which are relevant to the airline industry, which is also in line with the realist paradigm. This is also in line of Churchill's (1979) suggested methods (experience surveys) and the brand equity scale development research for specific industries (e.g. Christodoulides & de Chernatony, 2004; de Chernatony et al., 2004).

Stage 1.2 Conceptualising the scale: Literature combined with findings of Stage 1.1

The interviews are examined in conjunction with the brand equity literature and consumer behaviour literature (existing concepts, theories) in order for this analysis identify the dimensions of airline customer-based brand equity (ACBBE). Each dimension needed to be conceptualised along with relevant literature which then leads to a thorough review of literature on the specific constructs as well as measurement theory considered.

Stage 1.3 and 1.4 Item generation using data mining of over 5,000 traveller reviews posted on social media and literature

Then, a data-mining study on airline passenger reviews is conducted for passenger views to be incorporated in the scale development. Although, focus groups and/or critical incidents techniques were recommended techniques by Churchill's (1979) for item generation, data mining is an emerging data analysis technique which has advantages over these techniques was used .

Identification of the dimensions of ACBBE scale and items reflecting the scales and their conceptualisations were carried out with the relevant literature expert interviews and data mining study and by considering the measurement theory. This exploratory study yielded the dimensions of ACBBE and measurement items (item pool) reflecting those dimensions.

3.5.2 Stage 2: Scale Development and Validation

Once the dimensions of the scale are identified and a pool of seventy items reflecting the dimensions are specified, in the second phase of the research focuses on the scale development and validation. In the line with the scale development suggestions of DeVellis (2017); Netemeyer et al. (2003), and the recent practices (e.g. Meek, Ryan, Lambert, & Ogilvie, 2019; Thornton, Henneberg, & Naudé, 2014), these items subjected to expert judgements for refinement and redundancy for reflective items as they are exchangeable. Formative construct items were considered only for redundancy as their content validity is established through data mining study.

Following Churchill (1979), the final item set were then subjected to further refinement and to obtain initial reliability, and validity estimates through an online pre-test survey to 200 airline passengers of full-service and low-cost airlines in the UK (British Airways, Virgin Atlantic Airlines, Emirates, EasyJet, Jet2 and Ryanair). Then a new data set is collected for further assessment of the scale from the passenger of full-service (453 responses) and low-cost carriers (508 responses) in the UK. First, the scale is further assessed through EFA for both samples and pooled data and then a confirmatory factor analysis is conducted which clearly established the unidimensionality of the scale constructs and lead to identification items with the best psychometric properties.

Once the final set of reflective items is identified and a clear factor structure is established, then the overall measurement model including formative and reflective constructs, was subjected to validity and reliability assessment. Finally, a structural model assessment conducted to analyse predictive capabilities of the scale.

3.6 Stage 1 Scale Construction

3.6.1 Interviews with Marketing Professionals

3.6.1.1 Justification of the Interview Method

The purpose of interviews is to find out the unique brand equity measures relevant to the air transport industry. As discussed in the first chapter, most of the researchers have adopted Aaker's (1996) and Keller's (1993) frameworks either directly or with some modifications. There has been a long debate about the applicability of these frameworks directly to a specific industry; thus, many authors have developed industry-specific brand equity measurement frameworks as stated in the introduction. Both Aaker (1996) and Keller (1993) emphasise the necessity of the modifications on the framework for specific categories and contexts applied to establish an effective framework for evaluating and monitoring the performance of brand equity. In the current literature, more than 25 different components of brand equity frameworks have been introduced (Tasci, 2018). Grounded upon customer-based brand equity measurement theory (Aaker, 1992; Erdem & Swait, 1998; Keller, 1993) and considering airline consumer

behaviour research as complementary, it is aimed to identify airline customer-based brand equity measures through interviews.

3.6.1.2 Data Collection and Sampling

Semi-structured interviews with airline brand/marketing executives and airline marketing consultants were carried out. Non-probability purposive sampling was adopted and data analyses were made concurrently while data collecting in-process and this process finalised when the data saturation is reached (Saunders et al., 2009). During the process, a saturation point was established after 11 interviews, and the process continued with two more interviews however, no more new concepts, themes or codes emerged from the interviews. A total of 24 airline marketing executives and consultants from different airlines and regions were approached to reach thirteen interviews.

Table 7: Sample profile for expert interviews

Respondent	Responsibility	Employer	Airline Experience	Region
R1	Marketing Consultant	Consultant	30 Years	North America
R2	Marketing Manager	Airline	5 Years	South America
R3	Marketing Director	Airline	5 Years	Europe
R4	Academic & Consultant	Consultant	18 Years	North America
R5	Marketing SVP	Airline	6 Years	North America
R6	Head of Marketing	Airline	10 Years	Asia
R7	Consultant/CEO	Consultant	10 Years	North America
R8	Marketing Director	Airline	2 Years	Europe
R9	Chief Customer Officer	Airline	20 Years	Europe
R10	Customer Experience Manager	Airline	4 Years	Asia
R11	Marketing SVP	Airline	10 Years	Asia
R12	Customer Experience Manager	Airline	3 Years	Europe
R13	Customer Research Manager	Airline	8 Years	Asia

The sample is kept as a wide and as diverse group of people as possible from the industry to explore the phenomenon in depth (Table 7). Airlines having an international brand presence, and consultants dealing with various airlines all around the world as part of their job were approached for an interview. The industry experts from both low-cost airlines (4) and full-service network carriers (6) as well as, airline marketing consultants with an academic background were interviewed (3) so that different perspectives could be incorporated into the research.

Interviewees were approached by e-mail and an official invitation letter explaining (see Appendix B) aims and objectives of the study. Once the interview was agreed, they were sent a consent form indicating data protection and anonymisation in line with the UK Data Protection Act (1998) (see Appendix C). Both face-to-face and telephone interviews were conducted due to geographic dispersion, time-cost constraints and to facilitate interviewees' participation since it is aimed to conduct interviews with executive level management (The average industry experience of the interviewees are ten years). Interviews were kept as open as possible to allow interviewees to bring up new ideas.

3.6.1.3 Study Design

Interview questions and probes were either adopted from previous research (e.g. de Chernatony et al., 1998; Veloutsou et al., 2013) or had shaped during the initial interviews as is seen in Table 8. The interview questions were designed with three purposes. First set of questions aimed (Table 8) to obtain information about branding and challenges on building and managing airline brands to understand how airline branding is different. Most importantly the questions were used to capture possible ideas which may be useful for brand equity measurement and to understand sources of airline brand equity which might be converted into measurable dimensions.

Table 8 Specific research objectives and key interview questions

To understand the role of branding in the industry and challenges encountered to manage and develop airline brands.
• What does brand and brand equity mean to you and your airline? • Can you tell me which airline do you see as successful in terms of branding and why do you think they are successful? • What are the characteristics of strong airline brands, and why? • What are the challenges encountered in brand management and building? How did you manage these challenges?
To examine how brand equity measurement system works
• How do you evaluate the performance of your brand? • What are the specific KPIs you use?
To examine the actual execution of branding tools across the industry
• What unique measures do you use for different cultures, locations and segments? • How do you consider the performance of competing brands?

In the second set of questions, it is aimed to understand what unique measures the airlines use to measure brand performance and finally, the actual execution of brand performance measurement in the airline industry was understood. In addition to the main interview questions, various probes were directed to the respondents. The interviews were carried out over five months, from October 2017 to March 2018. All interviews were recorded along with supplementary notes and lasted between 30 to 80 minutes.

3.6.1.4 Data Analysis

Twelve interviews were conducted in English, and one interview in Turkish. All interviews were first transcribed and translated from audio recordings immediately after the interviews were carried out. The data was pre-processed for further analysis with NVivo 12, a qualitative data analysis software.

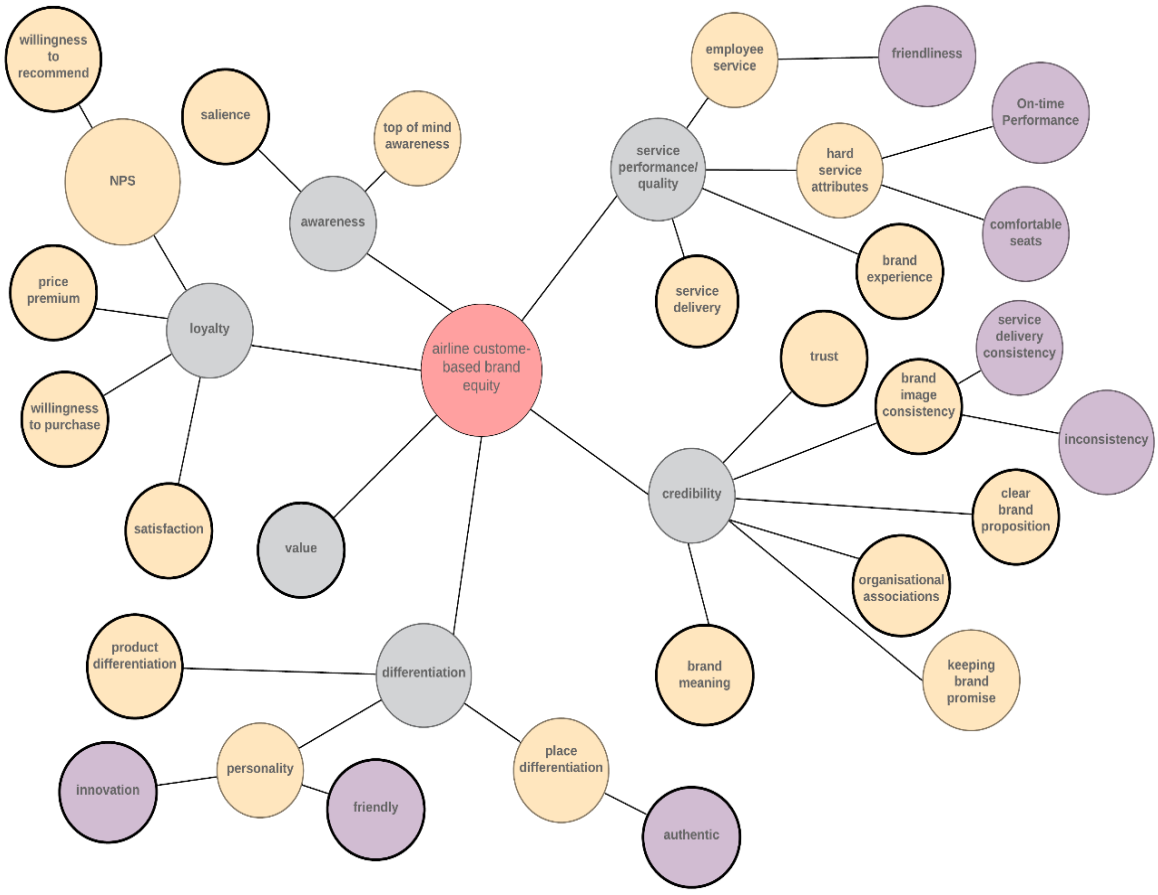
The template analysis technique is adopted for data analysis which is a type of thematic analysis. It provides some degree of a structure as well as flexibility in the process of analysing textual data to adapt it to a specific study (King, 2012). Template analysis is essentially a list of codes or categories representing the themes emerging from the data. Deductive and inductive approaches are combined in the template analysis in which the codes can be pre-identified and then edited or can be included while data is collected or analysed (Saunders et al., 2009).

This technique may be used within a range of epistemological orientations. Therefore, it can be employed in the realist qualitative research which is concerned with discovering the reasons behind the human action and would like to achieve researcher objectivity and to show coding reliability (King, 2012). This research also adopts realist orientation.

The hierarchical organisation of codes is the key aspect of template analysis in which groups of similar codes are clustered to create more higher-order codes (see Figure 7). One of the advantages of the hierarchical coding is that it allows analysing a text at different levels.

This research employed both inductive (bottom-up) and theoretical (top-down) approaches to identify the themes, categories and concepts in the data. The data analysis was performed in three coding levels which in turn creates a hierarchical organisation of the codes. Over 38,000 words were transcribed from 13 interviews. In the initial coding, over 350 initial data fragments (e.g. words, lines and segments) were generated from transcripts (see codebook from Appendix D).

Figure 7 Mind map: Hierarchical illustration of interview codes



In the second level theme in which the initial codes are associated under a “core” category to integrate and to syntheses the data particularly by using frequently-used and significant codes (Corbin and Strauss, 1990; Charmaz, 2006; Thornberg et al., 2013). Conceptually similar fragments are grouped together to generate categories and subcategories (Corbin & Strauss, 1990) and were analysed through constant comparison of the data with data (Charmaz, 2006) which resulted in 20 codes.

The top-level theme was used to identify possible relationships between categories which developed in the second-level coding. The aim of these codes is both to conceptualise the relationship between second-level codes and to move the analytical story forward to a theoretical direction (Charmaz, 2006; Thornberg et al., 2013; Bryman, 2016). Top-level codes were generated by constantly going back and forward to literature and the data until they met a common ground or shared understanding between the data and the theory. Most of the terms for the final categorisation were revealed from the actual terms that the participant used in the interview. However, the relationship between the second-level codes was derived mostly from the existing theory and the literature.

For example, the information economics approach to brand equity discusses the antecedents of credibility as brands ability to deliver its promises consistently, clarity of brand message and consistent execution of marketing mix elements. Similarly, Keller (2001) and Aaker (1996) approach incorporate credibility in a similar way. The marketing experts focused on these aspects which are the source of strong airline brand equity. Therefore, credibility emerges as a higher-order code explaining the lower codes such as a clear brand proposition, image consistency, keeping brand promises (see Figure 7) and as a component of airline customer based-brand equity. Following the same approach, this process created six main dimensions reflecting airline customer-based brand equity (Figure 7) namely: awareness, credibility, service performance, differentiation, value and loyalty.

3.6.1.5 Reliability

Reliability of codes can be established through inter-rater reliability which is a measure of to what extent different evaluators allocate a similar score to similar variables. Although there are different variants of testing inter-rater reliability, the most conventional one is percentage agreement (McHugh, 2012).

In this research, two interview transcripts were given to two independent evaluators (non- marketing PhD students) for coding. Both evaluators independently examined the transcripts and allocated codes. The initial codes revealing from two transcripts were

compared and initially, 76% of the agreement established. Any discrepancies were discussed, and the final themes decided.

3.6.2 Data Mining Study

3.6.2.1 Justification of Data Mining Study

Justification of this study approach includes various layers. First, conceptual issues will be explained as the underlying reason for the approach. Then measurement-related issues and lastly, passenger reviews as a data source will be justified.

Conceptual Issues

As discussed in chapter two, service quality conceptualisation is rather challenging. Perceived quality is a frequently used measure in brand equity research but there is a certain level of consensus on its measurement for products. For example, it is measured as an overall concept for products such as cars, TVs, shoes (e.g. Netemeyer et al., 2004; Yoo & Donthu, 2001). However, the measurement of service quality has been one of the controversial topics in the marketing literature. Therefore, no conclusion has been reached; neither on its dimensions nor its measurement (Brady & Cronin, 2001). The reasons are; service quality is a difficult concept for the customer in comparison to assessing the quality of goods. Consumer perceptions of service quality are revealed by comparing the expectations with actual service performance, and quality evaluations are not only made based on the outcome of service but also the process of service delivery is considered (Parasuraman, Zeithaml, & Berry, 1985).

Additionally, the number of service attributes used both in the literature and in practice to evaluate service quality is large. This is likely because of services offered by airlines may show a significant difference based on business models and service class.

Another consideration is the length of the service quality measures developed to measure airline service quality such as; AIRQUAL which incorporates 43 items to measure service quality (e.g. Nadiri, Hussain, Ekiz, & Erdoğan, 2008). It would increase the length of the survey significantly to include 43 items for one concept measurement within an ACBBE scale.

Finally, the validity and reliability of formative measures are assessed differently. Therefore, it is not possible to establish the content validity of service performance construct based on the literature as the views on its measurement diverse.

Model Misspecification Related Issues

It was clearly revealed in the interview results that there is consensus on attribute level service performance measurement among airline marketing professionals. However, from the measurement perspective, attribute level service quality measurement requires a different approach as this level measurement is assumed to be formative (Brodie et al., 2009). In this type of conceptualisation, several service attributes form the overall service performance (Collier & Bienstock, 2006). They may or may not share the same theme or pattern of intercorrelation (Coltman, Devinney, Midgley, & Venaik, 2008). In this case, airline service performance (underlying construct) does not drive the service attributes which is a reflective approach. Therefore, airline service performance needs to be considered as a formative construct so that does not lead to model misspecification which in turn would lead to biased results (Collier & Bienstock, 2006). Therefore, in a scale development study on web site service quality (E-S-QUAL) conducted by Parasuraman, Zeithaml, & Malhotra (2005) questioned their scale using reflective items (the traditional SERVQUAL model is based on reflective measurement theory which is developed by Parasuraman et al., 1988). They emphasised the appropriateness of using formative construct structures for first-order dimensions of scale based on Jarvis, MacKenzie, & Podsakoff (2003)'s review of model measurement model misspecification (Collier & Bienstock, 2006). Therefore, it would seem that service performance is conceptualised as a formative construct.

Justification of Passenger Review as a Source Of The Study

As a data source, online airline passenger reviews and as research techniques, data mining, are selected to incorporate passengers' reviews into the research and to establish relevant key service attributes covering key aspects of the service performance constructs based on airline business models and service classes.

Online platforms (such as Twitter, Facebook and Skytrax) allow customers to share information, opinions, and knowledge about products, services and brands (Filieri and McLeay, 2014). Today, an increasing number of consumers read and share online travel-related content particularly if those are posted or created by their friends (Gretzel, Yoo, & Purifoy, 2007). Customer feedback and reviews on online fora are boosting the expansion of word-of-mouth (WOM) on the web (Filieri & McLeay, 2014). They are especially relevant for service industries because of intangible characteristics of services which include purchase risks (Nikookar, Rahrovy, Razi, & Ghassemi, 2015). Sotiriadis and van Zyl (2013) found that online reviews and recommendations affect the decision-making process of tourists towards tourism services and WOM has a significant impact on the subjective norms and attitudes towards an airline, and a customer's willingness to recommend (Nikookar et al., 2015). According to the Pew Research Centre (2016), 82% of US adults tend to read online reviews and ratings prior to purchasing a product or service for the first time. In the US, reading reviews is particularly common for those who are under 50. In the age group 18-29, 53% and in the age group 30-49 year, 47% always read reviews when buying something first time. This proportion is lower in the 50-64 age group at 34% and 23% for 65 and older. Although reading reviews is popular, one-in-ten of Americans *always* share, and almost 50% *sometimes* share reviews about product and services they used (Smith & Anderson, 2016).

The increasing presence of customer engagement in online fora provides a large amount of useful data for airline marketers and researchers. Effective analysis of these unstructured data can enable real-time customer feedback analysis, compared to traditional data analysing techniques (Liau & Tan, 2014). It may be difficult to obtain genuine passenger feedback through traditional methods such as focus group. The majority of customers are not always willing to share genuine feedback with their service provider, particularly feedback about their dissatisfaction (Berezina, Bilgihan, Cobanoglu, & Okumus, 2016). Research shows that complaint behaviour of airline passengers varies based on demographic characteristics, and they voice their complaints either directly to the company or privately (WOM) or via a third-party platform (Y. K. Kim & Lee, 2009). Using online reviews may be very useful to better understand a diverse

customer base in order to find out key service attributes which would enable the generalizability of the scale.

Passenger Complaints as a Source of Key Service Attributes

Online passenger reviews and/or complaints may serve a great source of valuable information as passenger interaction with an airline does not necessarily result in satisfaction. Dissatisfaction is an apparent reality in the industry usually. According to expectancy disconfirmation theory (Oliver, 1980), when the customer expectations are not met, negative disconfirmation occurs due to the gap between passenger expectation and service performance perceptions. Failure in the service delivery often results in customer dissatisfaction and complaint behaviour such as; negative word-of-mouth (WOM), complaints, and customer turnover (M. J. Lee, Singh, & Chan, 2011). It is, thus, very important to understand the attributes that lead to passenger dissatisfaction. Kano, Seraku, Takahashi, & Tsuji, (1984) explain these attributes in their customer satisfaction model, under two categories; "must-be" and "one-dimensional requirement". Particularly unfulfilled "must-be" elements cause excessive dissatisfaction, but their presence does not enhance satisfaction since they are perceived as guaranteed features. On the other hand, customer satisfaction increases proportionally when "one-dimensional" requirements are realised (Matzler & Hinterhuber, 1998).

3.6.2.2 Data Collection and Sampling

The data for this research are gathered from TripAdvisor.com, a website which enables travellers to review and share their experiences, photos, express their views on hotels, airlines, restaurants, and destinations (Berezina et al., 2016). TripAdvisor examines all the data entered by the users to make sure they comply with content guidelines. Approved reviews are posted on the hotel/airlines page. Summary rating scores are provided as a result of user ratings (O'Connor, 2010). After the introduction of an airline reviews platform in 2016, users can access user-generated information about airlines, or they can review their flight experiences. Additionally, the website allows users to rate both their overall flight experience and specific experiences about seat comfort and

customer service to demonstrates their satisfaction level with an airline on a five-point scale.

For this study, 5,120 user-generated airline reviews, 2,584 positive and 2,536 negative reviews, were collected from the website. The sample only includes reviews written in English by international passengers (and excludes passengers travelling domestically). The sample covers reviews of the top 50 most valuable airline brands from around the world. The airlines were selected proportionally to their global market share based on Revenue Passenger Kilometres (IATA, 2018b), the global market share of airline business models (Full-service/ legacy 77% and leisure/ low-cost 23%) (IATA, 2017) and passenger class (economy 82%, premium-class 18%). Brand Finance's annual report of airline brand values (BrandFinance, 2018) was used to select the most valuable airline brands in the world. However, only 45 airlines on the list are considered for the sample since the remaining five (Hainan Airlines, Shenzhen Airlines, Juneyao Airlines, Xiamen Airlines, and Shanghai Airlines) did not have a sufficient number of reviews for the data collection period (See airlines in appendix E). Instead, the following airlines were selected to be included in the sample by assessing the market shares in their respective regions (LATAM, Aeromexico, Avianca, Hawaiian, and Ethiopian). Based on these two criteria, the airline sample is distributed by region as follows; 2% Africa, 34% Asia-Pacific, 28% Europe, 6% Latin America, 10% Middle East and 20% North America, and by airline type; 22% low-cost, 78% traditional.

On average 102 airline passenger reviews (includes positive and negative) per airline –reviewed in the 12 months period between January 2017 to December 2017– were collected based on predefined indices for each month (beginning, mid and end of the month) with the purpose of elimination of any seasonality impact on reviews. In certain periods of the year, customer complaints may accumulate due to seasonality (peak) or industry-specific factors like weather, strikes. For each review, user-related information (country, contribution level (calculated based on the number of previous reviews) and the number of reviews, date of review, overall satisfaction rating, review, and cabin class information were collected.

3.6.2.3 Data Analysis

Online data are generally unstructured, and it is very difficult to analyse this large amount of data manually and objectively. However, this study uses a well-established statistical method, Latent Semantic Analysis (LSA) that reveals hidden meanings in unstructured data.

LSA is realised throughout the computation of high-dimensional semantic vectors, or context vectors of words from their co-occurrence statistics (Kanerva, Kristofersson, & Holst, 2000). Fundamentally LSA uncovers common factors by collecting all of the contexts within which words appear (Sidorova, Evangelopoulos, Valacich, & Ramakrishnan, 2008). LSA uses a system of coordinates of reduced dimensionality to link similar ideas, and its foundation emerges from a vector space model (VSM). In the VSM, documents (passenger reviews) are considered as a bag-of-words and the grammatical and syntactical structure of a text are disregarded. Documents are transformed into a mathematical vector in a multi-dimensional space and every single term (word) in the document library refers to a dimension (Visinescu & Evangelopoulos, 2014).

The usage of automatic text mining and natural language processing (NLP) methods has gained increasing attention in academic research to analyse unstructured texts. However, LSA provides a range of advantages over other frequency-count methods (Ahmad & Laroche, 2017). LSA is completely automatic mathematical and statistical method and it does not use human-built dictionaries, knowledge bases, semantic networks, grammars, syntactic, parsers, and morphologies as in traditional NLP or artificial intelligence software (Landauer, Folt, & Laham, 1998). It is suggested in psychology research that LSA works in a similar way as the human brain interprets text meaning (Sidorova et al., 2008).

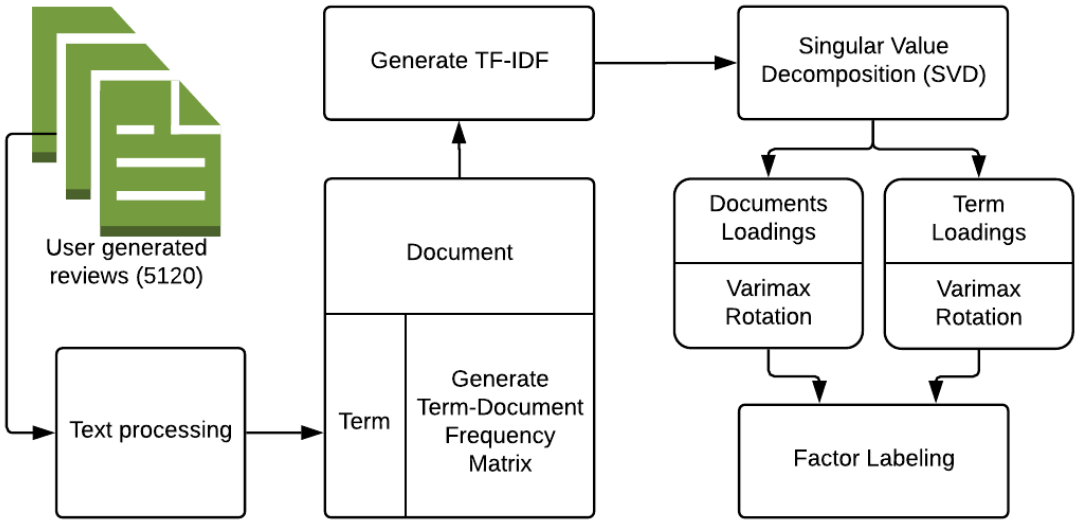
In this study, the well-accepted statistical text analysis technique, LSA will be used because of its advantages over other techniques. The manual analysis of unstructured textual data, a sample of 5,120 reviews, is not practical using traditional qualitative

methods, so text mining methods come into play to render them in an interpretable form (Lee, Baker, Song, & Wetherbe, 2010).

Latent Semantic Analysis

In line with previous studies (Sidorova et al., 2008; Yalcinkaya & Singh, 2015; Kulkarni, Apte, & Evangelopoulos, 2014; Xu and Li, 2016; Ahmad and Laroche, 2017), Latent Semantic Analysis is undertaken by following four steps (Figure 8) textual data processing, Term Frequency-Inverse Document Frequency (TF-IDF) transformation and singular value decomposition, analysis of factors, and factor rotation and labelling.

Figure 8 Latent Semantic Analysis process



Source: Generated based on previous LSA applications (Sidorova et al., 2008; Yalcinkaya & Singh, 2015; Kulkarni et al., 2014; Xu and Li, 2016; Ahmad and Laroche, 2017).

***Step 1:** Quantification of textual data (Text processing)*

The airline passenger reviews are separated into positive and negative reviews for each airline business model and passenger class. The dissatisfied economy passenger analysis will be used as an example to clarify the LSA process. The following procedures are applied to process the data sets in Rapid Miner 9.0 studio and Matlab for the subsequent analysis; customer reviews are transformed into lowercase letters (see Appendix F for

the model). The reviews are then broken into small units by a tokenisation function with a non-letter separator, and tokens with fewer than two letters are removed since these words do not present meaningful information. After tokenisation, English stop words like “the”, “and”, “so” and “is” are filtered/removed, and airline names removed from the analysis. Then term-stemming techniques are applied in which different variants of the word such as; “absolutely”, “absolute”, “absoluteness” are truncated into the single token “absolut” in order to bring single word concepts together. As the last step, an N-grams algorithm is applied to identify phrases in which two terms are often found together throughout the data such as; “leg_room”, “comfortable_seat”. Consequently, initial term-by-document (word-by-review) matrices are generated for positive and negative reviews for each airline business model and service class.

An initial term-by-document matrix (of 68,186 x 1,545) was generated as a result of this term processing. Eighty-one percent (81%) of terms were removed from the matrix since 55,158 of the terms (tokens) occurred once only in one document and thereby considered unimportant. This resulted in a 13,020 x 1,545 term-by-document. However, the matrix was still large enough for effective subsequent analysis. A prune method was applied (Yalcinkaya & Singh, 2015) by which any terms occurring less than five times in the dataset are removed which results in a final 3,309 x 1,545 term-by-document matrix for further analysis.

Step 2: *Term frequency and inverse document frequency (TF-IDF) weighting of the term-document matrix and dimensionality reduction with SVD*

The 3,309 x 1,545 term-by-document matrix was then subjected to a preliminary TF-IDF method, where the relative frequency of a word in a particular document identified against the inverse proportion of that specific word over the whole document corpus. In other words, this calculation demonstrates the relevancy of a given word in a specific document (Ramos, 2003).

TF-IDF is calculated as follow;

Equation 1 TF-IDF

$$idf_i = log_2\left(\frac{N}{n_i}\right) + 1$$

TF-IDF (weighted) score is calculated by; $w_{ij} = tf_{ij} * idf_i$

idf_i = demonstrates the rarity of term i in the entire corpus

N = the number of documents in the corpus

n_i = the term frequency of term i in the entire corpus

tf_{ij} = the number of occurrences of term i in document j

Using this method, rare terms are promoted whereas, more common words are given less weight (Sidorova et al., 2008; Husbands et al., 2005). As a final step, the TF-IDF weighted 3,309 x 1,545 term-by-document matrix is subjected to Singular Value Decomposition (SVD) analysis. SVD is a variation of factor analysis (Thomas K Landauer et al., 1998). SVD is defined as "*X = WSP"*. *X* refers to a weighted matrix of terms-by-documents (words-by-reviews). SVD analysis decomposes the weighted terms-by-documents matrix into three matrices. The two orthonormal singular vectors, "*W"* and "*P"* correspond to terms and documents respectively, and the last one to a diagonal "*S"* matrix of singular values (square roots of eigenvalues) (T K Landauer, Laham, & Derr, 2004). The singular values demonstrate the importance of each factor in descending order. Multiplication of singular values with singular term vectors generates a term-by-factor matrix of term loadings and, in the same way, a document-by-factor matrix of document loadings is produced (Sidorova et al., 2008). The number of factors produced in this way is equal to the number of documents (1,545 in this study). To assess the key service attributes, the number of factors are reduced via dimensionality reduction (Yalcinkaya & Singh, 2015). The optimum number of factors is retained for each data set based on the following procedure.

Step 3: *Identifying the number of factors reflecting key service attributes leading to customer satisfaction and dissatisfaction.*

As in factor analysis, LSA enables researchers to identify or specify the number of relevant factors in a dataset and to determine the level of aggregation, so that common themes are identified (Sidorova et al., 2008). However, identifying the optimum number of dimensions is one of the open research areas that proceed from dimensionality reduction in the principal component analysis. The issue is addressed by authors differently, such as; empirically testing and comparing different level factor solutions, quantitative estimation approach, and a more common approach is to use a scree plot of eigenvalues. Once the plot is drawn, diminishing returns or the "elbow" point is considered to decide the number of factors (Evangelopoulos, Ashton, Winson-Geideman, & Roulac, 2015). To identify the numbers of factors in this dataset, both a scree plot is drawn, and empirically different levels of factors are tested for each corpus and then the optimum meaningful number of factors is decided via examination of associated words.

Step 4: *Factor Rotation and Labelling*

Factor rotation in traditional factor analysis makes the interpretation of factors easier by simplifying factor associations (Sidorova et al., 2008; Yalcinkaya & Singh, 2015). Once the number of factors is decided, Varimax rotation is applied to increase the variance of the factor loadings, which either maximise factor loadings or minimise them under a specific factor (Visinescu & Evangelopoulos, 2014). Thus the associations between factors and loading variables become clear which makes factor interpretation more easy (Evangelopoulos, Zhang, & Prybutok, 2012). Varimax rotation is applied both on to the term and document loadings so that they can be interpreted in the same semantic space. Both terms and documents are reviewed together for each factor solutions so that they can be labelled.

3.6.2.4 Reliability

As the last step, extracted factors for both terms and documents are reviewed and interpreted by two researchers (PhD students) independently through the examination of high-loading terms and documents. Discrepancies are eliminated with a final discussion.

3.7 Stage 2 Scale Development and Validation

3.7.1 Airline Passenger Survey

Once the pool of survey items was refined by the expert reviews, the remaining items were subjected to an online passenger survey for further scale refinement and validation. An online platform was selected for survey data collection because of advantages over traditional methods such as cost and time efficiency, easy to reach potential respondents from different demographics; and, it secures anonymity of respondents (Van Selm & Jankowski, 2006). Also, Prolific, – the online platform used for the distribution of the survey – provides additional functionality such as control on the subject pool through pre-screening and ensures accurate responses by enabling the researcher to control each response. These advantages of the online approach outweigh those of traditional surveying methods. Thus, this study uses an online panel as a survey administration method.

3.7.1.1 Justification of Survey Data Collection

The usage of crowdsourcing platforms, where researchers can recruit participants for their studies for their social science experiments, has substantially increased in recent years (Palan & Schitter, 2018). Crowdsourcing is the use of internet sources to employ studies drawn from a large and diverse population. Some of these platforms are; Amazon Mechanical Turk (MTurk), Prolific Academic, Qualtrics Panels, Survey Monkey Audience and Witmart (Palmer & Strickland, 2016). These platforms abolish various problems inherent to online data collection. They act as a marketplace where a large number of participants take place, which in turn reduces the amount of time for data collection. These marketplaces also have a reputation-based system which encourages rigorous participation (Stewart, Chandler, & Paolacci, 2017).

Various studies examined the quality of the data obtained through these platforms. Stewart, Chandler, & Paolacci (2017) points out the increasing popularity of online labour markets as a source of research participants for cognitive science. Thus, they argue the reproducibility of research conducted on convenience samples obtained through crowdsourcing platforms with other data collected through traditional and/or

other online methods. Various comparative studies were conducted to test the reproducibility of studies with the data gathered from crowdsourcing platforms. For example, Clifford, Jewell, & Waggoner, (2015) examined personality and value-based motivations of political ideology with three different samples collected via online and face-to-face as representative of national samples and a sample obtained from MTurk. They found statistically identical results among three different samples.

Similarly, Crump, McDonnell, & Gureckis (2013) examined the feasibility of MTurk for cognitive behavioural experiments. They concluded that MTurk data and laboratory results are similar. Buhrmester, Kwang, & Gosling (2011) also examined MTurk data, and they argued that the data is as reliable as the data gathered through traditional methods.

There are also comparative studies examining the data quality obtained from different crowdsourcing platforms. For example, Peer et al. (2017) compared the data quality among three platforms; CrowdFlower, Prolific Academic and Amazon Mechanical Turk. He concluded that the quality of the data produced from Prolific's participants was higher than the other two platforms.

This study, thus, employs a crowdsourcing platform, Prolific Academic which enables individuals to participate in academic surveys for monetary compensation. The platform launched in 2014 by graduate students from Oxford and was supported by Oxford University Innovation centre (Peer et al., 2017). Different to other crowdsourcing platforms such as Amazon MTurk, and Survey Monkey, Prolific Academic is developed for the scientific community (Palan & Schitter, 2018). Because of its purpose, the platform provides a great deal of transparency about its population, particularly compared to other online platforms (Palan & Schitter, 2018). Researchers can access various options in the platform, such as detailed demographic information about participants as well as pre-screening options (e.g. age, gender, nationality) into their panel before they recruit participants. The panel includes over forty-five thousand registered UK residents.

The Prolific panel was chosen for this research by considering the advantages of the platform and in the light of comparative studies arguing the equivalency and the quality of data obtained from crowdsourcing platforms particularly in the cognitive science, cognitive behavioural experiments as this research focus on the development of airline-customer based brand equity scale in which passenger attitudes, perceptions, and behaviours are measured. Therefore, the other advantages such as quick responses, lack of interaction with participants, removal of the possible influence of the researcher on the results and the previous usage of crowdsourcing for brand equity scale development studies (e.g. Tasci, 2018) are the fundamental reasons for the selection of the online panel.

3.7.1.2 Data Collection and Sampling

Online panels represent a group of people who are willing to participate or a group of people who are paid to be available to carry out surveys. The demographic information and other information related to the participant may be obtained by the panel organiser, who then enables researchers to pre-screen their target population. Panel participants may take part in any type of study if they fit a particular criterion. Their decision to participate may be related to their interest in the particular topic, their availability or the amount of compensation offered (Landers & Behrend, 2015).

Crowdsourcing platforms are mostly representative of the demographics of the internet-using population (Crump et al., 2013). However, there are positive and negative aspects of incorporating a crowdsourcing platform in research compared to other survey collection methods thus it is suggested the most favourable data collection technique should be decided based on the research question (Palmer & Strickland, 2016). The negative side of crowdsourcing could be that the participants must have internet access to be involved in the survey which in turn results in the systematic exclusion of the participant who does not have this resource (Palmer & Strickland, 2016). Considering previous brand equity scale development studies, this study uses online panel for the development of ACBBE scale.

The target population for this study was identified as UK passengers who travelled at least once by air within the past year. The main reasons why UK air transport market was selected for the study are; the market maturity, high competition, and the number of airlines having strong brand presence in the market that the selected six brands (stated below) listed as the most valuable and strong airline brands in the world by Brand Finance (Brand Finance, 2019; BrandFinance, 2018).

By considering the brand value and the market share of the airlines, this study focusses on the passengers of six airline brands' who have flown one of them within the past year. These airlines include low-cost and full-service and have the highest market share in the UK in their category – low-cost carriers; Easy Jet, Ryanair, and Jet2 and full-service carriers; British Airways, Virgin Atlantic Airways, and Emirates. These airlines were categorised based on their business model and two data sets were created as they will be referenced as LCC data and FSC data referring to passenger who had flown with them within the past year.

It is also common practice in the literature to identify stronger brands for scale development purposes (e.g. Yoo & Donthu, 2001). Therefore, airlines having different pricing strategies, service class, marketing strategies and business model would lead to the assessment of cross-product/service capabilities of the scale as well as the generalisability of the scale across more airline brands which is in the line of previous research (Hsu et al., 2012; Yoo & Donthu, 2001). Higher market share also facilitates to find potential respondents.

Sample Size

DeVellis (2017) argues that the sample size should be large for scale development studies since smaller sample size may create stability problems on the pattern of covariation among the items. This study aimed to collect two hundred responses for the pre-test study and one thousand responses to the main study. A similar number of responses across brands were aimed. This study yielded two-hundred responses for pre-test study and 961 responses for the main study including 508 valid responses for LCCs and 453 valid responses for FSCs.

3.7.1.3 Survey Design

This study follows a similar pattern to a longitudinal survey design that allows collecting data from the same participants at different points of time. The Prolific system allows researchers to use a whitelist screener, which enables researchers to invite previously determined participants to participate in a survey at a different time (Palan & Schitter, 2018). Therefore, the survey was designed into two steps as screening and main study and the Qualtrics survey platform is used to design the survey.

In the screening survey, the aim was to find passengers who had flown at least once, and with one of the airlines stated above within the past year. The Qualtrics distribution link was shared on the Prolific platform. Potential respondents were given a brief description of the study and information about the follow-up study. Respondents were initially asked an eligibility question whether they had flown by air within the past year and their country of residence, then respondents who did fly were provided with the list of airlines together with the "none" option and asked which airline did they fly. Therefore, passengers likely to fly more than one airline, were urged to choose the one they know best.

Additionally, respondents provided their Prolific ID so that the follow-up study could be conducted. Two thousand nine hundred people were subjected themselves to the screening survey. Those who met the screening criterion were subjected to a demographic data comparison with the data collected and the demographic data that Prolific provides. Based on the two criteria, eligible participants were categorised to the relevant airline (whitelisted) for the follow-up study. 225 respondents were selected for the pre-test, while 1,119 eligible respondents for the main study which represents around 46% of the total pre-screened participants for the follow-up study.

The survey, designed on Qualtrics, was split in six different versions – one for each of the selected airlines (see survey Appendix H). Data was collected during the period between 02.07.2019 - 25.07.2019. Each survey starts with taking consent of the participants, which determines the eligibility of the respondent to complete the rest of the questionnaire. This research also obtained ethical approval from the Cranfield

University Ethical Approval Committee with a reference number of CURES/8698/2019 (see Appendix I). In the first section of the survey, participants were asked travel-related information (e.g. frequency, travel class) as well as their Prolific ID. In the following section, all questionnaire items related to airline customer-based brand equity dimensions was randomly grouped so that items measuring similar dimensions do not rank one under the other to minimise question order bias and to improve the quality of the data. For each question group, a question description was provided by referring to the airline brand, and the respondents were asked their degree to which they agree/disagree with a statement on a seven-point Likert scale.

Likert scaling is a commonly used method to measure beliefs, opinions and attitudes (DeVellis, 2017). Also, a positive link is found between the number of scale points and reliability since more variance may be extracted when the number of scale point increase (Churchill & Peter, 1984). Therefore, this study employed a seven-point Likert scale for the reasons stated and the common usage of a seven-point Likert scale in brand equity research (e.g. Christodoulides et al., 2006; Washburn & Plank, 2002). All questions were asked with agreement/disagreement ratings apart from questions measuring "willingness to recommend" and "willingness to use" which used likely / unlikely rating. In the final section of the survey, various demographics questions were covered. The average completion time for the survey was 5-6 minutes. Respondents paid compensation at different rates ranging from £0.60 to £0.90 for a fully completed survey.

3.7.1.4 Data Analysis

As explained in the previous chapter, the Airline Customer-Based Brand Equity scale (ACBBE) encapsulates formative and reflective measures which makes it a composite model, thus this study employed two-step data analysis strategy that refined the reflective constructs through conventional procedures (EFA-CFA). Then, PLS-SEM was incorporated to evaluate reflective and formative scales together since conventional statistical procedures (applied to reflective measures) are not appropriate for scale validation for formative constructs and therefore they require different treatment (Diamantopoulos & Winklhofer, 2001). Firstly, this study used traditional statistical

analyses, Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) mainly for item refinement as well as to assess the quality, reliability of the reflective measures of the ACBBE scale as in the line with the suggested scale development procedures and research (e.g. Churchill, 1979; Gerbing & Anderson, 1988; Yoo & Donthu, 2001). The aim was to identify the final set of items which ensures an acceptable level of discriminant and convergent validity, internal consistency, and robustness. Then, the overall measurement model evaluation and structural model assessment was conducted through Partial-Least Square- Structural Equation Modelling (PLS-SEM).

Explanatory Factor Analysis (EFA)

The reflective measures were subjected to Explanatory Factor Analysis (EFA) using IBM SPSS 25. Primarily, EFA aims to identify the underlying structure among the variables in the analysis (Hair, Black, Babin, & Anderson, 2014). EFA also can be used to refine the number of items generated for scale development before conducting confirmatory factor analysis (CFA) to confirm the hypothesised structure of a measure that various scale development studies on marketing and organisational behaviour utilise (Netemeyer et al., 2003).

Confirmatory Factor Analysis (CFA)

After refining the scale and establishing the factor structure of the scale, both data sets were examined with confirmatory factor analysis (CFA) using IBM SPSS Amos 25. CFA is an analysis which tests how well measured variables represent the constructs (Hair et al., 2014). Apart from confirming the structure of the model, CFA also can be used for scale refinement purposes since EFA, and item-level analysis shows only to what extent items loaded on to a factor, and cross-loadings. However, it does not reveal correlated errors which may endanger the dimensionality of a scale. Therefore, CFA can be used to detect these measurement errors and items can be trimmed further to finalise the scale (Netemeyer et al., 2003). CFA is used to finalise the reflective scales for both samples.

Partial Least Square – Structural Equation Modelling (PLS-SEM)

Reflective constructs of ACBBE were refined through EFA and CFA resulting from that the final constructs with their observed variables were established. The next step is to evaluate the overall ACBBE scale with its formative and reflective constructs. This includes overall measurement model evaluation where the reliability and validity of constructs of the ACBBE scale were analysed. Next, the structural model evaluation of the scale was assessed to examine the predictive capabilities of the construct.

This assessment can be conducted through structural equation modelling techniques (SEM). SEM is one of the statistical methods which aim to understand the relationships among multiple variables and is developed based on factor analysis and multiple regressions analysis. It can be considered as a unique combination of both. It examines the structure of links among the variables/constructs, which is expressed by a range of equations. All of the dependence and independence relationships in the analysis are expressed with these equations (Hair et al., 2014).

Two types of SEM techniques are available. However, covariance-based SEM (CB-SEM) methods are the most well-known, they are even equated with the term “SEM” by social science researchers. This method can be executed in various software packages such as LISREL, AMOS, EQS, SEPATH, and RAMONA. The other approach to SEM is partial least squares (PLS) which have not been as popular as CB-SEM techniques. Latent variables in a model are treated differently in CB-SEM and PLS-SEM, which is the fundamental conceptual difference between the two methods. A latent construct is regarded as a common factor in CB-SEM that the constructs explain the covariation between the measurement items. However, PLS-SEM uses composites which are a weighted sum of a specific construct item. PLS-SEM conducts a range of regressions to utilise the explained variance of the endogenous construct(s) (Hair et al., 2017; Rigdon, Sarstedt, & Ringle, 2017).

CB-SEM is also suitable for confirmatory research which is done based on well-developed theory. The assessment of the CB-SEM results requires goodness of fit indices together with reliability and validity assessments, whilst PLS-SEM uses total variance

which in turn enables both exploratory and confirmatory research (based on total variance). The results of PLS-SEM is done based on reliability and validity assessment only since it does not have model fit indices (Hair, Hollingsworth, Randolph, & Chong, 2017).

PLS-SEM can be very suitable and appropriate depending on the research, epistemic view of data to theory, characteristics of the data available or depending on the level of theoretical knowledge and measurement development (Chin, 1998). It has gained momentum recently, particularly in disciplines like marketing, strategic management, management information systems (Sarstedt et al., 2014).

PLS-SEM is particularly useful if the research aims to specify the most important antecedents of the construct in question or if the research aim is exploratory, which pursues to develop a theory or extend the existing theories. Furthermore, PLS-SEM works very well for models having lots of constructs and many path links among those constructs. Most importantly, it allows the assessment of formative developed constructs (Sarstedt et al., 2014) that the ACBBE scale embodies.

Considering the composite (including formative and reflective measurements) nature of the ACBBE scale as well as the nature of this research thus, this study employed the PLS-SEM approach for the overall assessment of the ACBBE scale.

3.7.1.5 Reliability

Various steps were undertaken for the study to increase the quality of the data. First, the responses completed in less than two minutes were eliminated from the data set. In the questionnaire, attention check questions were included such as “It is important that you pay attention in this study, please select strongly disagree” Respondents informed at the beginning of the survey to pay extra attention to read questions carefully. Any respondents fail to pass attention checks, were removed from the data set. Finally, through the data collection process both in the pre-screening and the primary data collection, demographic survey responses were compared to the demographic information registered in the platform thus any inconsistencies were considered, and the data excluded from the final data set. Additionally, the author

registered to the platform as a participant which allowed him to evaluate the system for three months and completed eligible studies. This approach allows the researcher to gain experience and to understand the overall working mechanism of the platform by observing the platform from both sides.

3.8 Summary

In this chapter, philosophical paradigms were reviewed, and the philosophical position and the research approach adopted in this study stated with its reasoning. In line with the paradigm, the research design was developed. Then, scale development procedures followed in this research were explained step by step. In the last section, each research methodology used in this study was critically justified with the reasoning behind their choice, then study design, data collection, data analysis techniques were examined in detail and their reliability assessment of each method discussed. In the following chapter, the qualitative research findings (construction of ACBBE scale) will be detailed and discussed.

4 CONSTRUCTION OF AIRLINE CUSTOMER-BASED BRAND EQUITY SCALE

In this chapter, the domain of the construct and its content is identified based on a review of literature and interviews with airline marketing professionals which revealed brand equity measures relevant to airlines. Generating candidate questionnaire items which capture the intended domain of construct is the second step to develop a better scale (Churchill, 1979). In this step, a pool of items reflecting the domain with desirable psychometric properties needs to be selected to arrive final scale items (Netemeyer et al., 2003). Items for the initial pool may be formed by literature review, expert interviews and by the scale authors (Churchill, 1979; Netemeyer et al., 2003). Although the expert interviews revealed the dimensions of the ACBBE construct and highlighted a range of potential items for the constructs, to tap into the initial item pool further, a two-step approach is followed to develop scale items. First, potential reflective items of the ACBBE construct were adapted from previous brand equity studies on products, services and airline consumer decision making literature. For formative scale items, it was not possible to establish the content validity of the items and therefore further research was conducted on airline passenger reviews to identify key service attributes and so to establish the content validity of service performance constructs. Once the airline customer-based brand equity scale (ACBBE) is conceptualised and items reflecting these constructs are identified, a potential ACBBE model is proposed.

4.1 The Domain of ACBBE Construct

A well-defined construct is a critical step for the validity of what is being measured. A comprehensive review of the literature was used to specify the theory. This review may provide a range of benefits to understand what the construct is, its boundaries, dimensions, and content domain. As well as, it helps to understand the weaknesses and strengths of the previous development attempts in order to avoid any problems in the process (Netemeyer et al., 2003).

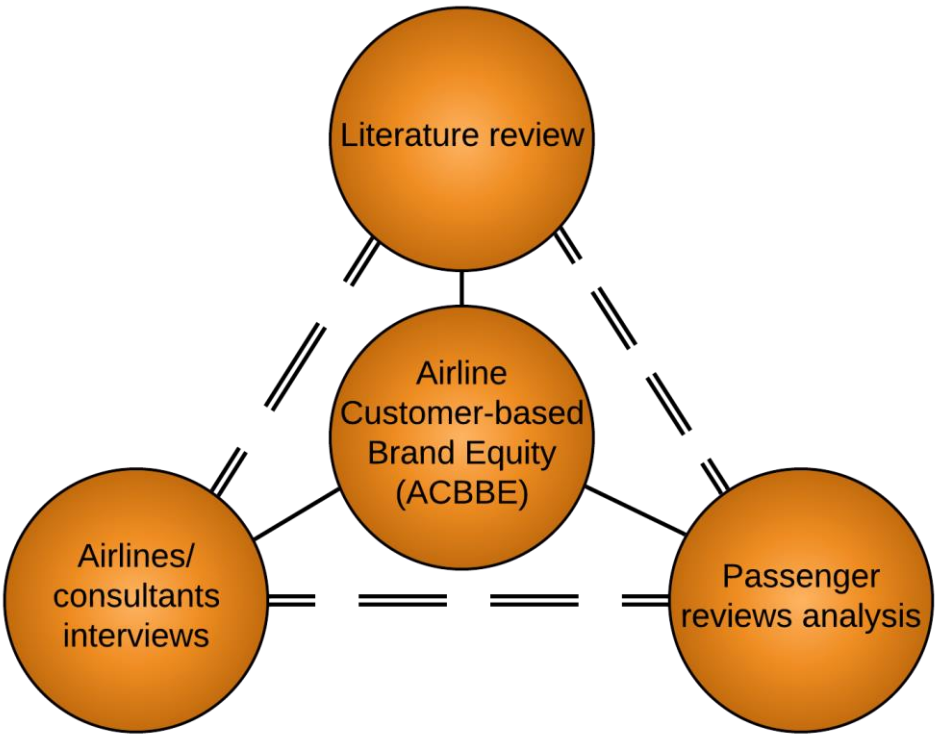
Brand equity research was reviewed comprehensively in chapter two. Therefore, various definitions of brand equity were proposed (e.g. Aaker, 1991; Farquhar, 1989; Keller, 1993; Simon & Sullivian, 1993). This study aims to develop a multi-dimensional airline customer-based brand equity measure that the customer-based refers to the measurement of cognitive(i.e. awareness) and behavioural (i.e. loyalty) brand equity at individual customer level by using passenger surveys (Yoo & Donthu, 2001). The purpose of this scale is to be a strategical tool for airline brand managers so that they can assess the performance of their brand, de Chernatony et al. (2004) argue that Marketing Science Institute's (MSI) brand equity definition includes managerial perspective while Keller's (1991) and Aaker's (1991) definition of brand equity addressing consumer's interest. Therefore, the Marketing Science Institute (MSI) defines brand equity as "a set of associations and behaviours on the part of a brand's consumers, channel members and parent corporation that enables a brand to earn greater volume or greater margins than it could without the brand name" (MSI in de Chernatony et al., 2004). Therefore, this study adopts MSI's brand equity definition.

4.2 Conceptualisation of ACBBE Scale

Considering the lack of agreement on the dimensions of CBBE, the content domain is further explored with expert interviews to identify relevant dimensions. This study created six main dimensions reflecting airline customer-based brand equity namely: Awareness, credibility, service performance, differentiation, value and loyalty.

Once the dimensions were identified, the next step is the conceptualisation of each construct and bringing those dimensions to measurable constructs. Each dimension conceptualised, items reflecting each dimension were identified based on interview findings, review of literature, and examination of passenger reviews. Considering measurement theory, first, the dimensions were divided as formative (service performance) and reflective (awareness, credibility, differentiation, value, loyalty) dimensions of ACBBE.

Figure 9 Methods used to construct ACBBE scale



All in all, airline marketing expert interviews, literature (branding theory, customer decision making theories, measurement theory) and passenger reviews were combined to identify dimensions of ACBBE and measurement items. In the following section, the conceptualisation of each dimension will be explained with expert narratives and literature review.

4.3 Reflective Measures of ACBBE

4.3.1 Awareness

Awareness shows the presence of the brand in the customer's mind and it may have a very critical role for some brand categories in terms of driving brand equity (Aaker, 1996). Brand recall – related to consumers ability to retrieve the brand – and brand recognition – ability to discriminate a previously seen or heard brand – are the main components of brand awareness (Keller, 1993). It is also one of the main dimensions of brand equity used in the literature (Veloutsou et al., 2013).

Airlines particularly use awareness in emerging markets or the markets they intended to penetrate.

> *"We do from time to time research, particularly in some of the emerging markets our brand that's how I understood to look at how we are tracking to towards building brand equity. Those are* [...] *awareness, consideration and willingness to try the product kind of survey questions."* ***(R5)***

Building awareness is also seen as a challenge due to the nature of the industry as quoted by respondent 9;

> *"One of the challenges is the international nature of airlines means you have built awareness in many places at the same time with very tangible but very short-life product.* (short life refers to the amount of time that the customer spent with the airline during his/her flight) *"* ***(R9)***

Brand awareness is critical in customer decision making. First, an increase in awareness leads to the brand to be considered or likely to take place as an alternative in the consideration set. Sometimes consumer may have no information about a brand rather than being aware of it. This familiarity of a brand may create an heuristic for consumer to choose a brand (Keller, 1993). Respondent (10) emphasises the identification/recognition of airlines. *"I think branding for me, in general, is really about identification to start with. But I think in terms of the airline, it is more important because we have seen that the airline industry and the products that airline offered has become somewhat commoditised."* ***(R10)***

Finally, awareness has an impact on customer decision making by influencing brand association formation (Keller, 1993) and brand recognition may increase the possibility of bringing to memory a favourable attitude which in turn may lead to consistent behaviour (Dick & Basu, 1994). Eight candidate questions were identified to measure brand awareness including brand recognition and recall and items were adapted from Aaker (1996); Hsu et al. (2012); Netemeyer et al. (2004); and Yoo & Donthu (2001) (Table 9).

4.3.2 Credibility

From the information economics perspective, Erdem and Swait (2004) define brand credibility as the believability of product information encapsulated in a brand. Erdem & Swait (1998) suggest brand credibility as a main determinant of customer-based brand equity. They suggest that trustworthiness and expertise are the fundamental components of credibility, so consumers need to perceive that the brand is able to and willing to deliver this promise over time. These two components of a brand reflect the total effect of past and present marketing efforts and strategies (Erdem & Swait, 2004). They also argue that credibility of a brand is mostly related to the consistency of marketing mix, consistent execution of this marketing mix and lack of ambiguity of the product information embodied in a brand (Erdem and Swait, 2016; Erdem et al., 2006)

The cognitive psychology approach to credibility is explained by Aaker (1996) and Keller, (2013). Aaker (1996) evaluated credibility as organisational associations that may provide a value proposition and/or credibility that organisation's claim can be evaluated as credible if they are being perceived expert, trustworthy and liked. However, he did not suggest credibility as a measure of CBBE. On the contrary to Aaker (1996), Keller (2013) included credibility as a brand judgment in his brand-building pyramid where he suggests that credibility measures whether the company or an organisation behind the brand is good at what it does. He argues that three dimensions create brand credibility: perceived expertise, trustworthiness and likability.

Most of the respondents highlighted through their narratives that consistency of marketing, as well as consistent delivery of services and keeping the brand promise, are the most important factors in terms of creating strong airline brand equity. As highlighted by respondents 10 and 11, the airlines which managed to stay consistent in the delivery of services are examples of successful airline brands;

> *"I think good examples would be…British Airways, Singapore Airlines; because of the consistency of their brand so the guest knows that what they receive time to time again and it is something consistent and they have earnt that trust over*

time. I think in essence brand equity means to me a credible brand one that has a good reputation and one that is powerful within the space that it operates." ***(R10)***

"(…) Look at the easy Jet, they are very clear what they are trying to do, and it is very clear how they position their product, it is brand positioning, their communications meet the expectation of the what the product delivers and therefore it is a little bit it is what it says. I think, makes it clear for people to make decisions and to build affinity to it. There is also another thing; consistency! for me, a brand is about consistency. It has to say do it do it do it again." ***(R11)***

In addition to the consistent service delivery, respondents 8 and 9 highlighted the importance of having a clear brand proposition and its consistent delivery over time for achieving brand success.

"Ryanair has been very clear on their proposition, so their brand is all about low-cost fares and the look of their branding is low cost, look of their uniform. I mean the yellow coat is basically walking ad for Ryanair, it communicates very clearly that they are low cost so Ryanair is very clear about their proposition that they are low-cost airlines. Everything they do is low-cost." ***(R8)***

*"Ryanair is the complete consistency of product service and image. It is like Coca Cola; it is one of the few brands. There might be a slight difference between Cokes in Turkey, Coke in Abu Dhabi but it is Coke, Ryanair seems to manage to achieve a level of consistency in the product, service and experience and its image across its entire network. In terms of the brand when someone if you ask one person who knows Ryanair and the next person, they would have the same impression of the brand." (****R9)***

Respondents 1 and 5 mentioned the difficulties in the administration of consistent service delivery in the airline industry because of the complexity of airline operations and employee service delivery.

"I think it is a hard industry just because operationally complex service business in which delivering that brand promise consistently is very difficult. And again, it is delivered by people; those people are largely distant probably to the network, so your employees aren't at one place you can get it. Actually, quite hard to get consistent, I mean you can have core brand image, proposition, design, it is very hard to fulfil it consistently in its complex and regulated operating environment in which we operate and with employees that are generally pretty defused out of the workplace." ***(R5)***

"The other reality is real inconsistency and service, which is delivered by people. And you cannot ensure that people will be careful 100% of the time. (…). West Jet whose personality is disposed of what producing and providing consistently friendly service." ***(R1)***

When the respondent was asked for the challenges of airline branding, he/she responded;

"The challenges are being able to maintain my credibility of that the brand you want to be through every touchpoint." ***(R3)***

It seems that increasing competition affects strategic positions of airlines. In turn, this may create confusion in the minds of the customer about the brand proposition. Most of the respondents emphasise the importance of clear brand positioning. Besides, delivering consistent service is one of the biggest challenges for airlines. Unclear brand promises or inconsistencies may cause fluctuations in the level of service and communication which in turn may create a gap between customer expectation and perceptions since expectations are influenced by prior product/service experience, communications and individual characteristics (Oliver, 1980).

This expectation gap through their communication and services could result from saying something and doing another thing; in other words, not keeping brand promises. Generating mixed signals reduces the credibility of a company and in turn, erodes the reputation of a firm in the long run. Particularly consistency is important for airlines since

repeated, consistent signals establish credibility and reputation. A company may have a bad reputation but can be completely credible as long as they deliver consistently bad services or vice versa (Herbig & Milewicz, 1993). It seems critical for airlines to manage credibility perceptions to build a strong brand as a result of the fierce competition in the industry.

This research conceptualises brand credibility as customer response to the brand in line with Keller (2013). This is also consistent with Sweeney & Swait (2008) conceptualisation of credibility for service brands as they suggest that brand credibility represents the relationship of a company and a customer over time. Therefore, airline brand credibility measures if customers perceive the company or the organisation behind the brand as good at what it does and how believable the product/service claims are encapsulated in a brand (Erdem & Swait, 1998; Keller, 2013).

Expertise and trustworthiness are the two dimensions of credibility which are widely recognised (Goldsmith, Lafferty, & Newell, 2000). Although Keller (2013) and Aaker (1996) refer to likability as another aspect of credibility, in addition to trustworthiness and Expertise, Goldsmith et al. (2000) criticised the usage of likability for credibility. Since describing an organisation as attractive/likeable similar to a person would not be appropriate. Therefore, empirical studies examined credibility with two dimensions: expertise and trustworthiness (e.g. Erdem & Swait, 1998, 2004; Sweeney & Swait, 2008). However, considering Churchill's (1979) notion that including items reflecting different shades of the meaning would be legitimate, the original list of items will be refined to establish the final measures. Therefore, to measure perceived credibility of airlines, eleven candidate items were adopted (Table 9). A total of eight items were adopted from the previous research of Erdem & Swait (1998, 2004); Erdem et al. (2006). Two items adopted based on Keller (2013)’s suggestion to measure likability and one item suggested by an expert.

4.3.3 Differentiation

Differentiation/Uniqueness refers to how a brand is seen as different/distinct from competing brands in the eyes of consumers (Aaker, 1996; Netemeyer et al., 2004). In

other words, to what extent does the consumer believe that the brand offers more benefits than the others (Keller, 2013). Differentiation-perceptions of a brand are linked to the capacity of a brand in terms of charging premium prices or sustaining a price which enables to gain enough profit margin (Aaker, 1996; Netemeyer et al., 2004). Both Aaker (1996) in his Brand Equity Ten framework as a summary measure, and Keller (2013), in the brand equity pyramid as brand judgements, have incorporated differentiation/uniqueness as a component of CBBE. Creating a level of differentiation is regarded as an important factor in terms of creating strong airline brands.

Kotler & Keller (2012) argue that four aspects of differentiation are attractive for consumers; employee, channel, image and service differentiation. Employee differentiation can be provided by well-trained staff who in turn deliver superior service. Service differentiation is related to providing more effective and efficient solutions to customers. The differentiations consist of reliability (on-time delivery etc.), resilience (handling emergencies) and innovative service offerings such as barcodes, information systems. Firms can achieve image differentiation by focusing more on consumers' social and psychological needs. The final aspect is channel differentiation that companies can achieve by making a purchase more simple, enjoyable and rewarding for their customers by improving and designing their distribution channels.

As quoted by marketing professionals in the interviews, two types of differentiation (image and service) could create strong airline brands; a differentiated product or a personality;

> *"There are airlines who have been successful in terms of building brands anchored themselves in the sense of place and embody that in their service. The other, second theme is, there is airline who have very distinctive product offerings, Southwest in the US is a great example of that. It is not really about place-specific brand identity; it is much more about sort of functional (service) attributes the product that is different from the rest of the industry and that used to differentiate themselves."* ***(R5)***

"I think you have to be able to differentiate yourself and it needs to be not necessarily a vastly differentiated product but has a personality that is consistently delivered so that you fall into affinity with that brand." ***(R11)***

Respondent 1 gives West Jet as an example and explains how they created a strong brand through their employee service.

"West Jet created from the beginning a business model that has always been focused on empowering their frontline customers. They have always spent a lot of time talking [about], what tools their frontline employees need to deliver great service. That's point one. And they always have a very consultative and a non-hierarchical model of managing employees that's point two. And historically they have required all employees to receive a small part of their compensation in the stock market which means that every employee in West Jet, is also the owner of the company. Those things have taken all together created success. Let's take JetBlue; they have similarly done very innovative work on empowering frontline employees and developing a participative and collaborative culture." ***(R1)***

The brand itself is seen as a differentiator as quoted below;

"The branding is the very central whole airlines in terms of differentiating from competitors and gives us a distinct personality. We would rely on all our brand essence to communicate very clear messages to our guests. About why they should choose (the airline) over other airlines so it is very important. (…) That's what brand means to us what we use as a business to differentiate ourselves." ***(R8)***

"Brand is how we differentiated ourselves, brand actually is an experience that we offer our customers and consumers." ***(R12)***

"(…) you can also have a really strong brand which stands out. Like I said [before] Air New Zeeland. They do things differently. I think a good UK example, Virgin Atlantic Airways. They kind of set themselves apart from the other [airlines] by

creating a very fun brand. Really creating a personality on their brand so I think if you have a brand that is very likeable just like you know friendships or personalities you come across in your life, I think that becomes memorable and I think that creates the strong brand." ***(R10)***

Achieving a certain level of differentiation either through product/ services or by creating personality is also highlighted as one of the most important factors by the interviewees to achieve a strong brand.

Differentiation theory suggests that a brand needs to be perceived [as] different both to win and to sustain market share since differentiation perceptions give a reason to buy to consumers or to motivate them constantly prefer the brand over competitors or new entrants (Romaniuk, Sharp, & Ehrenberg, 2007). Unique characteristics of a brand give a simplifying heuristic to the consumers to choose a specific brand among competitors. It is also supported that differentiated features of a brand linked with preference and willingness to pay premium price (Netemeyer et al., 2004).

Based on this background, differentiation is conceptualised as a summary measure for airlines to understand how they are seen different from competing brands in the eyes of their passenger. Five candidate items (see Table 9) were adapted from Aaker (1996); Netemeyer et al. (2004) to measure perceived differentiation.

4.3.4 Value

Perceived value is a frequently used component of brand equity scales and customer decision making models (e.g. Lassar et al., 1995; Chen et al., 2018; Park et al., 2004). The ability of a brand to create a value proposition is important since the absence of this proposition is likely to make a company vulnerable to competitors (Aaker, 1996a). Respondent 13 esteemed the value proposition as high as the brand itself;

"Value, in terms of the price I am paying, what I am getting in return. That could be everything from hard elements of the product to the softer elements to the service. Brand equity comprises all these elements in the mind of the customer.

But the price I am paying that's the value I am getting. I think this is a brand." ***(R13)***

"Something I didn't mention, I should have done, is value for money, so the extent to which customers think that the price that they paid was rapid or they got better value than the amount. That is very important to (The airline). (…) So, value is a very important measure." ***(R3)***

Respondent 6 emphasises the importance of value proposition for low-cost airlines as quoted below;

"I had broken down a couple of buckets. The first bucket is a kind of passenger, customer right. What I find useful to measure is Net Promoter Score then perceptions of quality of service that is cost. Value for money. It is typically for low-cost airlines." ***(R6)***

Aaker (1996) questioned whether the perceived value is different from the perceived quality construct. However, he concluded that it might be relevant for some brands more than perceived quality since some brands positioning their brand on delivering low-price. Therefore, he included perceived value as a separate component of CBBE on his Brand Equity Ten framework. Contrary to Aaker (1996), Keller did not advocate perceived value as a distinct component of CBBE neither in his initial conceptualisation of CBBE (e.g. Keller, 1993) nor in his brand equity pyramid (e.g. Keller, 2013). Various research in a hospitality context and product-based research also advocated perceived value as a distinct component of CBBE (e.g. Boo et al., 2009; Lassar et al., 1995; Netemeyer et al., 2004; Tasci, 2018).

In consumer behaviour research, perceived value has been an important concept. Various definitions of value and conceptualisations are available in the marketing literature. Dodds, Monroe, & Grewal (1991) conceptualised value as a trade-off between perceived quality and sacrifice. Zeithaml's (1988) definition of "perceived value is the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given" has been widely accepted.

Zeithaml (1988) examined value creation in a means-end approach where she argues that perceive quality is the driver of perceived value which in turn directly drives purchase intention. Means-end chain theory helps to explain the relationship between perceived value and the other components of CBBE where perceived value is regarded as higher level of abstraction of any attributes or benefits of the brand (Netemeyer et al., 2004)

Perceived value is a frequently used concept in airline customer behaviour research. It is sometimes conceptualised as service value (e.g. Chiou & Chen, 2010; Park et al., 2004), and customer value (e.g. Brodie, Whittome, & Brush, 2009; Chang & Yang, 2008) and sometimes as perceived value (Chen et al., 2018; Forgas et al., 2010; Han et al., 2014; Zins, 2001). Despite the different denomination, generally, Zeithaml's (1988) definition as the trade-off between "what is given and what is received" is adopted. The positive relationship between service quality and perceived value and in turn behavioural loyalty also is confirmed in the airline customer behaviour research (e.g. Brodie et al., 2009; Chen, 2008; Park et al., 2004).

Therefore, Zeithaml's (1988) definition is adapted and perceived value conceptualised as airline passenger's overall assessment of the utility of service based on perceptions of what is received and what is given. Seven potential items to measure perceived value were adopted from Chen (2008); Lassar et al. (1995); Netemeyer et al. (2004) (Table 9).

4.3.5 Loyalty/Satisfaction

Loyalty management is one of the key aspects of marketing. Particularly understanding the main reasons behind the loyalty may help practitioners to improve the customer retention rate. The ultimate loss of customers or reducing buying behaviours of customers leads to reduced sales volumes which in turn requires the attraction of new customers through concentrated marketing efforts (Zins, 2001).

Oliver (1999) theorises customer loyalty into four stages: cognitive, affective, conative and action loyalty. In the first stage loyalty, attribute level information about a brand available to the consumer may create preference of a brand among alternatives. In other

words, loyalty at this stage is based on brand beliefs and its level is very low. In the affective phase, customers' liking or attitude to the brand emerges based on cumulative satisfactions revealing previous usage experience. At this stage of loyalty – like cognitive loyalty – the customer may switch from the brand. Conative loyalty or behavioural intention is created based on repeated positive affect. In this phase, customers hold deep commitments to the brand which is similar to motivation. This commitment is an intention to buy the brand. In the final phase, all these intentions translate into behaviour.

Similarly, Dick & Basu (1994) explain customer loyalty through repeated patronage and relative attitudes where attitudes are driven – or may play role in defining the attitude – by cognitive (brand beliefs), affective (feelings states) and conative (behavioural intentions) antecedents. These attitudes, in turn, affect patronage behaviour.

Similarly, Keller (2013) emphasises on the multi-stage aspect of loyalty, who explains this multi-staginess of loyalty through a brand resonance construct. In brand resonance, the first step is loyalty, then attachment, community and finally, engagement. Aaker (1996) argues the strategic and tactical benefits of segmenting loyal customer groups and he suggests that a market can be divided into five groups: noncustomers, price switchers, the passively loyal, fence-sitters (indifferent between two brands) and the committed. Various definitions and categorisations of loyalty are available however, they can be mainly categorised in behavioural approaches, attitudinal approaches and composite approach including both attitudinal and behavioural elements (Vlachos & Lin, 2014).

Rundle-Thiele & Bennett (2001) argues that attitudinal loyalty measures are more suitable for services because of the specific characteristic of services (i.e. intangibility) that customer perceives more risk in service consumption than products which increases the likelihood to be loyal to a brand. They argue that behavioural measures may be more appropriate in the product markets because of market stability, low involvement and risk and high switching whereas in the services, markets are unstable where consumers seek for established brands because of high involvement and high

risk. Based on behavioural loyalty, most of the consumers may be considered loyal even though they may have the intention to change the service in the near future. Attitudinal measures (intentional loyalty)may be more useful to understand the loyalty of service customers and might be a better predictor of future loyalty. Therefore, affective and conative levels of loyalty may be more appropriate to measure service loyalty (de Chernatony et al., 2004).

The interview results also demonstrate that airlines use affective (i.e. satisfaction) and conative (attitudinal) measures (i.e. willingness to recommend) of brand loyalty. Four types of measures are revealed from the interviews to understand passenger loyalty and/or satisfaction. These are satisfaction, willingness to recommend, willingness to purchase and willingness to pay a price premium.

4.3.5.1 Satisfaction

Satisfaction plays a major role among outcomes of marketing activities because the profits are generated by satisfying consumer needs and wants. It, therefore, contributes to the relationship between the experiences revealed from the purchase and/or consumption, and post-purchase behaviours or attitudes such as brand loyalty, repeat purchase and attitude change (Churchill & Surprenant, 1982).

> *"We have sort of quite interlinked model. We also connected into customer experience, so we measure customer satisfaction which links into brands perceptions."* ***(R3)***

> *"NPS is the overall metric. I also look at the satisfaction, likelihood to use again, perception of value for money, then what I do is I look at the elements of the journey we measure it."* ***(R9)***

Oliver (1997 p. 8) defines overall satisfaction as *"a judgement that a product or service feature or the product or service itself, is providing a pleasurable level of consumption-related fulfilment, including levels of under or over fulfilment"*. His approach for customer satisfaction has widely accepted in the literature who express customer satisfaction as a function of expectation and expectancy disconfirmation. Overall

satisfaction can be assessed as the cumulative of the satisfactions originating from various product and/or service attributes (Churchill & Surprenant, 1982). Oliver, (1993) conceptualise satisfaction as attribute-based satisfaction and overall satisfaction. Respondent 13 also highlights the attribute level satisfaction together with broad customer satisfaction;

> *"We rely heavily on satisfaction scores, customer satisfaction as well. We have just introduced Net Promoter Score recently. And along with the broad customer satisfaction, we have different customer satisfaction scores along the touchpoints (…) multiple areas but all measures satisfaction."* ***(R13)***

Satisfaction is a very powerful measure, particularly for services where loyalty tend to occur as a cumulative result of the customer's experience (Aaker, 1996). Aaker (1996) treat satisfaction (liking) and loyalty interchangeably and argues that satisfaction is a direct measure of the customer's willingness to stick to a brand.

The interwoven link between loyalty and satisfaction is understood by both academics and practitioners and their relationship that satisfaction does not completely convert into loyalty whereas loyal customers are mostly satisfied (Oliver, 1999). Although Oliver (1999) argues that satisfaction and loyalty are different constructs, and these constructs are assumed to be discriminately valid in the service research context, there is very little empirical evidence to prove this argument (Bennett & Rundle-Thiele, 2004). Dimitriades (2006) argues the distinctiveness of satisfaction and loyalty in the service context. In their research on four service settings: financial services, retailing, entertainment and transportation services, they did not establish discriminant validity between satisfaction and attitudinal loyalty. Similarly, Kos Koklic et al. (2017) reported a lack of discriminant validity between satisfaction and intention to recommend in their research on low-cost and full-service airlines.

Satisfaction is advocated in service-based brand equity research (e.g. de Chernatony et al., 2004; Grace & O'Cass, 2005; Tasci, 2018). Satisfaction has not been used in airline customer-based brand equity research. However, it is a frequently used measure airline

passenger behaviour research that some authors conceptualise it as encounter specific judgements (i.e. Park et al., 2004), some of them used overall fulfilment response (i.e. Curras-Perez & Sanchez-Garcia, 2016; Curry & Gao, 2012; Han et al., 2014; Kos Koklic et al., 2017; Zins, 2001). Eleven items were adopted to measure satisfaction from Oliver (1997) (Table 9).

4.3.5.2 Willingness to Recommend / Net Promoter Score (NPS)

Willingness to recommend has frequently been used in the literature to measure airline passenger loyalty. However, in practice, it is used slightly different. Traditional willingness to recommend question is converted into a non-complex number to be communicated easily in the business.

Reichheld (2003) suggests that Net Promoter Score (NPS) is the most reliable measure of customer satisfaction and loyalty. The NPS is calculated based on a customer's ratings from 0 to 10 in a Likert Scale with a question measuring the customer's willingness to recommend. Reichheld (2003) argues that NPS is a strong loyalty indicator since customers put their reputations on the line. He argues that the customer takes that risk only if they are intensely loyal. It There are three categorisations in the NPS. Detractors are the customers who rate on the scale six or lower, Passives are the customer who rates 7 or 8, and Promoters are customers who rate 9 or 10 in the eleven-point scale. Therefore, the percentage of Promoters is subtracted from the percentage of detractors to obtain NPS.

NPS has been found as useful and is a frequently used measure by airlines which takes place on top of their brand equity measurement system;

> *"We have something in the airlines; I don't know if you heard about it. It is the Net Promoter Score. The NPS is like the measure your customer service, overall everything. For airlines, I think it should be the most important metric." (**R2)***
>
> *"They all are linking with Net Promoter Scores; all individual elements will make up the net promoter score."* ***(R8)***

"We do look at that Net Promoter Score that is an important measure not of the brand but of the manifestation of the brand which is people willingness to recommend. (…) My focus is generally on brand matters only the extends that if people purchase you or recommend you that drives to purchase." ***(R5)***

One item will be used to assess willingness to recommend in the classical test theory (Table 9). NPS will not be calculated in the model.

4.3.5.3 Willingness to Use

This is a commitment and close to motivation which is the intention to repurchase the brand. Consumer desire to repurchase, which might be expected but it is not translated into actual purchase or action (Oliver, 1999).

The measure of "intention to use" an airline is advocated by airlines

"My focus is generally on brand matters only the extends that if people purchase you or recommend you that drives to purchase." ***(R5)***

"NPS is the overall metric. I also look at the satisfaction, likelihood to use again, perception of value for money, then what I do is I look at the elements of the journey we measure it, so I take the answers so then look at, I particularly look for example the importance weighting and of the overall NPS. I look at it by element how important it is driving the overall NPS. I also look at how NPS is made up of different markets." ***(R9)***

"(…) we use recommendation rate, and would you fly again. Specifically, the interaction with the two." ***(R11)***

Three items were adopted from Chen (2008) and Brodie et al. (2009) to measure willingness to use (Table 9).

4.3.5.4 Willingness to Pay More

As a loyalty indicator, price premium refers to the amount of money which a customer is a willingness to pay to a brand in comparison to another brand offering similar or

fewer benefits (Aaker, 1996). Aaker (1996) argues that the price premium would be the best single measure and a summary indicator of the strength of a brand. He also argues that any drivers of brand equity ought to affect price premium, if not any kind of them would provide little value in terms of measuring brand equity. Price premium as a strength indicator of an airline is stated as follow by R10 and R13;

> *"I think there is also a point to be made! An airline with high brand equity that cannot actually command a price premium. They just have a very strong brand! I think that's an issue as well. The point I am trying to make is that the airline brand should be built so that they can actually command its premium that it turns into a financial benefit as well."* ***(R10)***

> *"It is what differentiates us from the other airlines probably a commoditised product so if a brand is strong, in certain countries you can charge a premium over it."* ***(R13)***

Respondent 5 put emphasis on the importance of price premium as a brand equity measurement;

> *"Here are specific things that we tend to measure and care about with relation to the brand are whether consumers are willing to pay more or to choose us over competitors."* ***(R5)***

Intention level measurement of loyalty is highly advocated in the airline passenger behaviour literature (Brodie et al., 2009; Kos Koklic et al., 2017; Park et al., 2004; Zins, 2001). Airline executives also support the attitude level measurement of loyalty. Based on this background, similar to Oliver's (1999) definition, this research defines airline passenger satisfaction as "passengers' overall affective response or pleasurable fulfilment." And for behavioural intention, adopts Fishbein and Ajzen's (1975 p. 12) definition which defines behavioural intention as "one's subjective probability whether someone will act some behaviour or not." Brand premium is defined as the amount of money which a customer is a willingness to pay to a brand with respect to another brand

offering similar or fewer benefits (Aaker, 1996). Four items were adopted from Netemeyer et al. (2004) to measure willingness to pay more (Table 9) .

Table 9 Original candidate questionnaire item pool for reflective constructs

Construct	Items	Reference
Awareness	I know what the XYZ symbol or logo looks like.	Hsu et al. (2012)
	I can recognize X among other competing brands.	Yoo & Donthu (2001)
	When I think of (product category), (brand name) is the brand that first comes to mind.	Netemeyer et al. (2004)
	(Brand name) is a brand of (product category) I am very familiar	Netemeyer et al. (2004)
	I am aware of X	Yoo & Donthu (2001)
	Some characteristics of X come to my mind quickly.	Yoo & Donthu (2001)
	I can quickly recall the symbol or the logo of X.	Yoo & Donthu (2001)
	I know what XYZ hotel looks like	Hsu et al. (2012)
Credibility	This brand delivers what it promises	Erdem et al. (2006)
	This brand's product claims are believable	Erdem et al. (2006)
	Over time, my experiences with this brand have led me to expect it to keep its promises, no more no less	Erdem et al. (2006)
	This brand is committed to delivering on its claims.	Erdem et al. (2006)
	This brand doesn't pretend to be something it isn't.	Erdem & Swait (1998)
	This brand has a name you can trust.	Erdem et al. (2006)
	This airline can be trusted.	Expert suggestion
	This brand has the ability to deliver what it promises.	Erdem et al. (2006)
	This brand reminds me of someone who's competent and knows what he/she is doing.	Erdem & Swait (1998)
	How much do you like this brand	Keller (2013)
	How much admire this brand	Keller (2013)
Differentiation	(Brand name) is distinct from other brands of (product).	Netemeyer et al. (2004)
	(Brand name) really stands out from other brands of (product).	Netemeyer et al. (2004)
	(Brand name) is very different from other brands of (product).	Netemeyer et al. (2004)
	(Brand name) is unique from other brands of (product).	Netemeyer et al. (2004)
	This brand is different from other brands.	Aaker (1996)
	This brand is basically the same as the other brands.	Aaker (1996)

Table 9 Original candidate questionnaire item pool for reflective constructs

Construct	Items	Reference
Value	This brand is well priced.	Lassar et al. (1995)
	Considering what I would pay for this brand of television, I will get much more than my money's worth.	Lassar et al. (1995)
	I consider this brand of television to be a bargain because of the benefits I receive.	Lassar et al. (1995)
	Considering the ticket price, I pay for this airline, I believe that the airline offers sufficient services.	Chen (2008)
	The ticket price of this airline is reasonable.	Chen (2008)
	Compared to other brands of (product), (brand name) is a good value for money.	Netemeyer et al. (2004)
	When I use a (brand name) brand of (product), I feel I am getting my money's worth.	Netemeyer et al. (2004)
Satisfaction	I am satisfied with my decision to buy ticket from this airline.	Oliver (1997)
	My choice to fly with this company was a wise one.	Oliver (1997)
	I have truly enjoyed using this company.	Oliver (1997)
	Using this company has been a good experience.	Oliver (1997)
	I am sure it was the right thing to buy ticket from this company.	Oliver (1997)
	This is one of the best products I could have bought.	Oliver (1997)
	Using with this product has been a good experience.	Oliver (1997)
	I am not happy that I used this product.	Oliver (1997)
	This company always fulfils my expectations	Forgas et al. (2010)
	All the contacts made with the company are satisfactory	Forgas et al. (2010)
	In general, I am satisfied with the company	Forgas et al. (2010)
Loyalty/ Willingness to pay premium	The price of (brand name) would have to go up quite a bit before I would switch to another brand of (product).	Netemeyer et al. (2004)
	I am willing to pay a lot more for (brand name) than other brands of (product category).	Netemeyer et al. (2004)
	I am willing to pay ___% more for (brand name) over other brands of (product). (0%, 5%,10%,15%,20%,25%,30% or more)	Netemeyer et al. (2004)
	I am willing to pay a higher price for (brand name) than for other brands of (product).	Netemeyer et al. (2004)
Loyalty/ Willingness to recommend	How likely is it that you would recommend this airline to a friend or colleague?	Reichheld (2003)
Loyalty/ Willingness to use	How likely is it that you will fly this airline again in the future?	Chen (2008)
	How likely you will use this Airline the next time you need to travel.	Brodie et al. (2009)
	How likely you will take more than 50% of your flights with this airline.	Brodie et al. (2009)

4.4 Formative Measures

As discussed in the chapter 3, the ACBBE scale consist of reflective and formative measures. The reflective measures were conceptualised in the previous section. In this section formative measures of ACBBE scale (service performance) will be conceptualised with expert surveys and literature review and the items to measure service performance will be generated by examination of airline passenger reviews on social media.

4.4.1 Service Performance

Service performance can be described as how airlines meet the needs of customers. Marketing professionals see customer experience and service quality as one of the most important aspects of an airline brand as is highlighted by the quotes below;

> *"We recognised that the brand is synonymous with quality and premium-ness."* ***(R13)***

> *"I think branding starts from customer service, excellence in the customer service is the factor building brand. All that I mention except for Spirit, they are really focus on experience and customer service. And that's the brand all about."* ***(R2)***

Two aspects of customer experience are underlined – physical service attributes (hard product) and customer-employee interaction or employee service delivery. The latter is viewed as being more important in driving brand equity.

> *"Employees (…) basically translates the brand into an experience or translate the brand into product and services. (…) They may have the most attractive uniform, they may have the best crew, but all take to ruin the perception and create negative brand associations is, one [poor]member!"* ***(R4)***

> *"I think it is a certain degree of collaboration with frontline employees to make sure that's delivered. It is also frontline employees' excellent initial training and periodically recurrent training service delivery. Of course, beyond that aspect, there is a hard product aspect prominently on board you know comfortable seats these kinds of things. I have really been defining brand really closer to the human aspect or people aspect."* ***(R1)***

Various service performance attributes including hard service attributes, and softer elements of customer experience like employee-customer interaction were incorporated in the brand equity measurement systems as stated below;

> *"(…) We look at 40 different customer touchpoints so everything from a telephone conversation, social media interaction, travel shop, interaction on board the aircraft, airport, check-in, security. We have got 40 different measures across the business which allows us actually track performance as to the KPIs against."* ***(R11)***

> *"Of course, the most important thing is the service, the carrier provides. I don't mean just service in flight, the cabin crew service but also on the ground (…) so the overall experience for service, everything else in terms of the product, the quality of materials. Everything goes into how people perceive the brand and the product."* ***(R13)***

> *"We use those scores (passenger ratings) absolutely to determine how we are actually performing in terms of punctuality, (…) friendliness, in-flight service you know all those customer experience from the time you booked your tickets, checked in to the arrival experience. Anything we claim to do well, we would actually check all of those in the follow-up scores."* ***(R8)***

Some respondents suggest that the set of measures of customer experience varies based on different business models, markets and segments because of inherent differences of the airline product.

> *"I think, different parts of the world value different things, so for example passengers from China, I know some passengers from Korea certainly value that duty-free offering onboard the airline. Passengers from China and India value food. Passengers from Europe and North America value on-time performance so you need to figure out what is your market values and then focus on that. Because it doesn't matter you have the best shopping in the world, nobody in the US cares about it."* ***(R7)***

Different elements drive customer decision making for the long-haul and short-haul markets, as quoted from respondents 3 and 8;

> *"It can really depend on which you are talking about: short haul or long haul, so for short-haul; there are a lot of rational elements for customer choice and rational behaviour your product if you like; where are you fly, how often you fly, which routes you serve, the time of day you serve them and price that you sell them out. (...) There is a broader set of decision-making criteria for the long haul. (…) I think they mean different things in different segments of the market."* ***(R3)***

> *"People can put up short 2 hours flight in terms of seat comfort or legroom but once they are going on 5 hours plus, they have different expectations in terms of comfort level."* ***(R8)***

Respondent 9 focuses on only one factor to assess satisfaction for the low-cost airline;

> *"I just do the on-time performance. I literally just do the on-time performance. In the low-cost airline industry, it is by far in the way the most significant factor of driving satisfaction and NPS. Don't let anyone tell you different."* ***(R9)***

The customer experience measures differ based on cabin class as well, as commented by respondent 12;

> *"We are differentiating our measures, particularly in customer satisfaction measures, both in terms of measuring expectation and satisfaction because the product that we offer is different for business and economy passenger."* ***(R12)***

The respondents suggest two aspects of customer experience that affect service performance; softer elements of service and hard product aspects. They are crucially important bottom line factors building the brand. However, most of the respondent's emphasis is on the employee side of customer experience which creates most of the brand. Service performance/quality is also consistent with empirical research in the airline customer behaviour literature examining it, to understand consumer decision making (i.e. Zins, 2001; Park et al., 2004; Mikulić and Prebežac, 2011) and is also

examined in airline brand equity research (Chen and Chang, 2008; Chen and Tseng, 2010).

4.4.2 Data Mining Study

4.4.2.1 Results

A Latent Semantic Analysis (see section 3), was applied to airline passenger reviews in order to identify service attributes that led to customer satisfaction and dissatisfaction for LCC passengers and FSC economy and premium passengers. The results of the LSA are shown in Table 10 and Table 11. These tables include attributes created from positive (Table 10) and negative (Table 11) reviews, the high-loading terms associated with each factor, and a ranking (singular values) of satisfaction and dissatisfaction attribute based on airline business model and service class. The singular values (Eigenvalues) demonstrate the importance of each factor in descending order (Sidorova et al., 2008).

For each passenger group, factors are labelled both by examining the associated terms and the passenger reviews falling under a particular factor. Then the extent of each factor labels is explained in the section below. The singular values refer to square roots of eigenvalues (Landauer et al., 2004) and demonstrate the importance of each factor in descending order.

Key Service Attributes for Full-service Carriers

Economy Cabin Passengers (Positive reviews)

- *Factor 1 (Friendly-helpful staff):* In this factor, passengers express the friendliness and helpfulness of the staff and this is linked with the greatness of service. The main expressions explain the factor are; "great_service", "friendly_staff".
- *Factor 2 (Hassle-free customer experience and care):* This factor is about the overall assessment of passenger journey ranging from check-in, airport, connecting flights, baggage-claim and boarding.
- *Factor 3 (Comfortable seats and legroom):* Passengers put particular attention to the comfort of seats and the sufficiency of legroom.

Table 10 Factors (attributes) related to customer satisfaction and associated terms

Factors	Singular values	High loading terms
FSCs (Economy cabin passengers)		
F1 (Friendly-helpful staff)	4.073	Great, great_service, staff, great_staff, service, great_experience, experience, friendly, great_flight, staff_friendly, professional, friendly_staff, excel, travel, helpful, polite
F2 (Hassle-free customer experience and care)	2.020	Crew, check, airport, connect, time, arrive, good_food, connect_flight luggage, cabin, flight, board, hour, air, book, cabin_crew, plane, get, journey, destination, customer_service, efficient
F3 (Comfortable seats and legroom)	1.887	Good, comfortable, seat, nice, great, good_service, seat_comfort, entertainment comfortable_seat, leg, excel, room, leg_room, comfortable_flight, space
FSCs (Premium cabin passengers)		
F4 (Service value)	2.372	Money, worth, recommend, value, upgrade, nice_food, class, crew, trip, flight, value_money, airline, outstanding, entertainment, extra, staff, upgrade_class, priority
F5 (Friendly-helpful staff)	1.335	Respectful, aspect, exceptional, nice, helpful, happy, airline, friendly, staff, flight_staff, friendly_helpful, efficient, friendly_staff, flight, quality
F6 (Food and beverages)	1.213	Menu, nice, style, western, standard, feel, nice_food, meal, choice, food, love, dish, super, vegetarian, plenty, food
F7 (In-flight service)	1.199	Good, excel, great, wine, food, service, good_service, entertainment, seat, bed, on-board, comfort, food_wine, plane, great_service, flat, service_good, smile
Low-cost airline passengers		
F8 (Low-price)	2.851	Cost, time, price, low, low_cost, airlin, company, cheap, budget, board, plane, check, air, service, travel, budget_airline, paid, money, good_price
F9 (Friendly and courtesy of staff)	1.715	Love, friendly_staff, frill, accommodate, easy, friendly, staff, efficient, polite, found, hostess, get_good, smile.
F10 (Good cabin crew service)	1.613	Attendant, excel, enjoy, great, crew, made, trip, kind, flight_attendant, nice, person, flown, love, rate, funny, flight, service, flight_crew, excel_ service

Economy Cabin Passengers (negative reviews)

- *Factor 1 (Uncomfortable seats and poor legroom):* The main words associated with this factor are; “legroom”, “uncomfortable”, “seat”. In this factor, insufficient leg room causes comfort problems which is the most important factor for dissatisfaction of economy passengers. Seat comfort is also found in Skytrax research among one of the top customer complaints (Skytrax, 2015).
- *Factor 2 (Baggage & flight disruptions):* Delays and cancellations have always been a quite important issue for airlines. Passengers showed their level of dissatisfaction in the reviews, particularly for the delays resulted in missing connecting flights.

- *Factor 3 (Unprofessionalism of staff):* This factor mostly explains the lack of occupational competence of staff, particularly cabin crew. The primarily associated words are; “language_barrier”, “knowledge”, “require”.
- *Factor 4 (Poor service and food & beverages):* This factor is about overall customer service experience where prominently food & beverages-related complaints take place. "bad_service”, “food”, “dirty”, “beer” are particular terms related to the factor.

Premium Cabin Passengers (positive reviews)

- *Factor 4 (Service value):* This factor corresponds to the cost-benefit ratio. In this factor, the passenger compares the amount of extra money paid for the premium product with the overall worth of experience or service.
- *Factor 5 (Friendly-helpful staff):* Similar to economy passengers, staff attitudes are quite important for the premium passenger to establish satisfaction with an airline.
- *Factor 6 (Food and beverages):* In this factor, passengers emphasise the availability of different food options. “Menu”, “choice”, and “plenty” are the main words associated with the factor.
- *Factor 7 (In-flight service):* This factor corresponds to the overall inflight service assessment of passenger ranging from core aspects; seats, IFE and food, to customer care and attentiveness of the staff.

Premium Cabin Passengers (negative reviews)

- *Factor 5 (Unprofessionalism of staff):* The main emphasis of this factor is on inappropriate staff attitudes towards passengers.
- *Factor 6 (Uncomfortable seats and old aircraft):* Customer complaints that fall under this factor are about overall seat comfort and the interior ambience of aircraft. “Old”, “seat”, “plane”, “interior”, “recline” are the words related to the factor.
- *Factor 7 (Baggage & flight disruptions):* This factor corresponds to baggage and flight disruptions similar to F2 for the economy passenger

Table 11 Factors (attributes) related to customer dissatisfaction and associated terms

Factor	Singular values	High loading terms
FSC (Economy cabin passengers)		
F1 (Uncomfortable seats and poor legroom)	3.382	Seat, leg, entertainment, economy, uncomfortable, poor, room, leg_room, comfort, old, plane, class, space, legroom, cabin, aircraft, cramp
F2 (Baggage & flight disruptions)	1.914	Luggage, delay, day, customer, bag, connect, call, told, hour, cancel, book, airport, air, help, check-in, customer_service, lost, wait, miss
F3 Unprofessionalism of staff)	1.796	Crew, staff, knowledge, require, crew, staff, cabin_crew, flight_crew, crew_member, apology, airways, language_barrier, major, inconvenient, ground_crew, air_hostess
F4 (Poor service and food & beverages)	1.661	Bad flight, bad_food, bad_service, food, service, bad_bad, average, avoid_future, dirty, future, avoid, attendant, beer, control, flight_attendant
FSC (Premium cabin passengers)		
F5 (Unprofessionalism of staff)	2.169	Respect, passenger, cancel_flight, communication, paid, curtain, separate, steward, paid_business, economy_passenger, hassle, treat, unacceptable
F6 (Uncomfortable seats and old aircraft)	2.044	Old, seat, plane, expect, interior, business_class, comfort, clean, bad, bed, quality, poor, limited, suffer, terrible, aircraft, leg, flat, seat_bed, old_plane, recline
F7 (Baggage & flight disruptions)	1.255	Bag, delay, luggage, day, arrive, check, get, told, hour, customer, information, airline, cancel, airport, connection, miss, travel, wait, customer_service, time, board, suffer, worst
Low-cost airline passengers		
F8 (Uncomfortable seats and poor legroom)	2.503	Leg, seat, leg_room, room, comfort, plane, price, low, leg_space, space, expect, paid, choose, book, get, limit, uncomfortable, flight_seat
F9 (Flight disruptions)	1.909	Connect, delay, connecting_flight, unprofessional, avoid, customer, provide, total, airline, layover, customer_service, flight_delay, spent, staff, delay_hour, time, miss_connection, late, service
F10 (Consistent poor service delivery)	1.435	Flown, problem, expect, low, time, huge, mistake, different, life, airline, end, book, budget_airline, crew_member, budget, unfriendly, change, cabin_crew, sign, kid, believe, avoid
F11 (Poor customer care)	1.391	Hour, late, cancel, flight_delay, wait, flight, day, service, minute, airport, experience, bad, arrive, crew, custom, poor, boarding, staff, customer_service, worst, information, communication
F12 (Extra or hidden charges)	1.320	Luggage, book, bag, charge, ticket, euro, service, paid, check, meal, online, full, busy, reserve, baggage, print, show, extra, hand, company, cost, seat

Key Service Attributes for Low-cost Carriers

Positive Reviews

- *Factor 8 (Low price):* Low fares are the main factor that drives passenger satisfaction for LCC passenger. “Cheap”, “price”, “good_price” are the main words associated with this factor.
- *Factor 9 (Friendly and courtesy of staff):* Friendliness of staff is an important attribute for LCC passengers. The “staff” in this factor correspond to all staff from check-in to arrival.
- *Factor 10 (Good cabin crew service):* This factor particularly corresponds to cabin crew, and it evaluates the overall cabin crew service.

Negative Reviews

- *Factor 8 (Uncomfortable seats and poor legroom): “*Legroom” and “uncomfortable” are common words under this factor. Passengers main comfort issue is related to the lack of legroom.
- *Factor 9 (Flight disruptions):* Customer complaints clustering under this factor are mostly about the long waiting time at airports and missing connecting flights because of flight delays and cancellations. This can be seen in the associated terms; “Cancel”, “hour”, “flight_delay”, “spent”, “hour”.
- *Factor 10 (Consistent poor service delivery):* This factor is related to the frustration of passengers in terms of having consistently poor service, particularly staff behaviours are the main reason for the complaints. “Problems”, “expect”, “avoid”, “cabin_crew” are the terms that are associated with the factor.
- *Factor 11 (Poor customer care)* This factor is generally related to flight disruptions, but while the complaint is not related to the disruption itself, it is more about the ability of the airline in terms of providing passenger recovery services and keeping passengers informed. The particular words linked with the factor are; “Experience”, “customer_service”, “worst”, “information”, “communication”.

- *Factor 12 (Extra or hidden charges):* Ancillary fees of LCCs can be very expensive especially if they are not purchased before traveling that cause passenger dissatisfaction such as; seat selection, excess baggage, printing tickets.

4.4.3 Service Performance Conceptualisation

Consumers continuously make decisions about purchasing, choosing and using product and services since they encounter plenty of alternatives emerging from increasing competition and new technologies. These decisions are generally difficult since there is a large amount of information available about these alternatives which emerge from various sources such as advertisement, WOM. Therefore, the customer may not have all information about how a specific product/service performs as a customer generally relies on heuristic (simplified strategies or rule of thumbs) to make choices (Bettman, Johnson, & Payne, 1991). In other words, most of the time, customer do not have all necessary information to make a rational and objective judgement on quality, if they do so, they may not have enough time or motivation to make this assessment. Therefore, they use a small number of cues that they link with quality (Aaker, 1996; Keller, 1993). The main aim of the data mining study was to identify those attribute level key cues (information) that airline passenger uses to assess their experience with the airlines so that they can be integrated into service performance measure.

Grönroos (1984) suggests that perceived service quality is as a result of consumers' view on the two aspects of service: functional and technical quality. Functional quality refers to expressive performance of service (how service is delivered), and technical quality reflects objective performance. This framework is also supported by airline marketing professionals as they focused on two aspects of airline passenger experience and service; physical service attributes (hard product) and customer-employee interaction or employee service delivery. Similarly, the data mining study also revealed two types of attributes which fit very well into this framework. Therefore, the two-factor framework adopted in the previous brand equity research in the hotel, the restaurant industry and retail brands(e.g. Çifci et al., 2016; Nam et al., 2011).

Consequently, this study defines service performance as specific objective and subjective quality assessments of airline passengers. This research adopts "Performance" as a terminology referring dimension or attribute level evaluations of airline passenger, in other words passengers' knowledge rather than their judgements. Therefore, dimension or attribute level evaluations will lead to higher level of abstraction (i.e. perceived value) which in turn will affect behavioural intention (Parasuraman et al., 2005).

The key service attributes revealed from online passenger reviews were incorporated to measure airline service performance for different business models. Corresponding service performance items were created as in Table 12. Eleven items generated for FSCs based on economy and premium passenger reviews and positive-negative reviews. Similar factors revealed from positive and negative reviews were put together to create questionnaire items for FSC and LCC. For example, seat comfort and legroom are the service attributes take place in positive and negative passenger reviews. Therefore, these service attributes were converted into a positive questionnaire item (i.e. this airline comfortable seat and legroom).

This study does not differentiate on service class only examines airlines from the business model level. Therefore, service attributes aiming to measure service performance of FSCs will be evaluated jointly. Similarly, eight items created for LCC including positive and negative reviews. Items were categorised into two groups as technical performance and functional performance.

Table 12 Development of service performance items

Key service attributes	Corresponding items created based on positive and negative reviews.
Service attributes for FSCs leading dis/satisfaction (economy/premium)	**Technical Performance**
Uncomfortable seats and poor legroom	This airline has comfortable seats and legroom.
Comfortable seats and legroom	
Uncomfortable seats and old aircraft	This airline has modern aircraft.
Baggage & flight disruptions	This airline departs and arrives on-time.
Baggage & flight disruptions	This airline delivers baggage on-time.
Food and beverages	This airline serves various food and beverage options.
Poor service and food & beverages	This airline serves high-quality food and beverages.
	Functional performance
Friendly-helpful staff	Employees of this airline are friendly.
Friendly-helpful staff	Employees of this airline are helpful.
Unprofessionalism of staff	Employees of this airline are professional.
Unprofessionalism of staff	
Hassle-free customer experience and care	This airline provides hassle-free customer experience and care.
In-flight service	This airline delivers good in-flight service.
Service attributes for LCCs leading dis/satisfaction	**Technical Performance**
Uncomfortable seats and poor legroom	This airline has comfortable seats and legroom.
Flight disruptions	This airline departs and arrives on-time.
Extra or hidden charges	This airline has acceptable ancillary charges.
Low-price	This airline offers cheap ticket fares.
	Functional Performance
Consistent poor service delivery	This airline cares for its customer when things go wrong.
Poor customer care	
Good cabin crew service	The cabin crew of this airline deliver good service.
Friendly and courtesy of the staff	Employees of this airline are friendly.
	Employees of this airline are courteous.

4.5 Proposed ACBBE Model

By combining expert interviews and the literature, this consequently study proposes a conceptual airline customer-based brand equity model (Figure 10). The model relationships were formulated based on theories on consumer behaviour: means-end approach, differentiation theory, hierarchy of effect approach and Keller's(2001,2013) brand equity pyramid.

Keller (2013), in his brand equity pyramid, defines building blocks of CBBE as a sequence of steps. He suggests that achieving the next step depends on the successful achievement of the previous step. Brand salience (awareness) is located very bottom of Keller (2013)'s brand equity pyramid which is followed by brand performance. Awareness influences brand association formation (Keller, 1993) as well as affects perceptions and attitudes(Aaker, 1996). From this logic, awareness should affect all components of ACBBE; however, the obvious relationship would be awareness and service performance which is in the line of Keller's (2013) brand equity pyramid.

Zeithaml's (1988) means-end approach suggests that product service attributes lead to perceive quality which is the driver of perceived value which in turn directly drives purchase. From this logic, airline service attributes lead to service performance (functional and technical service performance) constructs which in turn drives value which leads to loyalty. In other words, service performance constructs were considered as an exogenous variable which drives higher-order constructs of perceived value and loyalty.

Porter's (1985) differentiation strategy suggests that if a company is expected to charge premium price it needs to be perceived different which can be achieved by positioning itself on the specific attributes and by delivering those specific needs of buyers which in turn rewarded by its customer with a premium price. Keller (2013) also argues that superiority(uniqueness) is critical to achieving an intense and active relationship with customers. From this notion, differentiation perceptions should drive loyalty.

Keller (2013) considers brand credibility as a brand judgement of customers judgements based on brand performance and imagery associations and those judgements lead to brand resonance. Sweeney & Swait (2008) examined brand credibility (as a summary measure of the brand) in the customer relationship management perspective and found that brand credibility increases word-of-mouth and decreases switching behaviours through mediator role of satisfaction and commitment. Corporate credibility influences purchase intention since trustworthiness and expertise perceptions of customers are the information that they use to evaluate the quality of a firm's products/services

(Goldsmith et al., 2000). Therefore, brand credibility should lead to loyalty considering empirical evidence (e.g. Goldsmith et al., 2000; Sweeney & Swait, 2008). In the brand pyramid, the success of the next step is depending on the previous stage, from this logic, service performance (functional and technical) may affect brand credibility judgement. Consumers form brand judgements by considering different brand performances and imagery associations (Keller, 2013).

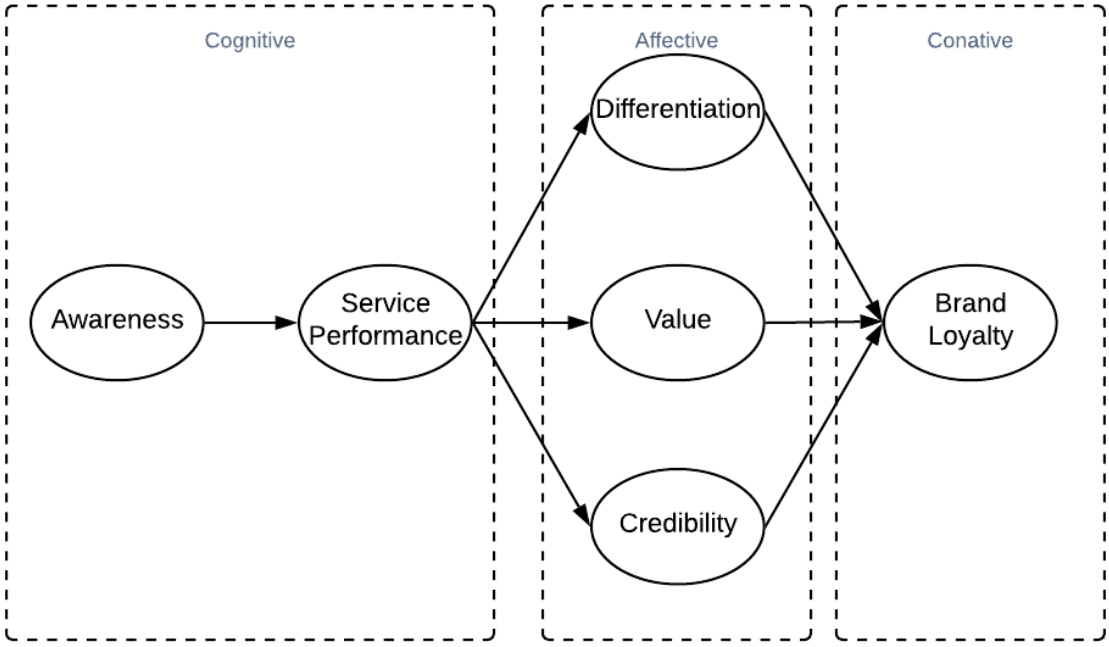
Consumer researchers have suggested various forms of hierarchical models in order to capture brand knowledge structure (e.g. AIDA; awareness, interest, desire, action) (Keller & Lehman, 2006). Lavidge and Steiner, (1961) suggested a Hierarchy of Effect approach to evaluate the effectiveness of advertising which emerged from the classical psychological model which examines behaviour with cognitive, affective and conative components (Lavidge & Steiner, 1961). The hierarchy chain includes six steps ranging from awareness, knowledge, liking, preference, conviction and purchase. Various researchers have advocated the model to understand the causal relationship among the dimensions of brand equity (e.g. Agarwal and Rao, 1996; Keller and Lehman, 2006) (Buil, Martínez, & Chernatony, 2013). Keller & Lehman (2006) argue that customer-level brand equity can mostly capture five aspects generating this hierarchical chain from bottom to top. The first level is awareness ranging from recognition to recall. The second level is associations which include tangible and intangible product/service aspects. The third level is attitudes ranging from acceptability to attractiveness. The fourth level is attachment (ranging from loyalty to addiction) and the top level is action including purchase and involvement such as word-of-mouth).

There are also various commercial versions of brand equity models that use hierarchy aspects of consumer behaviour such as Young and Rubicam's Brand Asset Valuator, and WWP's BrandZ (Keller & Lehman, 2006). The framework seeks to establish the stages that a consumer passes from thinking to decision making which is valuable diagnostic information for managers (Agarwal & Rao, 1996).

Airline customer-based brand equity model is suggested as a diagnostic tool for airlines. In light of the preceding discussion, a hierarchical ACBBE model is proposed (Figure 10).

Its bottom level is awareness which is then followed by service performance reflecting tangible and intangible aspects of airline services. These measures reflect cognitive aspects of brand equity showing the knowledge and belief of airline customer or consumer. The third level is aiming to understand passenger attitudes and or judgements to the service performance which refers to affective state. In the top-level, conative stage, brand intention loyalty is positioned which aimed to measure the different level of loyalty such as satisfaction, willingness to pay more, willingness to recommend.

Figure 10 Potential relationships of ACBBE model



4.6 Summary

In this chapter, first customer-based brand equity dimensions relevant to airlines were identified through expert interviews. Then, ACBBE and its constitutional dimensions were discussed along with the relevant literature and marketing theories. The analysis revealed that ACBBE can be measured with a composite measurement approach containing reflective and formative measurement approaches. In conjunction with measurement approaches, first, all reflective dimensions of ACBBE were conceptualised and candidate items intended to measure the relevant constructs were adapted from the literature. To develop the formative construct of ACBBE – service performance – a further research was conducted. In this research, airline service attributes were identified based on a data mining study on airline passenger reviews and the construct conceptualised with the relevant literature. In the final part of the chapter, an airline customer-based brand equity model is proposed. In the next chapter, the ACBBE model will be empirically tested and its psychometric properties will be established.

5 SCALE DEVELOPMENT AND VALIDATION

In the previous chapter, scale item generation both for formative and reflective scales were explained in detail. In this chapter, the pool of scale items in question are subjected to various qualitative and quantitative scale refinements. Initially, the scale refinement is realised through expert judgements. Then a two-step survey is conducted so that the psychometric properties of the ACBBE scale can be established. In the pre-test study, initial reliability and validity of the reflective scale constructs were assessed through Cronbach's Alpha reliability and Exploratory Factor Analysis. Then, the data obtained from the main survey study was first subjected to further scale refinement for reflective constructs through Exploratory Factor Analysis and Confirmatory Factor Analysis. Next, the reliability and validity examination of the overall measurement model is made. Once the reliability and validity of the ACBBE scale was established, the proposed structural model of the ACBBE scale was examined to highlight the predictive capabilities of the scale.

5.1 Qualitative Scale Refinement (Expert Judgements)

Once the item pool was generated based on previous research, as explained in the previous chapter, the next step is expert judgements for the item pool, which is in line with scale development suggestion by Netemeyer et al., 2003, and DeVellis, 2017. The primary purpose of expert judgements is to maximise the content validity of the scale. Content and face validity of the scale is strongly related to how the construct is defined and to what extent experts agree with the scale constructs and the items reflecting these constructs (Netemeyer et al., 2003). In other words, experts' view on the initial item pool can confirm or disconfirm the definition of the constructs and what each item intended to measure (DeVellis, 2017).

Additionally, expert judgements is particularly useful to obtain insightful comments about why certain items are ambiguous, or the items may be suitable for measuring a specific construct, but there may be issues on its wording or experts may suggest items which are not noticed but related and not included in the item pool (DeVellis, 2017).

This study follows a multi-step approach for expert judgements. First, the initial item pool was given to two academics in the Centre for Air Transport Management in Cranfield University to obtain overall comments about how they are related to constructs and how clear they are in terms of wording. Most of the scale items for the initial pool adopted from previous studies were either developed for measuring brand equity of various product categories, or to measure service brands such as hotels, restaurants, and banks. This adaptation phase may have created a certain level of unclarity, especially on the item wording. Thus, initial expert views were critical.

By considering initial feedbacks, the items were corrected accordingly. Secondly, the item pool was given to an expert panel (two senior academics in the Transport Systems theme in Cranfield University with expertise on airline marketing and two PhD researchers focusing on the measurement of passenger behaviour) to assess further the suitability of questionnaire items for measuring the intended constructs. They were given a definition for each dimension in the scale and several items for each construct. They were asked to assess the representativeness, suitability and wording clarity of the questionnaire items with a three-point scale including “not suitable”, “reasonable measure” and “good measure”.

The aim of this assessment was to bring the item pool to a manageable size. The reflective items (interchangeable items) only were subjected to expert judgement. If there is a full consensus on the unsuitability of items i.e. items which were rated as not suitable, by considering its conceptualisation and by using expert judgements as a proxy, they were considered for removal. Any comments related to items’ redundancy were modified accordingly because questionnaire items adopted to airline context from different studies like tourism, and goods marketing. By considering all suggestions and feedbacks carefully, and construct definition, the final item pool was confirmed. This process reduced the initial item pool, (reflective scale items) from 51 to 29 items. Besides, the 11 formative items for FSCs and eight formative items for LCCs were reviewed by experts in terms of wording, and redundancy. Suggested modifications were made accordingly, but they (formative items) were not subjected to any

elimination since their content validity was established in the previous chapter through the data mining study.

5.2 Passenger Survey Results

Passenger surveys were conducted into two steps: pre-test and main passenger surveys. Initial reliability assessment was made through pre-test survey. Main passenger survey conducted for the assessment of the ACBBE scale. All data sets were first examined in terms of normality and later a number of statistical analysis were carried out.

5.2.1 Normality for Pre-test and Main Passenger Surveys

Normality is the primary assumption of multivariate data analysis which is revealed by benchmarking the shape of data distribution for a specific item against the normal distribution curve. If the difference between the data distribution and the normal distribution is significantly large; it will invalidate the statistical results due to the requirement of normality for F and t statistics (Hair et al., 2014).

Two parameters can be used to assess the magnitude of non-normal data; the sample size and the distribution shape of non-normal data (Hair et al., 2014). Sample size is particularly important because larger samples reduce sampling error which increases statistical capability and decreases the issues resulting from the non-normal data. Non-normally distributed data may have a substantial impact on the samples smaller than 30 observations whilst it may not be considered for a sample size of 200 and/or above observations (Ghasemi & Zahediasl, 2012; Hair et al., 2014).

Kurtosis and skewness are measures used to evaluate the shape of the distribution for normality. Kurtosis gives information about the extent of the peakedness or flatness of the distribution against the normal distribution curve. In other words, it refers to the height of the distribution. Skewness is related to the balance of the distribution. The shift in the distribution to the left or the right demonstrates the skewness of the data which is either positive or negative, respectively. If the data is centred and symmetrical, the data is equally distributed (Saunders et al., 2009; Hair et al., 2014).

Values of skewness and kurtosis should be zero for a normal distribution. However, the values range between +1.96 and -1.96 are enough to establish data normality. However this criterion range increases in the sample size 200 and over in which standard error is marginal to 2.58 and -2.58 and very large sample, this criterion may not be applicable (Ghasemi & Zahediasl, 2012).

All data sets were examined for skewness and kurtosis. There were no skewness issues found in data sets (pre-test, LCCs, FSCs and/or pooled) in the criterion range of + 2.58 and – 2.58. However, two items in the LCCs dataset and seven items in the FSCs dataset did not fall into the range of kurtosis + 2.58 and – 2.58. Items related to awareness and willingness to purchase had larger kurtosis values in both data set than expected that these items made a peak in other words not distributed normally (see appendix J). Some of the items having considerable kurtosis values will be eliminated in the further analysis, therefore considering the large sample size for both data sets which remove detrimental effects of non-normal variables (Hair et al., 2014), nonnormally distributes items may be negligible.

5.3 Pre-test: Passenger Survey

In scale development studies, it is beneficial to refine the initial item pool with a large number of items through a pre-test survey. This is especially beneficial for obtaining initial reliability and validity estimates. In this way, items which do not meet specific psychometric criteria can be eliminated, and the scale may be brought to more manageable size (Netemeyer et al., 2003). A Two-step approach was followed for item elimination in this preliminary study. Firstly, items were evaluated for internal construct reliability (using Cronbach's Alpha) and then an Exploratory Factor Analysis was conducted. Items which do not pass both assessments were considered for elimination. A flexible approach was followed for item elimination because a lower sample size of the pre-test and the aim was to obtain initial reliability and validity estimates. Furthermore, the pre-test study was useful to mimic the primary passenger survey as the responses were collected from the online platform Prolific.

For the initial study, 131 responses were collected for LCCs including, 56 responses for easy Jet, 45 response for Ryanair, and 30 response for Jet2. The sample consisted of 96 female and 35 male responses. For FSCs, 69 responses were collected, including 44 females and 25 males. Airline based response were as follows 42 for British Airways, 20 for Virgin Atlantic, and eight responses for Emirates. A total of 200 responses collected and the EFA analysis and reliability assessment was conducted with pooled data.

Table 13 Pre-test demographics

		Frequency	Percentage
Gender	Female	140	70%
	Male	60	30%
Age	Under 21	19	10%
	21-34	85	43%
	35-44	49	25%
	45-54	33	17%
	55-64	10	5%
	65+	4	2%
Income	Less than £10,000	14	7%
	£10,000 to £29,999	59	30%
	£30,000 to £49,999	67	34%
	£50,000 to £69,999	37	19%
	£70,000 to £89,999	14	7%
	£90,000 to £149,000	6	3%
	£150,000 or more	3	2%
Travel Frequency	Between 1 and 4	191	96%
	Between 5 and 10	8	4%
	More than 10	1	1%
Airlines	Easy Jet	56	28%
	Ryanair	45	23%
	Jet2	30	15%
	Total	**131**	
	British Airways	41	21%
	Virgin Atlantic Airways	20	10%
	Emirates	8	4%
	Total	**69**	

Note: Travel Frequency refers to the number of round trips taken in the past 12 months. Income refers to the household income in the previous year before taxes.

5.3.1 Exploratory Factor Analysis

Initially, the data set was examined for the appropriateness for factor analysis. Sampling adequacy was assessed with Kaiser- Meyer-Orkin (KMO) – measuring the proportion of the variance in the variables – revealing an adequacy measure of 0.92 for the sample. Values close to one shows the adequacy of the data for factor analysis (IBM, 2019). Therefore, the sampling adequacy measure is well above the recommended value of 0.6. Another method used for data suitability for EFA is Bartlett's test of sphericity which demonstrates the existence of correlations among the variables (Hair et al., 2014). The usefulness of the factor analysis for the data is established at $p < 0.05$ (IBM, 2019). The test was significant for the data ($\chi 2 = 3458.667$; $df = 231$; $p \leq 0.00$); finally, the data was checked for commonalities.

A series of Explanatory Factor Analyses (EFA) was applied to the data set and the final six-factor solution was established, as demonstrated in Table 14Table 14. For factor extraction, a principal component technique was used. For factor rotation, the Direct Oblimin technique was used which is one of the oblique rotation methods.

Initially, 29 reflective questionnaire items were subjected to EFA. Hair et al. (2014) suggest that factor loadings higher than ±0.50 are considered significant. An item which has lower loadings (±0.50) on its' intended factor were removed one by one. The factor analysis was repeated until a clear factor structure could be established. Seven items did not load significantly to their corresponding factors. Each questionnaire item coded "IT" together with their item number. (IT3, IT40, IT25, IT18, IT44, IT35, IT36) (full questionnaire can be seen on Table 18).

Table 14 Pre-test Exploratory Factor Analysis

Item Labels	Factor 1 *Credibility*	Factor 2 *Brand Premium*	Factor 3 *Differentiation*	Factor 4 *Value*	Factor 5 *Awareness*	Factor 6 *Brand Intention*
IT9	0.653			*0.284*		
IT10	0.875					
IT16	0.620					
IT11	0.590					*0.414*
IT12	0.682					
IT14	0.534					*0.243*
IT45		0.862				
IT47		0.864				
IT20			0.790			
IT21			0.739			*0.254*
IT22			0.882			
IT23			0.875			
IT28	*0.270*			0.726		
IT30				0.888		
IT31			*0.377*	0.560		*0.234*
IT32				0.510		*0.359*
IT1					0.915	
IT2					0.738	
IT5	*0.257*	*0.363*			0.601	
IT48						0.704
IT49						0.883
IT33	*0.247*					0.613
KMO	0.92	0.92	0.92	0.92	0.92	0.92
Eigenvalues	10.5	2.4	1.3	1.5	0.9	0.8
Percent of variance	48%	11%	7%	6%	4%	4%

Note: "IT" with number (i.e. IT3) represents the questionnaire item labels and full items can be seen on Table 18, Table 19.

5.3.2 Reliability Analysis

Internal consistency was examined with Cronbach's (1951) coefficient Alpha. All construct items were assessed for internal reliability. Three items demonstrated very weak item to total correlation, and they were reducing the reliability of the construct. Two of them were negatively worded/negative meaning items; "This airline is basically the same as the other brands" "I am not happy that I used this airline." Besides, another

item related to awareness “When I think of airlines, this airline is the brand that first comes to mind” demonstrated a very weak item to total correlation.

Table 15 Pre-test item reliability assessment

Construct	Item Label	Item to Total Items Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Awareness	IT1	0.48	0.57	0.66
	IT2	0.63	0.50	
	IT3	0.33	0.72	
	IT5	0.49	0.60	
Credibility	IT9	0.70	0.93	0.93
	IT10	0.76	0.93	
	IT16	0.78	0.93	
	IT11	0.82	0.92	
	IT18	0.82	0.92	
	IT12	0.85	0.92	
	IT14	0.80	0.92	
Differentiation	IT25	0.34	0.91	0.86
	IT20	0.69	0.82	
	IT21	0.77	0.80	
	IT22	0.81	0.79	
	IT23	0.80	0.79	
Brand Premium	IT44	0.40	0.95	0.80
	IT45	0.81	0.55	
	IT47	0.77	0.59	
Brand Intention	IT48	0.69		0.80
	IT49	0.69		
Satisfaction	IT40	0.54	0.90	0.86
	IT35	0.77	0.79	
	IT36	0.83	0.77	
	IT33	0.74	0.81	
Value	IT28	0.68	0.83	0.86
	IT30	0.69	0.83	
	IT31	0.72	0.81	
	IT32	0.74	0.80	

Note: “IT” with number(i.e. IT3) represents the questionnaire item labels and full items can be seen on Table 18, Table 19.

The purpose of including negatively worded/negative meaning items in the item pool is to avoid response bias and to keep respondents honesty. Netemeyer et al. (2003) argue that negatively worded items do no show as high reliability as positively worded items. Therefore, these items may confuse respondents. In terms of factor analysis, while positively worded items incline to load on one factor, the negatively worded/negative meaning ones load high on another factor. Considering their potential to create a problem, the three items (IT3, IT40, IT25) were removed from item pool since these items neither provided internal reliability nor loaded enough to appear in the factor analysis. The remaining items were kept for further assessment for the main study. Although overall satisfaction items did not create a separate factor solution, they were kept for further assessment in the main study.

All in all, the pre-test enabled to assess the initial reliability and factors structure of the scale and allow to identify items creating problem.

5.4 Main Study: Passenger Survey Results

Table 16 demonstrates the demographic characteristics of the LCC and FSC samples. As is seen, the sample distributed well between male/female respondents. However, female respondents are slightly more than males for both groups. In terms of age distribution, the 21-34 age group constitutes 42% of low-cost carriers' passengers, whereas this group constitutes 46% of full-service carrier passengers. Overall, there are no striking differences between gender, age, and income for both groups. In addition to general demographics, travel-specific demographics were collected as well. For both passenger groups the vast majority of the respondents travelled for leisure and visiting relatives and friends purposes. In terms of travel frequency, most of the respondents made one to four return trips within the past year for LCC passenger 97.4%, for FSC passenger 87.6%. A considerably large number of FSC passenger flew in economy class (76%) whereas 24% flew in premium cabins. In terms of the distribution of passengers based on airline brands, 43% of respondents flew with easyJet, 30% of them with Ryanair and 27% of them with Jet 2. For full-service carrier passengers, 64% of them flow with British Airways, 22% of them with Virgin Atlantic and 14% of them with Emirates.

Table 16 Demographic characteristics of the sample

Demographics					
		LCCs		FSCs	
		Frequency	Percentage	Frequency	Percentage
Gender	Female	273	53.7%	237	52.3%
	Male	235	46.3%	216	47.7%
Age	Under 21	47	9.3%	17	3.8%
	21-34	213	41.9%	209	46.1%
	35-44	131	25.8%	114	25.2%
	45-54	71	14.0%	79	17.4%
	55-64	36	7.1%	26	5.7%
	65+	10	2.0%	8	1.8%
Income	Less than £10,000	25	4.9%	15	3.3%
	£10,000 to £29,999	156	30.7%	122	26.9%
	£30,000 to £49,999	168	33.1%	159	35.1%
	£50,000 to £69,999	92	18.1%	73	16.1%
	£70,000 to £89,999	38	7.5%	47	10.4%
	£90,000 to £149,000	27	5.3%	26	5.7%
	£150,000 or more	2	0.4%	11	2.4%
Employment status	Full-Time	282	55.5%	269	59.4%
	Part-Time	119	23.4%	94	20.8%
	Unemployed (job seeking)	32	6.3%	20	4.4%
	Not in paid work (e.g. homemaker, retired)	34	6.7%	37	8.1%
	Other	28	5.5%	15	3.3%
	Due to starting a new job within the next month	8	1.6%	10	2.2%
Travel purpose	Leisure	383	75.4%	265	58.5%
	Leisure, Visiting friends and relatives	65	12.8%	76	16.8%
	Visiting friends and relatives	29	5.7%	32	7.1%
	Business, Leisure	12	2.4%	38	8.4%
	Business	6	1.2%	15	3.3%
	Business, Leisure, Visiting friends/relatives	5	1.0%	17	3.8%
	Other	5	1.0%	5	1.1%
	Business, Visiting friends and relatives	1	0.2%	2	0.4%
	Leisure, Other	1	0.2%	2	0.4%
	Visiting friends and relatives, Other	1	0.2%	1	0.2%
Travel frequency	Between 1 and 4	495	97.4%	397	87.6%
	Between 5 and 10	12	2.4%	44	9.7%
	More than 10	1	0.2%	12	2.6%

Table 16 Demographic characteristics of the sample

Demographics		LCCs		FSCs	
		Frequency	Percentage	Frequency	Percentage
Travel Class	Economy			343	75.7%
	Premium economy			81	17.9%
	Business-class			23	5.1%
	First-class			6	1.3%
Airlines	Easy Jet	219	43%		
	Ryanair	152	30%		
	Jet2	137	27%		
	Total	**508**			
	British Airways			289	64%
	Virgin Atlantic Airways			100	22%
	Emirates			64	14%
	Total			**453**	
Total					**961**

Note: Travel Frequency refers to the number of round trips taken in the past 12 months. Income refers to the household income in the previous year before taxes.

5.4.1 Exploratory Factor Analysis (EFA)

Three datasets were generated for factor analysis. First the FSC and LCC samples were examined for EFA individually, and then both datasets pooled and analysed together. The main purpose was to establish a clear factor structure in which constructs clearly discriminate and identify items which sufficiently load onto the intended factor. In this way, cross-service/product level metric equivalence can be achieved. Initially, the data sets were examined for the appropriateness for factor analysis.

Sampling adequacy was checked (similar to pre-test) with Kaiser- Meyer-Orkin (KMO) revealing an adequacy measure of 0.94 for the FSCs sample, 0.94 for the LCCs sample and 0.95 for pooled data. Values close to one shows the adequacy of the data for factor analysis (IBM, 2019). Therefore, the sampling adequacy measure is well above the recommended value of 0.6 for both data sets. Another method used for data suitability for EFA is Bartlett's test of sphericity which demonstrates the existence of correlations

among the variables (Hair et al., 2014). The usefulness of the factor analysis for the data is established at $p < 0.05$ (IBM, 2019). The test was significant for all data sets. FSCs data ($\chi2 = 7743.797$; $df = 231$; $p \leq 0.00$), LCCs data ($\chi2 = 7030.936$; $df = 210$; $p \leq 0.00$) and ($\chi2 = 15047.269$; $df = 231$; $p \leq 0.00$) Finally, communalities also were checked for all items.

A series of Exploratory Factor Analyses (EFA) were applied to the datasets separately and the final six-factor solution established, as demonstrated in Table 17. For factor extraction, maximum likelihood estimation technique was used. The number of factors decided was based on conceptual foundation of the ACBBE scale, eigenvalues, the percentage of variance explained and alternative factor solution (including and excluding one or more factors) (Hair et al., 2014). The optimum number of factors which is reasonably supported by the empirical results of both data sets is the six-factor solution.

Factor rotation techniques were used to facilitate the interpretation of the extracted factors: orthogonal and oblique rotations. In the orthogonal rotation, factors are assumed to be uncorrelated; whereas, oblique rotations allow extraction of correlated factors, therefore, theoretically underlying constructs are expected to be correlated with each other (Hair et al., 2014). In this case, ACBBE dimensions are expected to be correlated to each other, thus the Direct Oblimin technique was used for factor rotation, which is one of the oblique rotation methods.

Table 17: Exploratory Factor Analysis results for the six-factor solution

	Factor 1			**Factor 2**			**Factor 3**			**Factor 4**			**Factor 5**			**Factor 6**		
	Credibility			Brand Premium			Differentiation			Value			Awareness			Brand Intention		
Items	FSCs	LCCs	Pooled	FSCs	LCCs	Pooled	FSCs	LCCs	Pooled	FSCs	LCCs	Pooled	FSCs	LCCs	Pooled	FSCs	LCCs	Pooled
IT9	0.731	0.767	0.708															
IT10	0.804	0.789	0.790															
IT16	0.792	0.828	0.819															
IT11	0.740	0.670	0.706															
IT12	0.846	0.727	0.792															
IT14	0.679	0.606	0.636				*0.206*										*0.233*	*0.211*
IT35	–	0.553	–		*0.225*													
IT36	0.617	–	0.595													*0.204*		*0.292*
IT45				0.814	0.873	0.882												
IT47				0.739	0.839	0.776												
IT20							0.627	0.565	0.638		*0.221*		*0.226*					
IT21							0.530	0.661	0.657									
IT22							0.741	0.848	0.836									
IT23							0.727	0.855	0.832									
IT28										0.538	–	0.500						
IT30										0.836	0.729	0.857						
IT31										0.839	0.661	0.772						
IT32			*0.231*							0.596	0.606	0.541						
IT1													0.699	0.618	0.669			
IT2													0.672	0.769	0.724			
IT5													0.617	0.453	0.539			
IT48		*0.388*	*0.273*													0.645	0.512	0.587
IT49																0.724	0.570	0.605
Eigenvalues	11.2	9.4	10	0.8	1.8	1.8	1.9	2	1.9	1.0	0.8	1.4	1.6	1.1	0.8	0.7	0.7	0.7
Percent of variance	51.0%	44.0%	47.0%	4.0%	9.0%	8.0%	9%	9%	8.0%	5%	4%	6%	7%	5%	4%	3%	4%	3%

Note: "IT" and number represents questionnaire items and for full items see Table 18,Table 19. FSC= full-service carrier sample. LCC= low-cost carrier sample.

Initially, 26 reflective items were subjected to EFA. Hair et al. (2014) suggest that factor loadings higher than ±0.50 are considered significant. Minimum interpretable loadings are in the range between ±0.30 and ±0.40. Thus, considering these criteria, items having loadings of less than 0.5 to its intended factor and having cross-loadings (having more than one significant loading) of more than 0.3 or above were considered for deletion. The deletion has been done one by one. An item falling into these criteria was removed from the variable list and then the factor analysis repeated until a clear factor structure established. In addition to empirical results, conceptual definition and the comparison of FSCs, LCCs and pooled data sets are considered for item deletion. Five items were eliminated (IT36, IT18, IT33, IT44, IT28) from LCCs data set, and four items were eliminated (IT35, IT18, IT44, IT33) from FSCs data set. In the pooled data four items did not meet the criteria explained above (IT35, IT18, IT44, IT33) (See items on Table 18, Table 19).

Empirical analysis through four different data sets (pre-test, FSC, LCC and pooled data) demonstrates that the same items consistently cross-loads or did not discriminate on a specific factor. Therefore, they can be eliminated confidently. Factor analysis on the four datasets clearly shows that the six underlying factors which have a clear factor structure are consistently established (Table 17). Credibility, value, differentiation, awareness clearly was identified in all the data sets as well as, the loyalty construct was clearly divided into two constructs as brand Intention and brand premium. Items intended to measure overall satisfaction neither generated a separate factor nor loaded into loyalty constructs. However, the final elimination of the remaining items will be realised through a confirmatory factor analysis.

5.4.2 Confirmatory Factor Analysis

Gerbing & Anderson (1988) argue that EFA may be a useful technique for preliminary analysis for scale development, particularly where there is insufficient theory about the relations of an item to its underlying construct. Therefore, the unidimensionality of a construct cannot be tested with the EFA technique. Confirmatory analysis is required for the unidimensionality assessment, for further refinement and for the resulting scales.

Following Gerbing & Anderson (1988), for a further assessment of psychometric properties of the ACBBE scale, confirmatory factor analysis (CFA) is applied to the final EFA solutions (Table 17). Twenty-three items were subjected to CFA for both data sets by using IBM SPSS Amos version 25.

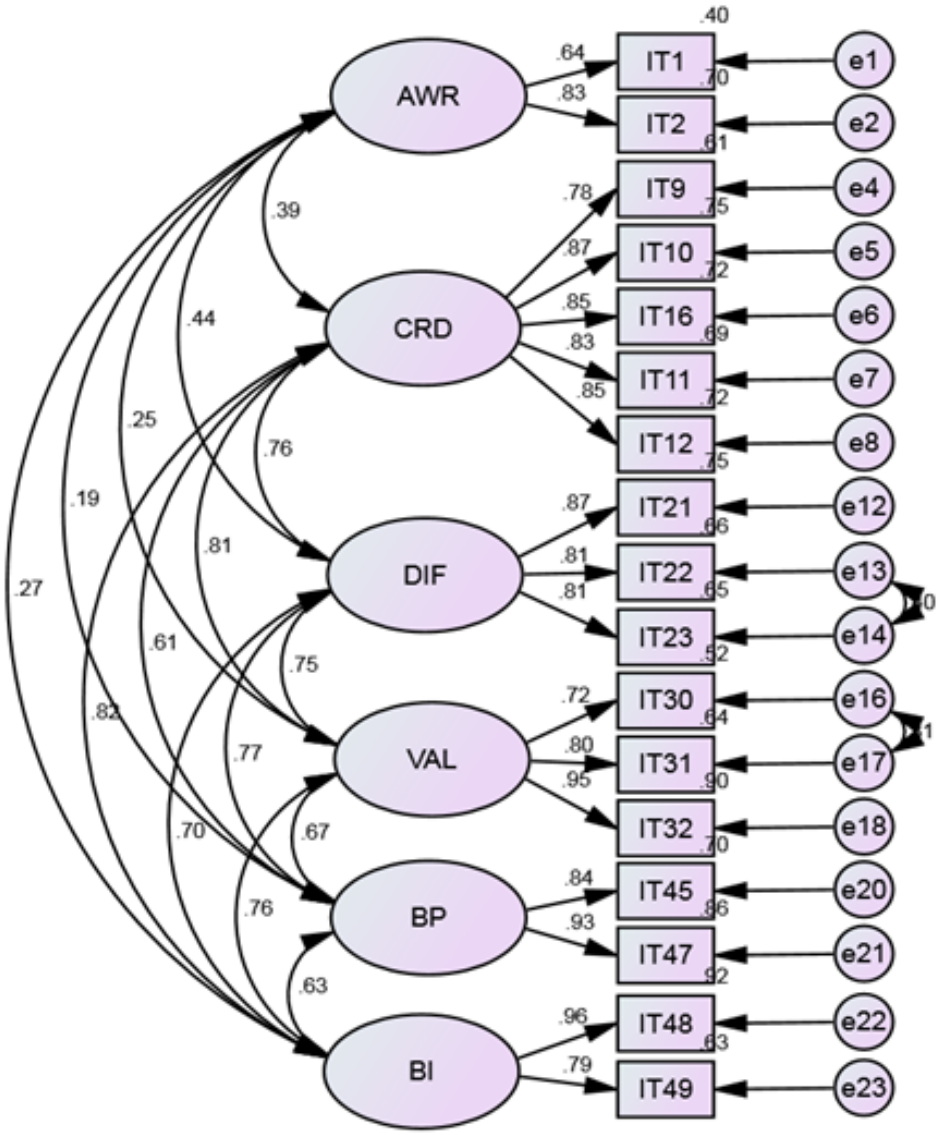
Various fit statistics are used to asses CFA model results. They are mainly (Hooper, Coughlan, & Mullen, 2008):

- X^2 = ChiSquare which assess overall fit. Good model fit should provide an insignificant result p-value > 0.05
- CFI= Comparative Fit Index which compares the sample covariance matrix with the null model. The values equal to 0.95 or greater indicate good model fit.
- RMSEA= Root Mean Square Error of Approximation which demonstrates how well the model fits. Values of less than 0.8 indicate good fit.
- (S)RMR (Standardized) Root Mean Square Residual, which refers to the square root of the difference between the residuals of the sample covariance matrix and the hypothesised covariance model.
- GFI and AGFI= (Adjusted) Goodness of Fit, which is the proportion of variance accounted for by the estimated population covariance. 0.95 or greater for GFI, and 0.90 or greater shows the good model fit
- NFI and TLI= Normed Fit Index or Tucker Lewis Index, which evaluates the model by comparing the χ2 value of the model to the χ2 of the null model. 0.95 or larger values are suggested.
- PCLOSE (close-fitting model)= One-sided test of the null hypothesis. Insignificant results (PCLOSE > 0.05) show a close fit of the model (Kenny, 2015).

The initial model assessment for the FSCs model (based on EFA solution) achieved acceptable fit indices; X^2 = 673.121, df =215, RMR=0.07, GFI =0.89, AGFI= 0.85, NFI=0.92, TLI= 0.93, CFI=0.94, RMSEA=0.07, PCLOSE= 0.00. However, this study aims to develop a robust ACBBE scale, thus to obtain a good model fit, items creating issues were eliminated. The elimination decision was made based on item cross-loadings in the EFA assessment, model fit indices, modification indices, standardised residuals and finally, items were compared for how they behave in both data sets. Items which created issues were removed one by one from the model then the analysis was re-run. The total of five items eliminated; IT5, IT14, IT36, IT28, IT20 (Table 18). This elimination resulted in excellent final model fit indices: X^2 = 215.644, df =102, RMR=0.04, GFI =0.95, AGFI= 0.92, NFI=0.96, TLI= 0.97, CFI=0.98, RMSEA=0.05, PCLOSE= 0.51 (see Figure 11).

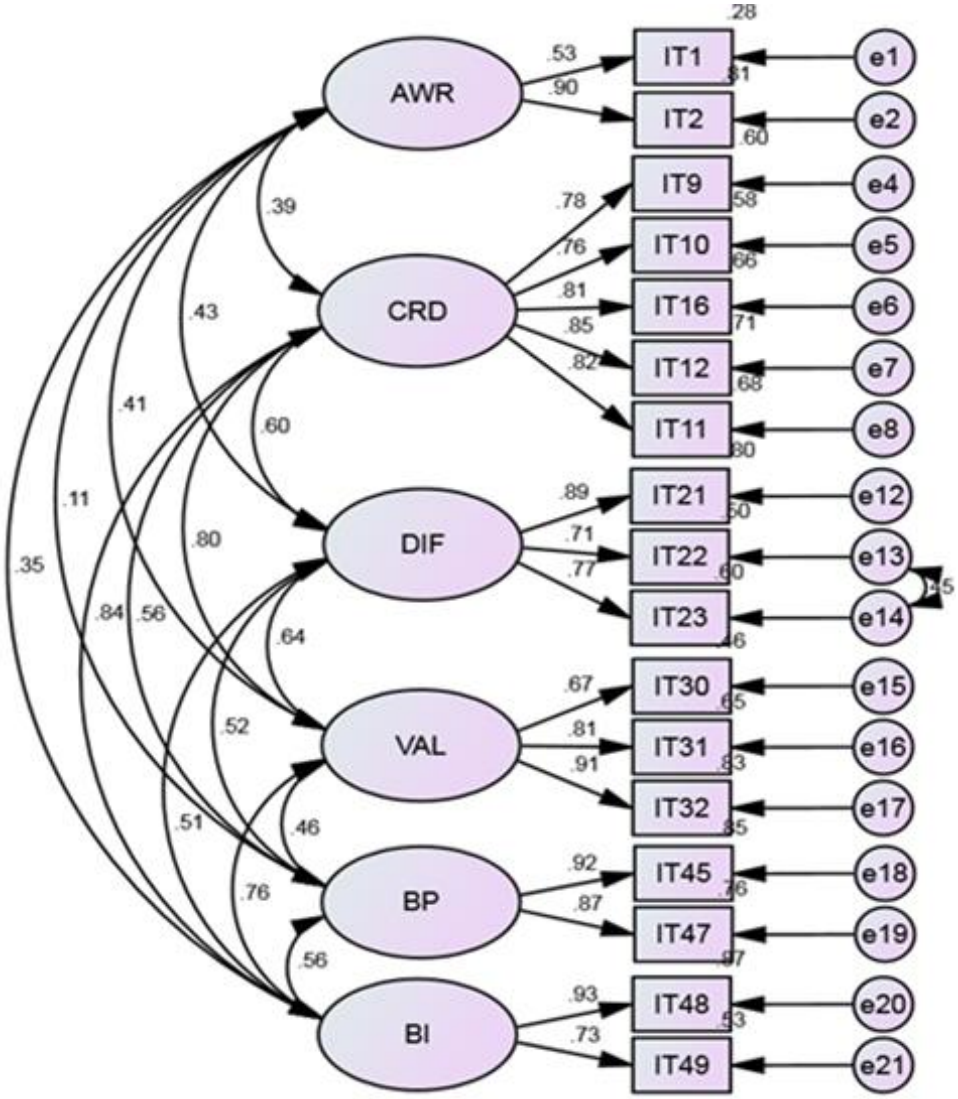
Similarly, the initial model assesment for the LCCs model achieved an acceptable fit: X^2 = 612.595, df =174, RMR=0.07, GFI =0.89, AGFI= 0.85, NFI=0.91, TLI= 0.92, CFI=0.94, RMSEA=0.07, PCLOSE= 0.00. Four items (IT5, IT14, IT35, IT20) (Table 18) were eliminated from the model both by considering crossloadings in the EFA assement, model fit indicies, modification incidies, standardised residuals and conceptual defination of constructs. This elimination improved the model significantly which resulted in the final model achieving a very good fit; X^2 = 277.467, df =103, RMR=0.06, GFI =0.94, AGFI= 0.91, NFI=0.95, TLI= 0.96, CFI=0.97, RMSEA=0.06, PCLOSE= 0.06 (see Figure 12).

Figure 11: Confirmatory Factor Analysis of full-service airlines data



Note: AWR (Awareness), CRD (Credibility), DIF (Differentiation), VAL (Value), BP (Brand premium), BI (Brand intention). Double-headed arrows show correlations. Arrows pointing circle to rectangle show factor loadings. Values on the right top of the rectangular shows squared multiple correlations (R^2). "IT" with number represents the questionnaire item labels and full items can be seen on Table 18, Table 19.

Figure 12: Confirmatory Factor Analysis of low-cost airlines data



Note: AWR (Awareness), CRD (Credibility), DIF (Differentiation), VAL (Value), BP (Brand premium), BI (Brand intention). Double-headed arrows show correlations. Arrows pointing circle to rectangle show factor loadings. Values on the right top of the rectangular shows squared multiple correlations (R^2). "IT" with number represents the questionnaire item labels and full items can be seen on Table 18, Table 19.

Multiple EFA and CFA on the different data sets clearly show that the same items created the problem (cross-loadings, high standard residuals and insufficient model fit) ; item elimination took place by examining both data sets. The final 17 items are measuring six

reflective constructs established for both data sets. Table 18 demonstrates the elimination phase of each item and Table 19 shows final item set for the models.

Table 18 Elimination phases of scale items

Construct	Item Label	Initial Item Pool for Reflective Construct	Elimination Phase
Awareness	IT3	When I think of airlines, this airline is the brand that first comes to mind.	Pre-test
	IT4	This airline is a brand of airlines, I am very familiar with.	Expert Judgement
	IT5	I am aware of this airline.	CFA
	IT6	Some characteristics of this airline come to my mind quickly.	Expert Judgement
	IT7	I can quickly recall the symbol or the logo of this airline.	Expert Judgement
	IT8	I know what this airline looks like	Expert Judgement
Credibility	IT13	This airline doesn't pretend to be something it isn't.	Expert Judgement
	IT14	This airline has a name you can trust.	CFA
	IT15	This airline can be trusted.	Expert Judgement
	IT17	This airline reminds me of someone who's competent and knows what he/she is doing.	Expert Judgement
	IT18	I like this airline.	EFA
	IT19	I admire this airline.	Expert Judgement
Differentiation	IT20	This airline is distinct from other brands of airlines.	CFA
	IT24	This airline is different from other brands.	Expert Judgement
	IT25	This airline is basically the same as the other brands.	Pre-test
Value	IT26	This airline is well priced.	Expert Judgement
	IT27	Considering what I would pay for this airline, I will get more than my money's worth.	Expert Judgement
	IT28	I consider this airline to be a bargain because of the benefits I receive.	EFA/CFA
	IT29	Considering the ticket price, I pay for this airline, I believe that the airline offers sufficient services.	Expert Judgement
Satisfaction	IT33	I am satisfied with my decision to buy a ticket from this airline.	EFA
	IT34	My choice to fly with this airline was a wise one.	Expert Judgement
	IT35	I have truly enjoyed using this airline.	EFA/CFA
	IT36	Using this airline has been a good experience.	EFA
	IT37	I am sure it was the right thing to buy a ticket from this airline.	Expert Judgement
	IT38	This is one of the best airlines I could have flown.	Expert Judgement
	IT39	Flying with this airline has been a good experience.	Expert Judgement
	IT40	I am not happy that I used this airline.	Pre-test
	IT41	This airline always fulfils my expectations.	Expert Judgement

Table 18 Elimination phases of scale items

Construct	Item label	Initial Item Pool for Reflective Construct	Elimination phase
	IT42	All the contacts made with this airline are satisfactory.	Expert Judgement
	IT43	In general, I am satisfied with this airline.	Expert Judgement
Loyalty/Brand Premium	IT44	The price of this airline would have to go up quite a bit before I would switch to another brand of the airline.	EFA
	IT46	I am willing to pay ___% more for this airline over other brands of airlines. (0%, 5%,10%,15%,20%,25%,30% or more)	Expert Judgement
Loyalty/Brand Intention	IT50	How likely you will use this Airline the next time you need to travel.	Expert Judgement
	IT51	How likely you will take more than 50% of your flights with this airline.	Expert Judgement

Note: In the "Elimination" column, the reason for elimination is provided, due to the findings of the pre-test, expert judgement, CFA, or EFA. "IT" with number represents the questionnaire item labels.

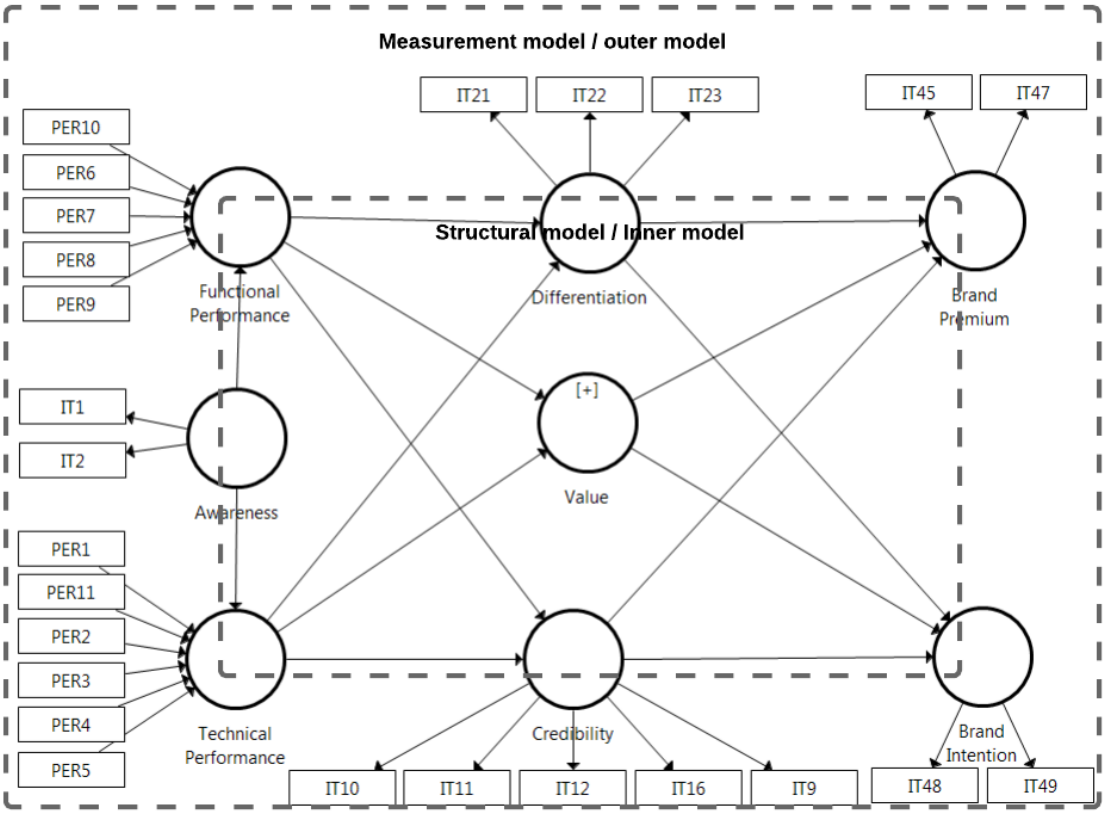
Table 19 Constructs and scale items retained for the model after elimination

Construct	Item label	Questionnaire items
Awareness	IT1	I know what this airline's symbol or logo looks like.
	IT2	I can recognise this airline among other competing airlines.
Credibility	IT9	This airline delivers what it promises
	IT10	This airline's service claims are believable
	IT11	Over time, my experiences with this airline have led me to expect it to keep its promises.
	IT12	This airline is committed to delivering on its claims.
	IT16	This airline has the ability to deliver what it promises.
Differentiation	IT21	This airline really stands out from other brands of airlines.
	IT22	This airline is very different from other brands of airlines.
	IT23	This airline is unique from other brands of airlines.
Value	IT30	The ticket price of this airline is reasonable.
	IT31	Compared to other brands of airlines, this airline is a good value for money.
	IT32	When I use this airline, I feel I am getting my money's worth.
Brand Premium	IT45	I am willing to pay a lot more for this airline than other brands of airlines.
	IT47	I am willing to pay a higher price for this airline than for other brands of airlines.
Brand Intention	IT48	How likely is it that you would recommend this airline to a friend or colleague?
	IT49	How likely is it that you will fly this airline again in the future?

5.5 Assessment of PLS-SEM Results

After establishing the final set of items for each reflective construct and establishing the dimensionality of the reflective constructs, the next step is to evaluate the ACBBE scale with its formative and reflective constructs together. Partial least square - structural equation modelling method (PLS-SEM) was used. PLS-SEM results were evaluated under two steps: measurement model evaluation (Figure 13) which related to the relationship between latent variables and their measurement items, and structural model assessment which concerns with the relationships between latent variables.

Figure 13 Path model of ACBBE scale



Note: Circles represent latent variables. Rectangles represent questionnaire item for the construct. The arrows pointing from/to rectangles to circle shows if the scale is reflective or formative. The lines among latent variables show the hypothesised relationships.

There is a systematic approach to assess PLS-SEM. The primary purpose of PLS-SEM is to utilise the explained variance of the endogenous variables (e.g. R^2 value) in the path

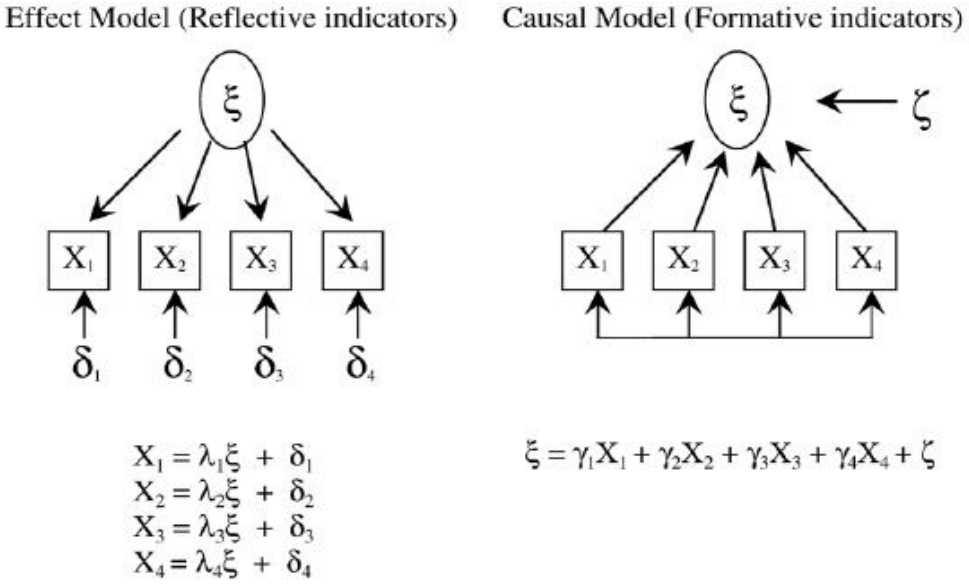
model. The prominent assessment metrics for the measurement model are, reliability, convergent and discriminant validity whilst, explained variance, effect size and predictive relevance and statistical significance are the most important criteria for structural model evaluation (Hair et al., 2017).

5.5.1 Measurement Model Evaluation

The measurement model is a designation of the measurement theory, demonstrating how latent variables are functioned by a number of measures (Hair et al., 2014). There are two methods to measure latent variables which can either be measured reflectively or formatively (Hair et al., 2017) (see Figure 14). The fundamental difference between these methods is that reflective indicators are interchangeable, and an item in the construct can be removed, which does not change the nature of the construct. However, all formative indicators form the construct and removing any item is equal to removing one part of the construct (Diamantopoulos & Winklhofer, 2001; Hair et al., 2017).

In reflective constructs, the latent variable or the underlying construct drives the items have positive and high intercorrelations. However, this may not be the case for formative measures. They may or may not share the same theme or pattern of intercorrelation (Coltman et al., 2008). Therefore, internal consistency or reliability assessments assuming high intercorrelation such as; factor loadings, communality, Cronbach's Alpha, average variance extracted, are not relevant for formative constructs since each item in the construct examine a different part of the construct (Coltman et al., 2008; Petter, Straub, & Rai, 2007). Because of the differences between formative and reflective constructs, their reliability and validity assessment has been done separately in line with previous research (Diamantopoulos & Winklhofer, 2001; Hair et al., 2017, 2019; Sarstedt et al., 2014).

Figure 14 Reflective and formative constructs



Source: Coltman, Devinney, Midgley, & Venaik (2008).

Note: In the reflective model, arrows pointing from the construct to the items indicates the assumption that the construct causes the measurement while, in the formative construct the direction of the arrows from items to construct shows casual (predictive) link (Hair et al., 2017).

5.5.1.1 Reflective Construct Evaluation

Construct Reliability

Measuring internal consistency is associated with Cronbach's (1951) Coefficient Alpha (DeVellis, 2017). Coefficient Alpha is related to the interrelation and the common variance among items aiming to measure a construct. The variance in an item set constituting a construct, include "true" variance reflecting the variance among individual items and "error" variance referring all other variance beyond the true variance. Therefore, Alpha computation is partitioning of the total variance into true and error components (Netemeyer et al., 2003; DeVellis, 2017). There is a long debate about what is a sufficient level for Cronbach's Alpha, although α = 0.70 or above is generally advocated (Netemeyer et al., 2003). Nunnally (1967) suggests that a modest reliability in the range of 0.5 to 0.6 will be sufficient for the early stages of the research (Peter, 1979). Hair et al. (2017) point out a 0.60 – 0.90 range.

As is seen in Table 20, the α value for the constructs, credibility, differentiation, value, brand intention and brand premium are significantly higher for both FSCs and LCCs data (their Cronbach's Alpha values range between 0.80 and 0.92). However, the α values for Awareness in both data sets is slightly lower than the generally referred value of 0.70. However, they still fall into the acceptable level that they are more than 0.60 for both models. Therefore, the value is satisfactory.

The number of items in the construct affects Cronbach's Alpha values significantly. Therefore, it tends to underestimate the internal consistency reliability. Thus, composite reliability (CR) is also recommended for the reliability assessment, which considers the factor loadings of the indicator variables. The composite reliability can be interpreted in a similar way as Cronbach's Alpha, and the values range between 0 and 1. Values of 0.60 and 0.70 are generally acceptable for explanatory research and values in the range between 0.70 and 0.90 considered as satisfactory (Hair et al., 2017). As is seen in Table 20, all constructs were provided satisfactory composite reliability in the range between 0.72 to 0.92 for FSCs model and 0.68 to 0.90 for the LCCs model. Based on two criteria (Cronbach Alpha and Composite Reliability), both models demonstrated satisfactory internal reliability.

Content Validity

Specifying the domain of the construct and generating a pool of items reflecting these constructs and then applying a range of item eliminations phases establishes the face and content validity of a construct (Churchill, 1979). This study used expert interviews, passenger reviews and literature and previous scale development studies to identify the constructs of the ACBBE scale and items reflecting these constructs. A range of item elimination phases follows this. All these research processes establish content and face validity of the scale.

Construct Validity

The assessment of construct validity is taking place at the very centre of the scientific process therefore it is important to understand what the construct really measures

(Churchill, 1979). Analysing the convergence of the different constructs of the scale and divergence among the constructs of the scale was done for validity assessment (Cook and Campbell (1979) in Netemeyer et al. 2003).

Convergent Validity

Convergent validity is related to the correlation among the measures of a construct, and it establishes if there is a significant and strong correlation between the measures of the construct in question (Netemeyer et al., 2003). Convergent validity assessment can be done based on two parameters: factor loadings examination of the indicators of a construct and average variance extracted examination (AVE) (Hair et al., 2017).

Higher factor loadings demonstrate that the items have much in common and generally 0.70 is considered sufficient since the square of standardised factor loadings of an item represents the amount of variance explained by the construct. Generally, a latent variable is expected to explain a significant amount of variance (50%) in the construct item which would equal to $(0.708)^2$. However, it is common for new scales to have factor loadings of less than 0.70 thus loadings as low as 0.50 - 0.60 may be acceptable if there is an additional indicator in the construct (Chin, 1998; Hair et al., 2017).

As it can be seen in Table 20, factor loadings are well above the general rule of thumb for both for LCC and FSC constructs. However, IT1 in the Awareness construct does not exceed the satisfactory cut-off (0.70) for both samples 0.61 and 0.54 for FSC and LCC sample, respectively. However, they are still above the minimum requirement of 0.50 for both constructs. Lower factor loadings for awareness construct are also reported in the literature (e.g. Segarra-Moliner & Moliner-Tena, 2016). Therefore it is recommended to retain items that contribute to the content validity of a construct (Hair et al., 2017).

Table 20: Scale validity and reliability assessment of FSC and LCC models

Construct	Construct Items	Mean		Convergent Validity				Internal Reliability			
				Loadings		AVE		α		CR	
		FSCs	LCCs	FSCs	LCCs	FSCs	LCCs	FSCs	LCCs	FSCs	LCCs
				>0.50		>0.50		>0.60		>0.60	
Awareness	IT1: I know what this airline's symbol or logo looks like.	6.01	6.13	0.610	0.537	0.564	0.529	0.693	0.641	0.715	0.680
	IT2: I can recognise this airline among other competing airlines.	6.21	6.28	0.870	0.877						
Credibility	IT9: This airline delivers what it promises.	5.58	5.50	0.786	0.775	0.699	0.648	0.920	0.902	0.920	0.902
	IT10: This airline's service claims are believable.	5.41	4.97	0.901	0.763						
	IT16: This airline has the ability to deliver what it promises.	5.45	5.25	0.819	0.786						
	IT11: Over time, my experiences with this airline have led me to expect it to keep its promises.	5.40	5.12	0.843	0.844						
	IT12: This airline is committed to delivering on its claims.	5.60	5.22	0.844	0.854						
Differentiation	IT21: This airline really stands out from other brands of airlines.	5.07	4.62	0.924	0.907	0.729	0.691	0.891	0.870	0.890	0.869
	IT22: This airline is very different from other brands of airlines.	4.72	4.19	0.804	0.731						
	IT23: This airline is unique from other brands of airlines.	4.86	4.20	0.830	0.846						
Brand Premium	IT45: I am willing to pay a lot more for this airline than other brands of airlines.	3.57	3.01	0.844	0.910	0.778	0.802	0.874	0.890	0.875	0.89
	IT47: I am willing to pay a higher price for this airline than for other brands of airlines.	3.98	2.64	0.919	0.881						
Brand Intention	IT48: How likely is it that you would recommend (XXX) to a friend or colleague?	5.83	5.38	0.971	0.920	0.777	0.693	0.863	0.807	0.873	0.817
	IT49: How likely is it that you will fly with (XXX) again in the future?	6.31	6.28	0.782	0.735						
Value	IT30: The ticket price of this airline is reasonable.	4.85	5.70	0.719	0.680	0.726	0.656	0.883	0.843	0.886	0.849
	IT31: Compared to other brands of airlines, this airline is a good value for money.	4.82	5.42	0.828	0.806						
	IT32: When I use this airline, I feel I am getting my money's worth.	5.13	5.20	0.987	0.922						

Note: α = Cronbach's Alpha, CR= Composite reliability, AVE= Average Variance Extracted.

Another criterion to evaluate convergent validity is AVE (Average Variance Extracted) estimates which are calculated by dividing sums of squared loadings of factor loadings by the number of indicators in a construct. An AVE value of > 0.50 shows that a construct explains more than 50% of the variance of its items (Hair et al., 2017). AVE equal or higher than 0.50 is given as minimum cut-off (Bagozzi & Yi, 1988; Fornell & Larcker, 1981) As is seen on Table 20, all constructs have greater AVE value than the minimum requirement.

Reflective scales for ACBBE for FSCs and LCCs demonstrated satisfactory convergent validity as all five constructs (credibility, differentiation, value, brand intention and brand premium) achieved a very good fit in terms of factor loadings and AVE. Only one item for awareness was just above the minimum requirement. Therefore, the convergent validity of the reflective measures is established.

Discriminant Validity

Discriminant validity is the extent to which a construct is novel, and is not similar to other constructs of a model (Churchill, 1979). Traditionally two approaches are used to evaluate discriminant validity; the cross-loadings examination and Fornell–Larcker criterion (Hair et al., 2017) and a new method suggested by Henseler et al. (2014) called Heterotrait – Monotrait ratio (HTMT) for PLS-SEM

In the cross-loadings assessment (refer to item-level discriminant validity) item loadings should be higher than its cross-loadings on the other constructs in the model. In other words, item-level discriminant validity is shown when each measurement item is weakly correlated with related constructs apart from its theoretically relevant construct. This approach is used to assess explanatory factor analysis (EFA) (Henseler et al., 2014). In this research, the item cross-loadings examined through EFA analysis and items having insufficient loading to its corresponding factor were eliminated, and a clear six-factor structure was found.

The second approach to discriminant validity is the Fornell - Larcker criterion (Fornell & Larcker, 1981) which suggests that the square roots of AVE of each construct need to be

higher than their greatest correlation with other measures (Hair et al., 2017). Table 21 and Table 22 shows the Fornell-Larcker calculations of FSC model and the LCC model, respectively. The bold numbers demonstrate the square root of AVE for the dimensions of the ACBBE scale and the other numbers show the correlation between constructs. In the FSC sample, all the square roots of construct AVEs are greater than their highest correlation. For example, square root of AVE of credibility is 0.836 which is greater its correlation between awareness (0.387), brand intention (0.815), brand premium (0.608), differentiation (0.716) and value (0.778). In the FSCs sample (Table 21) discriminant validity was established for all constructs based on Fornell-Larcker criterion.

Table 21 Fornell - Larcker Criterion assessment for discriminant validity for FSC sample

	AVE	AWR	BI	BP	CRD	DIF	VAL
Awareness	0.564	**0.751**					
Brand Intention	0.777	0.273	**0.881**				
Brand Premium	0.778	0.190	0.629	**0.882**			
Credibility	0.699	0.387	0.815	0.608	**0.836**		
Differentiation	0.729	0.409	0.658	0.762	0.716	**0.854**	
Value	0.726	0.211	0.717	0.667	0.778	0.693	**0.852**

Similarly, Fornell-Larcker criterion applied to LCC sample (Table 22). awareness, brand premium, differentiation and value constructs met with the criterion for discriminant validity. However, credibility and brand intention demonstrated a high correlation that square root of AVE of credibility (0.805) did not exceed their correlation with brand intention (0.837).

Table 22 Fornell-Larcker Criterion assessment for discriminant validity for LCC sample

	AVE	AWR	BI	BP	CRD	DIF	VAL
Awareness	0.529	**0.727**					
Brand Intention	0.693	0.369	**0.833**				
Brand Premium	0.802	0.123	0.526	**0.895**			
Credibility	0.648	0.394	0.837	0.561	**0.805**		
Differentiation	0.691	0.407	0.476	0.551	0.542	**0.831**	
Value	0.659	0.429	0.767	0.429	0.779	0.577	**0.812**

Although the discriminant validity is established for all constructs for both samples through EFA and CFA and cross-loading assessment, the Fornell - Larcker criterion did not meet the required level for the LCCs sample for credibility, and brand intention constructs. However, there are critics about inadequate performance of Fornell - Larcker criterion particularly for the constructs in which item loadings differ marginally and on variance-based structural equation modelling (Hair et al., 2017; Henseler et al., 2014). For a rigorous assessment of discriminant validity and also as a reminder that this research incorporates variance-based structural equation modelling, a new method suggested by Henseler et al., (2014) called Heterotrait – Monotrait (HTMT) ratio used to assess discriminant validity further.

HTMT demonstrates a lack of discriminant validity by comparing the heterotrait-heteromethod correlations and monotrait-heteromethod correlations (Henseler et al., 2014). The HTMT approach aims to calculate the true correlation between two constructs if the constructs were measured perfectly. This true correlation is also called disattenuated correlation in which the value of this correlation should be less than 1 to achieve discriminant validity (Hair et al., 2017). Henseler et al. (2014) suggest 0.85 for a very conservative cut-off for HTMT discriminant validity.

Table 23: Heterotrait - Monotrait Ratio (HTMT) assessment for FSC and LCC sample

FSC Sample	**AWR**	**BI**	**BP**	**CRD**	**DIF**	**VAL**
Awareness						
Brand Intention	0.281					
Brand Premium	0.195	0.634				
Credibility	0.397	0.820	0.608			
Differentiation	0.414	0.659	0.764	0.712		
Value	0.204	0.717	0.670	0.778	0.687	
LCC Sample						
Awareness						
Brand Intention	0.386					
Brand Premium	0.134	0.521				
Credibility	0.405	0.839	0.561			
Differentiation	0.419	0.473	0.553	0.536		
Value	0.453	0.776	0.421	0.780	0.571	

By considering the conservative cut-off, as is seen in Table 23, all the HTMT correlations of the constructs for both sample is lower than the strict 0.85 HTMT criterion. The HTMT correlation between credibility and brand intention is also sufficiently lower than the strict 0.85 value. The reason for lack of discriminant validity for these constructs in the Fornell-Larcker criterion may be the weaknesses of the criterion when the item factor loadings of a construct do not differ significantly (Hair et al., 2017). This is the case for the credibility construct where item loadings are very similar to each other (Table 20). Therefore, the high correlation between the two constructs anticipated that credibility precedes the brand intention loyalty.

In the light of various statistical assessments(e.g. EFA, CFA, HTMT), it can be concluded that the reflective constructs of both models (FSC, LCC), demonstrate sound discriminant validity.

5.5.1.2 Formative Construct Evaluation

Statistical analysis techniques used for the reflective construct evaluation cannot be directly applied to the formative constructs as they require different validity treatment (Hair et al., 2017). Hence, the assessment of the composite measurement model having reflective and formative constructs has to be done separately. Once the content validity of the formative constructs is established, Hair et al., (2017) suggest a three-steps validation for formative constructs; assessing convergent validity, collinearity assessment and significance and relevance assessment of construct items.

Content Validity

Specifying the content of the formative index that it is intended to capture is the first consideration for formative measure development (Diamantopoulos & Winklhofer, 2001). Hair et al., (2017) suggest that the items for the formative construct should be specified through qualitative research since the exclusion of any relevant items in the construct leads to the exclusion of one part of the construct itself. As explained in detailed in the previous chapter (4), service performance is conceptualised as technical and functional performance (Grönroos, 1984; Nam et al., 2011). The relevant service attributes reflecting these constructs are decided through a data mining study to

passenger reviews for both low-cost airlines and full-service airlines. Therefore, the theoretical background of the study and a comprehensive literature review supporting this background was conducted to establish the content validity of the formative items. This comprehensive study ensures the content validity of formative service performance construct, including technical and functional performance.

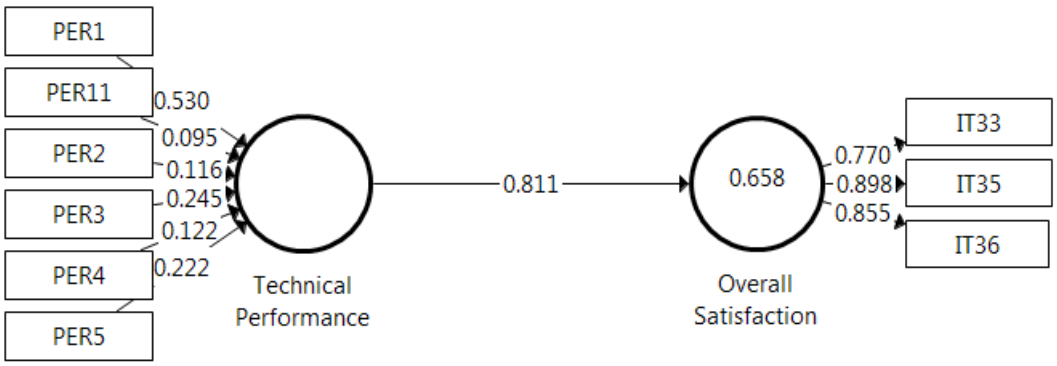
Convergent Validity Assessment

Internal consistency assessment to examine how items fit into a construct is not appropriate for formative measures (Diamantopoulos & Winklhofer, 2001). Thus external validity assessment has to be done to specify how a formative construct positively correlates with other measures (reflective). Hence, formative measures need to be correlated with an overall reflective construct or a similar construct (Coltman et al., 2008). In other words, a formative construct can be used as an exogenous latent variable which predicts endogenous latent variables consisting of reflective scale items (Hair et al., 2017). A path estimate of 0.80 between formative and reflective construct would be sufficient to secure this validity (Chin, 1998). However, Hair et al., (2017) suggest as low as 0.70 may be enough to establish convergent validity. This value translates into an R^2 value of 0.50.

There should be a theoretical background as to why the formative construct should be related to the specific reflective items or construct. One solution to establish external validity would be to use global reflective items that summarise the formative construct it is intended to measure (Diamantopoulos & Winklhofer, 2001). Overall satisfaction was used as a related variable with perceived service performance (technical and functional performance) that measures customer evaluations about their experience with a particular product or service or service encounter. Therefore, overall satisfaction is cumulative of the previous transaction-specific satisfaction with a service provider (Jiang & Rosenbloom, 2005). Previous studies in airline consumer behaviour (chapter two) confirm the relationship between service quality and overall satisfaction. Consequently, it makes sense to link service performance to the overall reflective satisfaction construct to establish convergent validity of the formative constructs in question.

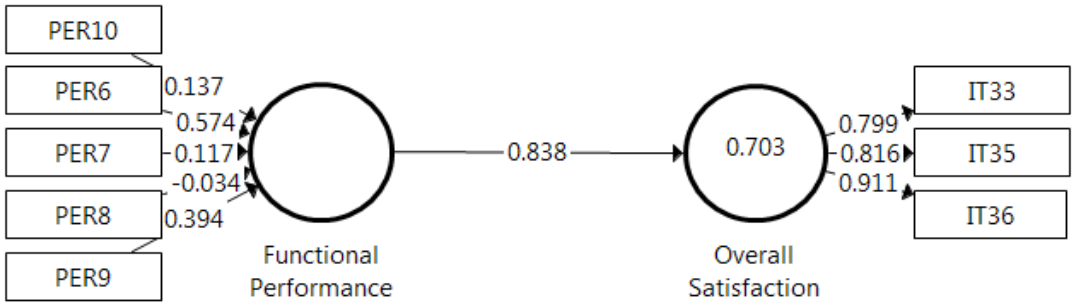
Figures 15 and 16 show the correlation between technical and functional service performance satisfaction with overall satisfaction. This magnitude of the link between the two constructs is 0.81 for technical performance and 0.84 for functional performance, which are significantly higher than the minimum cut-off 0.70. Therefore, the technical and functional performance explains a substantial amount (0.658 and 0.703) of the variance in the overall satisfaction construct. Therefore, this link also establishes the convergent validity formative constructs for FCS model.

Figure 15 Convergent validity assessment of technical performance for the FSC model



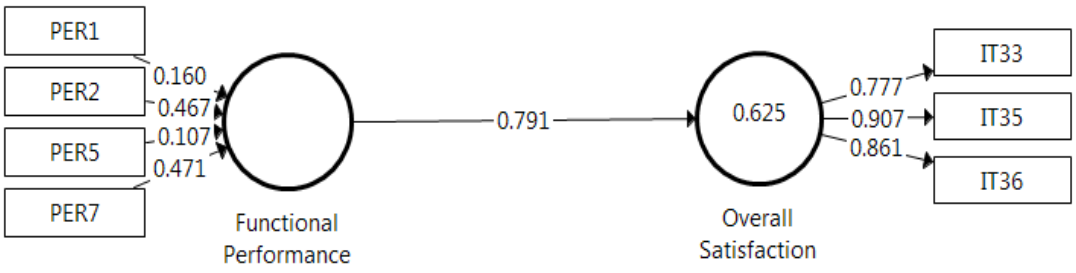
Note: The link between circles indicates the correlation. The value in the circle shows R^2 value. The arrows pointing from rectangle to circle shows item weights and loadings.

Figure 16 Convergent validity assessment of functional performance for the FSC model



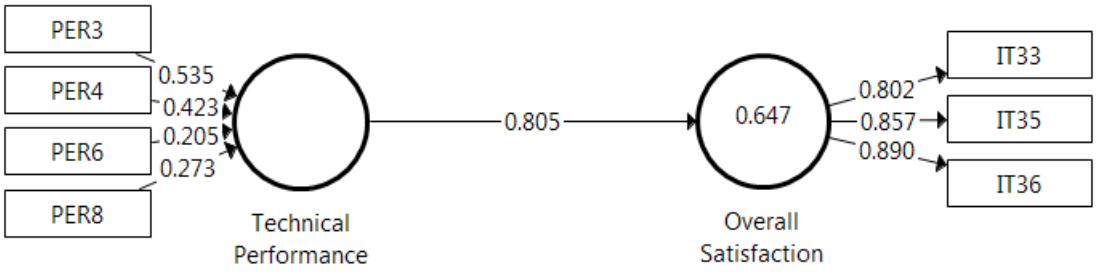
Note: The link between circles indicates the correlation. The value in the circle shows R^2 value. The arrows pointing from rectangle to circle shows item weights and loadings.

Figure 17 Convergent validity of functional performance for the LCC model



Note: The link between circles indicates the correlation. The value in the circle shows R^2 value. The arrows pointing from rectangle to circle shows item weights and loadings.

Figure 18 Convergent validity of technical performance for the LCC model



Note: The link between circles indicates the correlation. The value in the circle shows R^2 value. The arrows pointing from rectangle to circle shows item weights and loadings.

Similarly, formative constructs of the LCCs model were also subjected to convergent validity assessment. Figures 17 and 18 highlight that both functional and technical performance constructs have a significant correlation with overall satisfaction 0.79 and 0.81, respectively. These figures, therefore are significantly higher than the minimum requirement of 0.70 to establish the validity. The functional and technical performance also explain a substantial amount of variance in the overall satisfaction, 0.625 and 0.647, respectively.

Collinearity Assessment for Formative Construct

Multicollinearity is a crucial issue for formative constructs since the formative models are based on multiple regression assessment, thus sample size and strength of item intercorrelations have an impact on the stability of items' coefficient. Identification of

the impact of an individual item on a latent construct becomes difficult because of the higher level of collinearity (Diamantopoulos & Winklhofer, 2001). Collinearity assessment among formative construct variables can be done by computing variance inflation factor (VIF) of each indicator with higher VIF scores showing the magnitude of the collinearity. Therefore, generally a VIF of less than five is sufficient to indicate a lack of multicollinearity among the indicators (Sarstedt et al., 2014).

As is seen in Table 24, VIF is far less than five for all formative construct items for both business model. Therefore, collinearity is not an issue for formative constructs assessment.

Table 24 Service performance items for LCCs and FSCs

Service Performance Items for FSCs			
Technical Performance	**VIF**	**Weight**	**Loadings**
PER1: This airline has comfortable seats and legroom.	1.584	0.366	0.791
PER11: This airline serves various food and beverage options.	2.124	0.138	0.681
PER2: This airline has modern aircraft.	1.440	0.271	0.722
PER3: This airline serves high-quality food and beverages.	2.640	0.208	0.785
PER4: This airline departs and arrives on-time.	1.477	0.155	0.635
PER5: This airline delivers baggage on-time.	1.406	0.242	0.655
Functional Performance			
PER6: This airline provides hassle-free customer experience and care.	1.648	0.552	0.885
PER7: Employees of this airline are professional.	2.468	0.115	0.723
PER8: Employees of this airline are friendly.	3.039	0.008	0.716
PER9: This airline delivers good in-flight service.	1.818	0.403	0.821
PER10: Employees of this airline are helpful.	3.590	0.116	0.786
Service Performance Items for LCCs			
Technical Performance			
PER3: This airline has comfortable seats and legroom.	1.387	0.403	0.698
PER4: This airline departs and arrives on-time.	1.176	0.355	0.630
PER6: This airline offers cheap ticket fares.	1.018	0.506	0.605
PER8: This airline has acceptable ancillary charges (Excess baggage, onboard food etc.).	1.427	0.282	0.668
Functional Performance			
PER1: Employees of this airline are courteous.	2.140	0.117	0.721
PER2: Cabin crew of this airline deliver good service.	2.674	0.427	0.875
PER5: Employees of this airline are friendly.	2.737	0.179	0.817
PER7: This airline cares for its customer when things go wrong (in case of flight disruptions).	1.382	0.480	0.824

Significance and Relevance Assessment

The relevance assessment is another critical factor for the assessment of formative measured constructs. The weight of the formative items to its latent variable is calculated with multiple regression where indicators act as an independent variable, whereas the latent variable is a dependent variable. This regression analysis leads to an R^2 value of 1.00 which means the construct itself explained by its items 100% (Hair et al., 2017).

Table 24 demonstrates the weights and loadings of the formative constructs for both samples. This weights and loadings were calculated based on the measurement model demonstrated in Figure 13. Item weights show the relative importance of formative items in terms of forming the latent construct, whereas the indicator loadings highlight the absolute contribution of the items to the latent construct. Absolute contribution of the item loadings computed through simple regression without considering other items in the construct (Hair et al., 2017).

Bootstrapping

Table 24 shows that performance items have high factor loadings and weights. However, it is not enough to assess the significance and relevance of formative items that they need to check whether the items significantly contribute to its formative construct.

In the PLS-SEM, there is no normal distribution assumption about the data thus parametric significance tests used in the regression analysis cannot be applied to non-normal data to check if the relationships of the item weights and loadings and path coefficients are significant (Hair et al., 2017). Hence, a nonparametric procedure called bootstrapping is used to test the significance. Bootstrapping is a procedure that generates sub-samples from the original data set and repeat the computations for each subsample. As rule of thumb 5000 subsamples are recommended. This analysis calculates t-statistics and p-values for each indicator weight (Sarstedt et al., 2014) (Table 25). Based on the t-statistic, if the items (e.g. seat comfort) significantly contribute to the latent variable (e.g. functional performance), they are retained, if they do not, their

loadings or the absolute contribution takes into consideration (Table 24). Items having loadings of larger than 0.50 are retained (Hair et al., 2017; Sarstedt et al., 2014).

Table 25 Bootstrapping results for the FSC model

Technical Performance	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
PER1 -> Technical Performance	0.366	0.363	0.049	7.546	**0.000
PER2 -> Technical Performance	0.271	0.272	0.046	5.896	**0.000
PER3 -> Technical Performance	0.208	0.209	0.067	3.096	**0.002
PER4 -> Technical Performance	0.155	0.154	0.048	3.216	**0.001
PER5 -> Technical Performance	0.242	0.239	0.063	3.866	**0.000
PER11 -> Technical Performance	0.138	0.137	0.063	2.184	*0.029
Functional Performance					
PER6 -> Functional Performance	0.552	0.547	0.046	11.99	**0.000
PER7 -> Functional Performance	0.115	0.111	0.056	2.043	*0.041
PER8 -> Functional Performance	0.008	0.009	0.066	0.118	0.906
PER9 -> Functional Performance	0.403	0.404	0.055	7.380	**0.000
PER10 -> Functional Performance	0.116	0.119	0.075	1.555	0.120

*Note: * p < 0.05, ** p < 0.001. Original sample: original item weights. Sample mean: bootstrapping sample item mean.*

Bootstrapping significance test results with 5000 sample (Table 25) shows that all technical performance items significantly contribute to its latent variable at $p < 0.05$ level for the FSC model. However, in the functional performance construct, item "PER7 Employees of this airline are professional" and item "PER10 Employees of this airline are helpful" are statistically not significant at $p < 0.05$. Considering their absolute contribution to their latent construct, the items have significantly higher loadings (Table 24) 0.723 and 0.786, respectively. Both items have a significantly absolute contribution to their constructs. Therefore, they are retained.

In the same way, bootstrapping analysis (Table 26) is conducted to the LCCs sample for formative constructs. All items contribute to their latent construct significantly at $p < 0.05$ level apart from the item "PER1 Employees of this airline are courteous" in the functional performance construct. Again, considering its absolute contribution to its latent construct of 0.721 (Table 24), this item is therefore retained in the construct.

Table 26 Bootstrapping results for LCC model

Technical Performance	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
PER3 -> Technical Performance	0.403	0.402	0.041	9.847	**0.000
PER4 -> Technical Performance	0.355	0.355	0.044	7.983	**0.000
PER6 -> Technical Performance	0.506	0.506	0.037	13.68	**0.000
PER8 -> Technical Performance	0.282	0.281	0.04	7.054	**0.000
Functional Performance					
PER1 -> Functional Performance	0.117	0.113	0.09	1.293	0.196
PER2 -> Functional Performance	0.427	0.428	0.087	4.898	**0.000
PER5 -> Functional Performance	0.179	0.180	0.077	2.332	*0.020
PER7 -> Functional Performance	0.480	0.478	0.062	7.795	**0.000

*Note: * p < 0.05, ** p < 0.001. Original sample: original item weights. Sample mean: bootstrapping sample item mean.*

5.5.2 Structural Model Evaluation

Once the reflective constructs were refined through EFA and CFA and fitness of the model established, the final construct is subjected to the reliability and validity assessment. Reflective and formative scale constructs constituting the measurement model are evaluated separately for reliability and validity because of the unique characteristics of different constructs. As explained previously, all constructs (formative and reflective) exhibit satisfactory level of quality; thus, this leads to the evaluation of the structural model of ACBBE scale to evaluate it's the relationships among constructs and the predictive capabilities of the scale.

The structural model assessment consists of collinearity assessment, significance and relevance assessment of the relationships, R^2 and Q^2 values assessment (Hair et al., 2017, 2019; Sarstedt et al., 2014) and then an alternative model will be assessed.

5.5.2.1 Collinearity Assessment

Path estimates are calculated through a series of regression analyses. It should be ensured that the regression results are not affected by multicollinearity. Each set of predictive construct needs to be examined separately since latent variable scores of the predictor measures are considered for VIF computation. Generally, a VIF < 5 expected

to demonstrate lack of collinearity among the predictor constructs (Hair et al., 2017; Sarstedt et al., 2014).

Table 27 Collinearity assessment of predictive constructs for FSC and LCC models

	FSCs	LCCs
Path between constructs	**VIF**	**VIF**
Credibility -> Brand Intention	2.983	2.654
Credibility -> Brand Premium	2.983	2.654
Value -> Brand Intention	2.798	2.816
Value -> Brand Premium	2.798	2.816
Differentiation -> Brand Intention	2.267	1.553
Differentiation -> Brand Premium	2.267	1.553
Functional Performance -> Credibility	2.440	1.560
Functional Performance -> Differentiation	2.440	1.560
Functional Performance -> Value	2.440	1.560
Technical Performance -> Credibility	2.440	1.560
Technical Performance -> Differentiation	2.440	1.560
Technical Performance -> Value	2.440	1.560
Awareness -> Functional Performance	1.000	1.000
Awareness -> Technical Performance	1.000	1.000

Table 27 shows the collinearity assessment of the set of predictors such as credibility and brand intention – credibility and brand premium for both sample sets. As is seen in Table 27, VIF values are well below the critical value of five and even below the robust level of three which is an indicator for the lack of the collinearity issues in the predictive constructs both for FSC and LCC sample.

5.5.2.2 R^2 Value Assessment

The next step is an R^2 value examination once the collinearity was examined. R^2 values are used to assess the predictive ability and variance of a structural model. It demonstrates the amount of variance in the endogenous variable, which is explained by the exogenous variables connected to it (Hair et al., 2017, 2019). Although there is no specific value for the examination of R^2 since its examination differs from discipline to discipline, in the marketing discipline, R^2 values of 0.25 are regarded low, 0.50 moderate and 0.75 substantial as a general rule of thumb (Hair et al., 2017).

Table 28: R^2 Value of endogenous constructs of the ACBBE scale for LCC and FSC models

Construct	FSCs	LCCs
Brand Intention	0.687	0.736
Brand Premium	0.619	0.412
Credibility	0.836	0.757
Differentiation	0.493	0.329
Functional Performance	0.138	0.088
Technical Performance	0.151	0.137
Value	0.523	0.650

For the FSC sample (Table 28), the variance explained in the brand intention is $R^2 = 0.69$. Thus credibility, differentiation and value explain a substantial amount of variance in brand intention. The technical and functional performance also explain a great amount of variance in credibility ($R^2 = 0.84$). R^2 values for brand premium (0.62), differentiation (0.51) and value (0.52) are moderate. R^2 values for technical and functional performance are very low as awareness is the only construct which linked to them, and therefore, explains minimal variance in the performance constructs for both models. R^2 value is related to the number of exogenous variables linked to an endogenous construct as the number of linkages increases the R^2 may likely increase.

In the LCCs model, similar to FSC model, credibility (0.76) has the highest R^2 and together with brand intention (0.75) having greatest explanatory power. This is followed by the value (0.65) construct having substantial explanatory power. Different to the FSC model, differentiation (0.33) and brand premium (0.41) have slightly lower explanatory power.

5.5.2.3 Q^2 Value Assessment

In addition to R^2 values in endogenous variables, the predictive accuracy of the model can be assessed by using blindfolding-based cross-validated redundancy measure (Hair et al., 2019). Blindfolding is a procedure that removes part of the data matrix then estimates the model parameters with the remaining data then the omitted parts are predicted by using previous estimates. The difference between these two refers to the prediction error that the sum of squared prediction errors is computed to reveal Q^2 value. The magnitude of the difference between predicted and the original values determine the size of the Q^2 values. Smaller difference creates a greater Q^2 in turn the

value translates into predictive relevancy (Hair et al., 2017, 2019; Sarstedt et al., 2014; Smartpls, 2019). Q^2 values in the range between 0 and 0.24 demonstrates little predictive relevancy, greater than 0.25, medium, and greater than 0.50, high effect size (Hair et al., 2019).

Table 29: Q^2 assessment of FSC and LCC model

	SSO		SSE		Q^2 (=1-SSE/SSO)	
	FSCs	**LCCs**	**FSCs**	**LCCs**	**FSCs**	**LCCs**
Awareness	906	1,016.00	906	1,016.00		
Brand Intention	906	1,016.00	476.035	557.084	0.475	0.452
Brand Premium	906	1,016.00	519.495	729.69	0.427	0.282
Credibility	2,265.00	2,540.00	1,034.76	1,374.97	0.543	0.459
Differentiation	1,359.00	1,524.00	902.772	1,200.23	0.336	0.212
Functional Performance(FP)	2,265.00	2,032.00	2,102.50	1,933.07	0.072	0.049
Technical Performance (TP)	2,718.00	2,032.00	2,580.83	1,959.67	0.050	0.036
Value	1,359.00	1,524.00	876.225	910.317	0.355	0.403

Note: SSO= Sum of the squared observations. SSE= Sum of the squared prediction errors.

As is seen on Table 29 credibility having the highest Q^2 value (0.543, 0.459) demonstrates that the path model has the largest predictive relevancy for both data group. This is followed by brand intention construct with a similarly high value. The predictive relevancy of brand premium and differentiation shows a significant difference between the two airline groups. Functional and technical performance have lower predictive values because of the awareness is the only variable link with them.

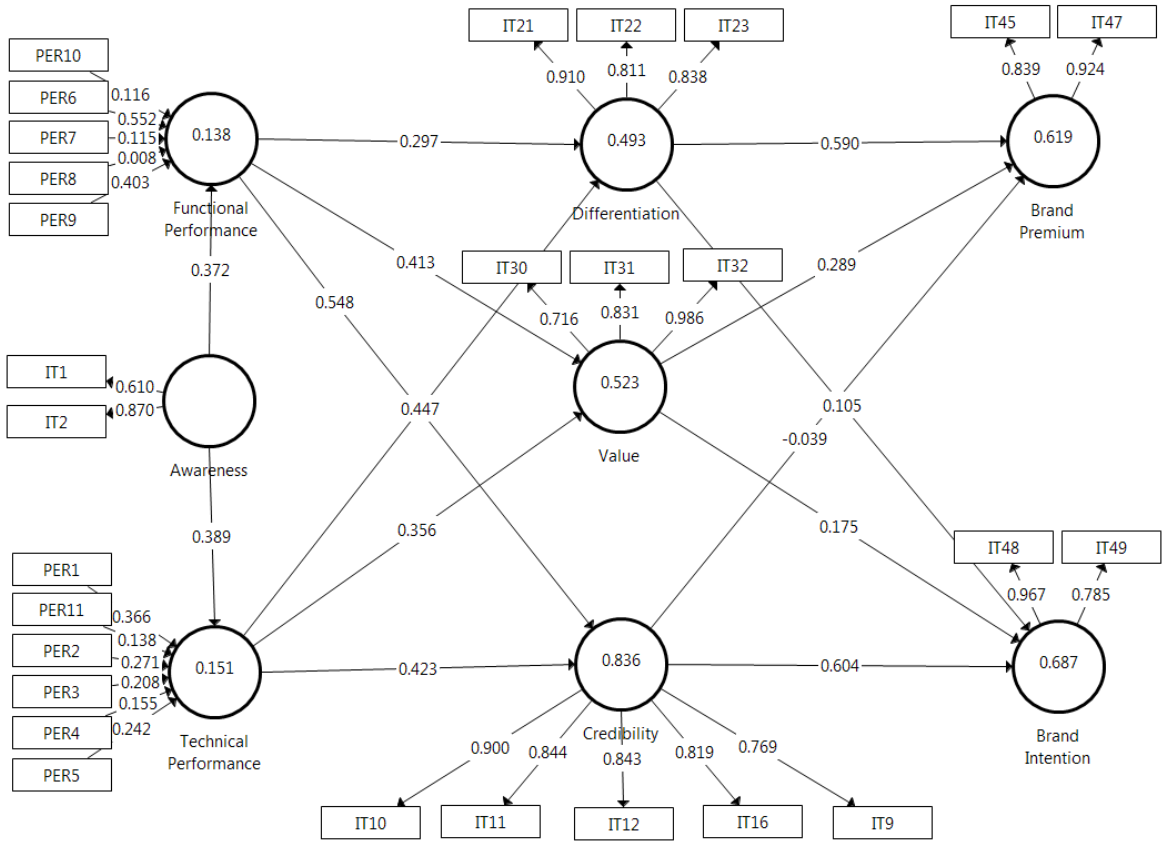
5.5.2.4 Significance and Relevance Assessment of the Structural Model for FSCs

Once the model's explanatory and predictive powers are examined, the final step is the assessment of the relationship between the constructs (Hair et al., 2019). The path coefficients (Figure 19; 20) get standardised values between -1 and +1. A value of closer to 1, shows the greater strength of the relationship and indicates strong positive relationship, and vice versa (Hair et al., 2017; Sarstedt et al., 2014).

Figure 19 shows the path coefficients among the constructs of the FSCs model. To begin with the lower level of the hierarchy, awareness affects service performance

perceptions which have a significant impact both on functional performance (0.372) and technical performance (0.389).

Figure 19 Structural model path coefficients for the FSC model



Note: Inner bubbles demonstrates R^2 values. Rectangles represent construct items. Arrows are pointing toward rectangles show factor loadings. Arrows pointing bubbles show path coefficients.

By looking at the relative importance of the exogenous constructs driving differentiation, technical performance (0.447) is the most critical construct, followed by functional performance (0.297). Unlike differentiation, value and credibility perceptions are mostly driven by functional performance (0.413, 0.548) and then technical performance. Overall, service performance has a significant impact on the generation of passenger judgements about airlines. These judgements also convert into different levels of loyalty. For example, perceptions of differentiation (0.590) are a primary driver of the willingness to pay a premium to an airline and it is driven at a moderate level from

perceptions of value (0.289). However, credibility has no impact on the brand premium. Conversely, it drives brand intention formation substantially (0.604).

In addition to direct path coefficient estimates, the total effect of each construct can be examined, which may provide a better understanding of the overall structure of the model. Through the total effect examination (Table 30), it can be assessed how bottom-line measures; service performance constructs and awareness affect brand intention and premium through mediating constructs credibility, differentiation and value.

In Table 30, each column demonstrates the target measures while the rows show the antecedent constructs. For example, the total effect of functional performance through mediating variables – credibility, differentiation and value – has a strong total effect (0.435) on brand intention and followed by the technical performance (0.360) affecting brand intention formation. Conversely, technical performance has more total effect on (0.350) brand premium via mediating variables.

Table 30: Total effects assessment for FSC model

Construct	AWR	BI	BP	CRD	DIF	FP	TP	VAL
Awareness (AWR)		0.304	0.238	0.369	0.285	0.372	0.389	0.292
Credibility (CRD)		0.604	-0.039					
Differentiation (DIF)		0.105	0.590					
Value (VAL)		0.175	0.289					
Functional Performance (FP)		0.435	0.273	0.548	0.297			0.413
Technical Performance (TP)		0.365	0.350	0.423	0.447			0.356
Brand Intention (BI)								
Brand Premium (BP)								

This reveals that if FSCs are aiming to create brand premium, they need to focus more on technical performance since it has the greatest total indirect effect on the brand premium as well as differentiation perceptions. To be more specific, PER1 (related to seat comfort and legroom) and PER2 (modern aircraft) have the largest relative weights on the technical performance and differentiation. Hence, FSCs can charge a premium by addressing seat comfort, and/or having modern aircraft which also leads to an increase in the perceptions of differentiation. Airlines may focus more on marketing activities

which affect differentiation perceptions of passenger or more precisely more marketing activities on service quality addressing comfort and modern aircraft perceptions of passenger.

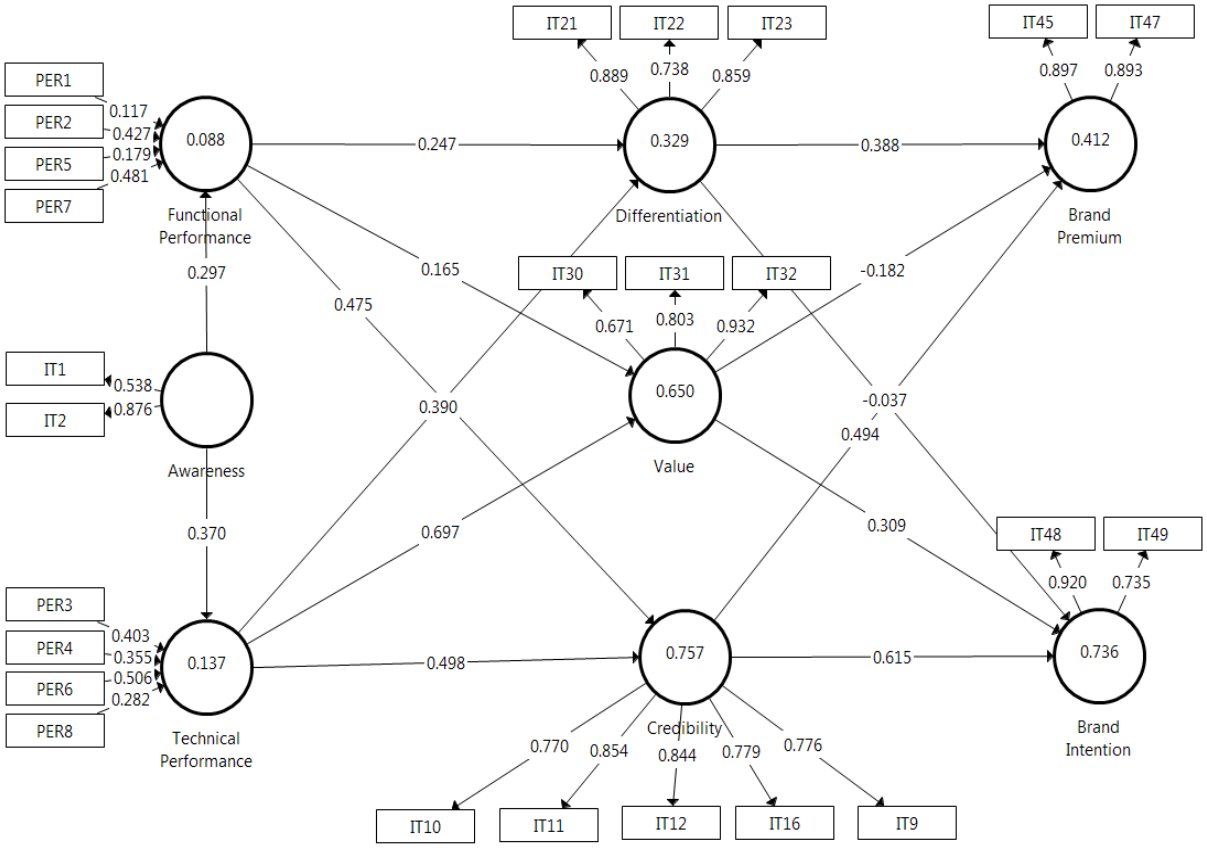
Another example for FSCs aiming to create intentional loyalty (including the willingness to recommend and willingness to purchase), they need to focus more on functional performance which has the most substantial total influence on brand intention. By examining the weights of functional service performance attributes, it can be said that PER6, which is a service attributes item related to “having hassle-free customer experience and care”, has the largest weight on effecting functional performance. Thus, FSCs need to either focus on the improvement of the passenger experience or the passenger’s perception through focused marketing activities so that they can reveal brand intention loyalty.

5.5.2.5 Significance and Relevance Assessment of the Structural Model for LCCs

Figure 20 shows the path coefficients among the constructs of the LCCs model. Like the FSC model, awareness has a significant impact on service perceptions formation. Technical performance is the most significant driver of differentiation and followed by functional performance. Perceptions of value are also substantially driven by technical performance (0.697), whereas functional performance has small bearing on it (0.165). Functional and technical performance also drive credibility at nearly the same level. Therefore, service performance constructs have a significant impact on the generation of customer judgements about LCC brands.

These judgements lead to different loyalty level as brand intention is substantially driven by credibility and moderately by value as in the FSC model. Different to the FCS model, the brand premium is significantly driven by credibility and perceptions of differentiation again has a significant bearing on the construct. The brand intention is entirely driven by value and credibility as differentiation has no impact on it.

Figure 20 Structural model path coefficients for the LCC model



Note: Inner bubbles shows R^2 values. Rectangles represent construct items. Arrows pointing towards rectangles show factor loadings. Arrows pointing bubbles show path coefficients.

Table 31: Total effects assessment for LCC model

Construct	AWR	BI	BP	CRD	DIF	FP	TP	VAL
Awareness (AWR)		0.287	0.189	0.325	0.218	0.297	0.370	0.307
Credibility (CRD)		0.615	0.494					
Differentiation (DIF)		-0.037	0.388					
Value (VAL)		0.309	-0.182					
Functional Performance (FP)		0.335	0.300	0.475	0.247			0.165
Technical Performance (TP)		0.507	0.270	0.498	0.390			0.697
Brand Intention (BI)								
Brand Premium (BP)								

Considering the total effects (Table 31), as opposed to the FSC model, technical performance is the most significant driver of brand intention, while functional

performance is mainly driving brand premium. Hence LCCs that would like to create a brand premium should mainly focus on functional performance improvement. Specifically, functional performance is significantly affected by service attributes PER2 (cabin crew service delivery) and PER7 (customer care) with a relative weight of 0.427 and 0.481, respectively. Improvement in these service attributes may lead to increase in airlines capacity of charging premium prices. The improvement could take place either at product level or marketing level aiming to a specific perception of the passenger.

Technical performance has a significant bearing on creating brand intention. Although the relative weight of technical performance attributes has quite similar values, PER3 (seat comfort and legroom) and PER6 (cheap ticket fares) are the most important ones to generate behavioural intention.

5.5.2.6 Structural Model Bootstrapping Significance Assessment

Significance assessment is conducted with a bootstrapping procedure similar to the formative construct evaluation since the significance of coefficient is related to the standard error which is revealed through bootstrapping (Hair et al., 2017). The procedure creates sub-samples (as a rule of thumb 5000 sub-samples were created) from the original data set to compute t-statistics and p-values in order to assess the significance of path coefficients. Table 32 and Table 33 gives information about both the original sample mean and the mean of the 5000 sub-sample created for bootstrapping analysis and calculates t-statistics and p-values.

When the hypothesised relationships in the FSC model are examined, the majority of the relationships between constructs are significant at $p < 0.001$ level. The only constructs having a statistically not significant relationship are credibility and brand premium, whereas this relationship is significant for LCC model. Like the FSC model, most of the relationships show a significant effect on their target construct in the LCC model. Apart from differentiation to brand intention, and value – brand premium relationship. It could be concluded that perceptions of differentiation are not enough to create brand intention, which is more related to credibility and value perceptions. There is also no significant relationship between value and brand premium.

Table 32 Bootstrapping results for FSC model path estimates

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Awareness -> Functional Performance	0.323	0.326	0.044	7.371	**0.000
Awareness -> Technical Performance	0.338	0.340	0.043	7.904	**0.000
Credibility -> Brand Intention	0.513	0.512	0.056	9.133	**0.000
Credibility -> Brand Premium	0.050	0.050	0.054	0.934	0.350
Differentiation -> Brand Intention	0.130	0.131	0.053	2.455	*0.014
Differentiation -> Brand Premium	0.480	0.481	0.045	10.684	**0.000
Functional Performance -> Credibility	0.527	0.526	0.052	10.144	**0.000
Functional Performance -> Differentiation	0.281	0.280	0.059	4.749	**0.000
Functional Performance -> Value	0.393	0.393	0.064	6.162	**0.000
Technical Performance -> Credibility	0.406	0.410	0.054	7.522	**0.000
Technical Performance -> Differentiation	0.423	0.425	0.055	7.637	**0.000
Technical Performance -> Value	0.339	0.343	0.065	5.246	**0.000
Value -> Brand Intention	0.199	0.199	0.052	3.819	**0.000
Value -> Brand Premium	0.261	0.260	0.052	4.995	**0.000

*Note: * p < 0.05, ** p < 0.001*

Table 33 Bootstrapping results for LCC path estimates

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Awareness -> Functional Performance	0.256	0.260	0.043	5.958	**0.000
Awareness -> Technical Performance	0.319	0.322	0.039	8.118	**0.000
Credibility -> Brand Intention	0.524	0.524	0.050	10.396	**0.000
Credibility -> Brand Premium	0.383	0.382	0.047	8.138	**0.000
Differentiation -> Brand Intention	0.009	0.010	0.045	0.211	0.833
Differentiation -> Brand Premium	0.328	0.330	0.045	7.247	**0.000
Functional Performance -> Credibility	0.452	0.453	0.035	12.984	**0.000
Functional Performance -> Differentiation	0.231	0.234	0.052	4.418	**0.000
Functional Performance -> Value	0.154	0.155	0.046	3.352	**0.001
Technical Performance -> Credibility	0.473	0.473	0.032	14.908	**0.000
Technical Performance -> Differentiation	0.365	0.365	0.046	7.884	**0.000
Technical Performance -> Value	0.649	0.649	0.038	16.925	**0.000
Value -> Brand Intention	0.287	0.287	0.065	4.408	**0.000
Value -> Brand Premium	-0.054	-0.057	0.047	1.148	0.251

*Note: * p < 0.05, ** p < 0.001*

5.5.3 Alternative Model Assessment

Although the proposed structural model proved excellent explanatory and predictive power and fit with the data for both data sets, a possible alternative model was tested for robustness. In the alternative model, six brand equity dimensions (awareness, functional performance, technical performance, credibility, differentiation and value) were directly linked to brand loyalty constructs (brand intention and brand premium). This is also the case in the brand equity research that brand loyalty is modelled as a summary dependent variable driven by brand awareness, brand image and/or perceived quality (e.g. Hsu et al., 2012; Nam et al., 2011). In this model, all constructs are linked to brand loyalty constructs; brand premium and brand intention. The proposed model and the alternative model are assessed based on three criteria: significance and the relevance of the relationships, R^2 assessment and Bayesian Information Criteria (BIC) (Table 34).

In the alternative model assessment for both FSCs and LCCs, the exogenous variables (functional performance, technical performance, differentiation, value, credibility) significantly affect either brand premium and/or brand intention however, for FSCs, the relationship between awareness -> brand intention was negative and statistically not significant (p_1=-0.045, t=0.634 p=0.526) and awareness -> brand premium relationship was negative and significant (p_1=-0.133, t=2.623 p=0.009). Similarly, for the LCC model, the relationship between awareness -> brand intention was statistically not significant (p_1=0.008, t=0.757 p=0.449) and awareness -> brand premium was negatively significant (p_1=-0.146, t=2.853 p=0.05). Particularly, significant negative relationship between awareness -> brand premium and awareness -> brand intention are counter-intuitive results. The statistically not significant relationship between awareness and brand intention, is also contrary to theoretical anticipation. Therefore, this might be an indicator of inappropriate model.

In terms of predictive power comparison, the R^2 values in the alternative model are slightly increased compared to the proposed model. However, this is because of all exogenous variables (functional and technical performance, differentiation, value,

credibility) are linked to brand premium and intention, and the number of constructs linked to endogenous variable increases R^2 value. Therefore, the alternative model contains one level relationships which eliminates the opportunity to assess the predictive power of mid-layer constructs such as credibility, and differentiation.

Table 34: BIC and R^2 value comparisons

	Alternative	**Proposed**	**Alternative**	**Proposed**
BIC	FSC	FSC	LCC	LCC
Brand Intention	-508.023	-513.096	-645.148	-651.963
Brand Premium	-423.613	-423.348	-347.685	-246.235
R^2				
Brand Intention	0.703	0.686	0.742	0.736
Brand Premium	0.642	0.618	0.536	0.441

Finally, Bayesian Information Criteria (BIC) given as a model selection criterion in the SmartPLS considered for model comparison. A model producing lower BIC value for the target construct should be preferred over the one produce higher BIC value (Hair et al., 2019). Although the values do not differ significantly between proposed an alternative model, the BIC value for brand intention in the proposed models is lower than the competitor model for both FSC and LCC models. BIC value for brand premium has an almost similar value for FSCs. It is significantly lower in the alternative model than the proposed model for LCCs.

Considering statistically not significant theoretical relationships, BIC and R^2 value comparison, the proposed model generally outperforms against the alternative model for both data groups. Therefore, considering the diagnostic capabilities of the proposed construct because of the hierarchical structure, the alternative model was rejected.

5.6 Summary

In this chapter, various scale development and validation analysis conducted in line with scale development procedures suggested by Churchill (1979); Gerbing & Anderson (1988). Initiating with scale refinement through expert judgements, followed by pre-test study for preliminary item assessment. This is then followed by an airline passenger

survey analysed into two steps. First, in line with conventional scale development procedures, reflective scale items refined via EFA and CFA and the multidimensionality of the ACBBE scale was established. Next, the overall measurement model with its formative and reflective indicators was evaluated, and its reliability and validity were established. In the final analysis, the structural relationship of the ACBBE scale was examined, and its predictive capabilities were established.

6 DISCUSSION

Considering brand equity theory (i.e. Aaker, 1991,1996; Keller, 1993, 2001; Erdem & Swait, 1998) and empirical studies on brand equity scale development (de Chernatony et al., 2004; Netemeyer et al., 2004; Yoo & Donthu, 2001) as well as scale development procedures (Churchill, 1979; Gerbing & Anderson, 1988; Netemeyer et al., 2003), this study has systematically developed a valid, reliable and parsimonious scale to measure customer-based brand equity of airline brands which is practical in terms of guiding marketing strategy and tactical decisions, evaluating the effectiveness of marketing decisions, diagnostic and reflecting all dimensions of airline customer-based brand equity. Six main dimensions of ACBBE are proposed: awareness, service performance (technical and functional performance), credibility, differentiation, value, brand intention and brand premium both for FSCs and LCCs. FSCs model consist of 28 and LCCs model consist of 25 questionnaire items (see scale items Appendix A). These dimensions both include the conventional measure of CBBE (i.e. awareness, service performance) and there are relatively new measures for airline branding literature emerge demonstrating the potential sources of airline brand equity such as differentiation, credibility and value.

Figure 21 and Figure 22 shows the proven relationships with their strengths and the final ACBBE model for FSCs and LCCs. Both models highlight the predictive power of the ACBBE scale which may enable airlines to guide their marketing and strategical decision by understanding the brand equity formation in their customers' mind. By assessing each dimension, airlines can assess the health of their brand. Thus, they can make sufficient allocation of their sources to the problematic areas. For example, technical performance is the strong driver of differentiation which in turn drives brand premium substantially. More specifically, they can assess the relative weight of service attributes to understand its contribution to service performance and the differentiation formation and in turn brand premium. Therefore, airlines can specifically focus on the specific service attribute so that they can improve customer responses and loyalty. This assessment would enable them to diagnose the problems in the brand equity formation

accurately. The relevance of each dimension for airlines will be discussed in the following section.

Figure 21 A diagram for the path model for FSCs

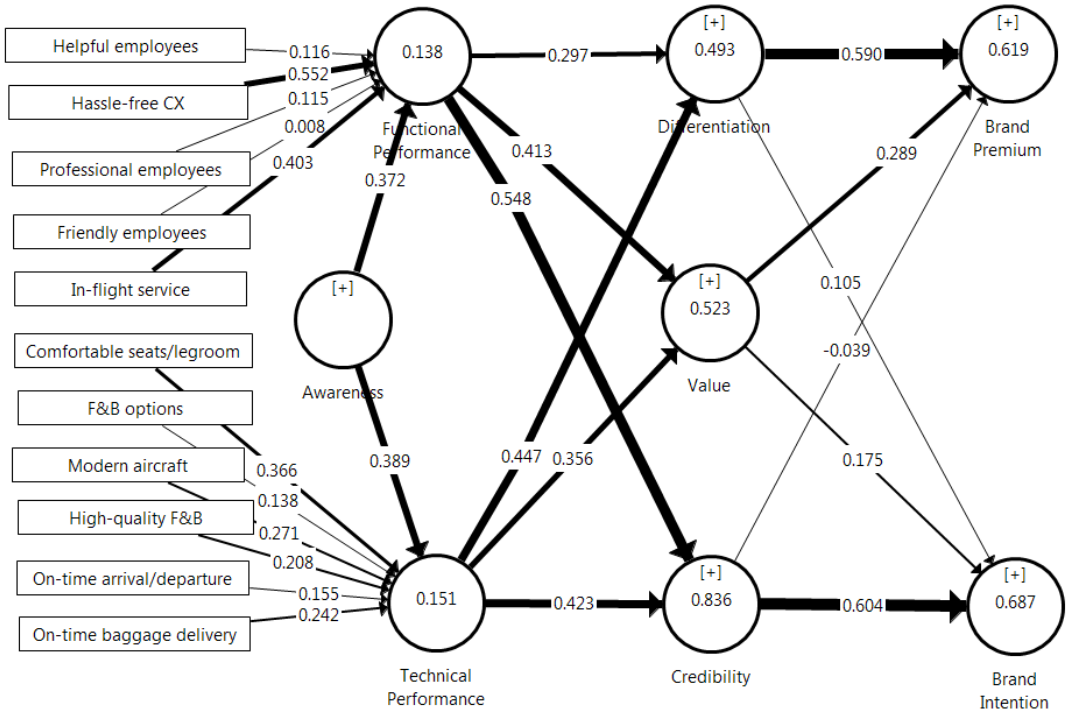
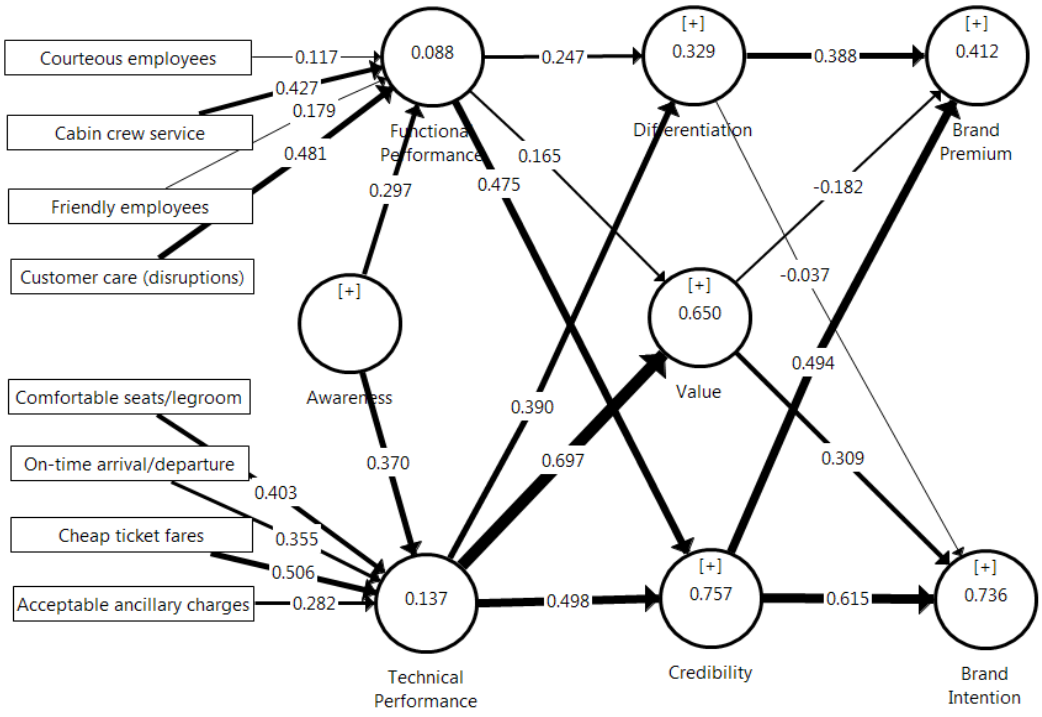


Figure 22 A diagram for the path model of LCCs



6.1 Awareness

Awareness demonstrates the presence of the airline brand in the consumer minds, which includes two components: recognition and recall. Each aspect of measured with one item in the ACBBE scale. As the first-level measure, brand awareness is a frequently used dimension that many researchers incorporated it into their model (e.g. Aaker, 1996; Keller, 1993). It is also one of the advocated measures that airlines marketing professionals use mainly for emerging markets. Increasing brand awareness leads to the probability of a brand to be a member of the consideration set. Even if there is no brand association, awareness alone can affect customer decision as well as brand association formation (Keller, 1993). Therefore, brand awareness has a critical impact on the formation of service performance associations for both FSCs and LCCs (Figure 21, 22).

Airlines operated in highly international environments and multiple markets. Raising awareness in multiple-locations is one of their most challenging tasks. Therefore, measuring awareness highly relevant to the airline industry.

6.2 Service Performance

Service performance refers to dimension or attribute level evaluations of airline passengers having two components: functional and technical service performance where functional performance is referred to how service is delivered (employee service delivery), and technical performance is related to what customers get in the service encounter. This conceptualisation is both supported by the interviews and the data mining study as well as in the literature. For FSCs and LCCs, technical performance measured with six items and four items and functional performance is measured five and four items respectively (for items see Figure 21, 22).

For FSCs, functional performance significantly affects credibility and value formation, whereas it has a slightly lower impact on differentiation. In terms of total effect, it has more total impact on brand intention(0.435) formation then brand premium (0.273) (see Table 30; Table 31). Therefore, while technical performance attributes significantly affect brand premium, functional performance leads to brand intention. Specifically,

hassle-free customer experience and in-flight service considerably contribute to functional performance. FSCs need to maintain the balance between functional and technical performance at both communication and experience level.

The empirical results demonstrated that for FSCs, seat comfort and legroom and on-time baggage delivery and modern aircraft are the three most critical attributes affecting technical performance which in turn affects brand judgements (differentiation, credibility and value) and brand intention and brand premium loyalty formation. In other words, positive performance in these attributes enhances customer brand judgements, and in turn, brand intention and particularly brand premium loyalty.

Similar to FSCs, functional performance significantly affects credibility perceptions for LCCs. Cabin crew service delivery and customer care are the most important attributes affecting the functional performance of LCCs. Different than FSCs, technical performance has more total impact on brand intention for LCCs, whereas functional performance affects the brand premium more. However, for FSCs, functional performance affects brand intention more while technical performance has similar impact on brand intention and premium (for total effect see Table 30; Table 31).

Marginally different than FSCs, technical performance is a more important aspect of service performance to create customer judgements for LCCs. Price and seat comfort-legroom are the most important attributes affecting technical performance. Price tend to be very significant performance associations since price differences among brands may enable customer to organise their brand knowledge in the product/service category. Company's pricing policies create associations in the mind of consumer to extent to which the price of a brand is expensive or inexpensive versus competitors (Keller, 2013). In the data mining study, the price revealed as the most crucial attribute for LCCs as its' importance is also revealed in the empirical results.

6.3 Credibility

Airline brand credibility measures if customers perceive the company or the organisation behind the brand as good at what it does and how believable are the

product/service claims encapsulated in a brand. Empirical results demonstrated that trustworthiness and expertise are the two dimensions of credibility widely recognised in the literature (Goldsmith et al., 2000). Likeability is eliminated as it does not discriminate or load onto credibility, which supports the argument of Erdem & Swait (1998) and Goldsmith et al. (2000).

Although credibility was not included as a component of airline brand equity in the literature, and the airline consumer behaviour literature, researchers used concepts similar to credibility such as trust, conceptualised as the reliability and integrity between company and customer (e.g. Forgas et al., 2010; Han et al., 2014); and reliability of delivering its promises (Curras-Perez & Sanchez-Garcia, 2016); airline image, conceptualised as accumulated attitudes and perceptions of consumers from an organisation (Zins, 2001; Park et al., 2004; Brodie et al., 2009); and reputation, conceptualised as stakeholder's overall evaluation of company over time (Curras-Perez & Sanchez-Garcia, 2016). Brodie et al. (2009) examined image concept with the brand image, company image, employee trust and company trust.

However, the credibility concept this study uses is representing the relationship between the company and the customer over time. The trustworthiness component of credibility refers to characteristics of an entity like brand or person which is different from trust used in the airline passenger behaviour literature (Sweeney & Swait, 2008). In the information economics literature, the historical notion of credibility revealing from the cumulative of past behaviours is viewed as reputation (Erdem & Swait, 2004). Herbig & Milewicz (1995) suggests that the constant process of credibility transactions strengthen a company's reputation and afterwards, credibility if mixed signals created (saying one thing while doing another) in the credibility transactions which in turn has a demolishing effect on reputation and subsequent credibility.

Credibility is also revealed as the most critical concept affecting brand loyalty. For low-cost carriers, it has a significant positive impact on both brand willingness to pay premium and brand intention loyalty; whereas it did not affect willingness to pay a premium for full-service carriers while it is affecting brand intention substantially. It

appears to be that credibility perceptions are not enough to create a brand premium for full-service carriers, yet it is enough to create the intention to buy.

Therefore, it is important to understand how an airline can build credibility. Airlines should focus on a very clear brand message which could be achieved by being clear about its focus and what it stands for (Erdem & Swait 1998). Therefore, this is also related to achieving organisational culture, which aligns with the brand's positioning. Another issue is being consistent with marketing mix decisions such as service quality, pricing, promotion and communication with the customer. Credibility perceptions also can be enhanced by investing in advertising and social responsibility activities (Sweeney & Swait, 2008).

Airline managers interviewed noted the difficulty of consistently delivering brand promise through communications and passenger experience and see it as one of the biggest challenges or one of the most essential sources or underlying aspects for strong airline brands in the airline industry. Therefore, the credibility concept as one of the components of ACBBE that may provide an important diagnostic measure for airlines to measure/understand to the degree to which they achieve this consistency in the eyes of their customer as it is clearly demonstrated in the empirical results the impact of credibility on loyalty creation.

6.4 Differentiation

Differentiation refers to how airline passengers see an airline different from competing brands. Airline brand differentiation perceptions can be created in the core product (innovative products) or employee service (friendly service) or creating a personality reflecting the characteristic of the origin of the airline. Therefore, differentiation is referred to as a summary measure and as an indicator of a brand's ability to achieve differentiation.

Today, increasing costs, downward pressure on price and fluctuation in passenger demand has forced airlines to find diverse ways to increase profitability. Particularly, airlines have found new revenue sources by unbundling flight experience, which made

the delivery of differentiation of the services and impeccable passenger experience difficult (Aaker, 2014). Airlines pursuing full-service characteristics may behave like a low-cost or vice versa depending on the conditions of the market. It seems critical for airlines in today's competitive environment to understand how their services/products are differentiated in the eyes of customers and consumers.

Differentiation/uniqueness is advocated as a measure of CBBE by Aaker (1996) and Keller (2013), and used in the goods-based brand equity research (e.g. Netemeyer et al., 2004), as well as used by advertising agencies to measure CBBE such as Young & Rubicam Brand Asset Valuator and Millward Brown Brand Dynamics. Differentiation has not been used neither as a component of CBBE nor has been used in the airline consumer behaviour research. However, the results of the interview conducted clearly demonstrates its relevance to understand passenger behaviour.

Differentiation is the most important driver of brand premium for both FSCs and LCCs. Porter (1985) suggests that not only a company pursuing differentiation strategy focus on differentiation, but also a cost leader has to consider the bases of differentiation since, if buyers does not perceive the products of the cost leader as comparable or acceptable, it has to reduce its price significantly lower than the competitors so that it can attract more customers or increase sales.

Porter (1985) in his generic strategies also argue that a firm can achieve differentiation by being unique in its industry with one or more attributes which are valued by buyers. In this research, the passengers' most valued service attributes were identified through the analysis of airline passenger reviews. Then, these attributes were incorporated into the ACBBE scale and their relationship with differentiation, as well as brand intention and brand premium loyalty were examined.

The empirical results show that the main source of differentiation for FSCs is technical performance which is significantly driven by comfortable seat and leg room. Similarly, technical performance, the main driver of differentiation for LCCs, is also significantly driven by cheap ticket fare and seat comfort. Differentiation affects brand premium

substantially. Therefore, airlines aiming to charge premium prices may focus more addressing these specific service attributes.

Differentiation has not received any attention in airline brand equity research or airline consumer behaviour research and the ACBBE model shows that is should receive. The findings highlight the importance and relevance of differentiation in airline passenger decision making.

6.5 Value

The study also revealed that creating a value proposition is critical for airlines to remain competitive. Perceived value emerges as a cost-benefit ratio for customers. Previous service-based brand equity research also incorporated perceived value into their models (e.g., Tasci, 2018; Boo et al., 2009).

For FSCs, perceived value affects brand premium significantly. However, it has a lower impact on brand intention. The value appears to refer more "what I give and what I get" or the balance between the quality and price for FSC passenger. Therefore, the more an FSC is perceived as providing value, customer are more likely to be willing to pay more (brand premium). However, higher value perceptions do not completely translate into the behavioural intention that passenger essentially seeks for more credibility from FSCs for brand intention.

Conversely, the value has a considerable effect on the brand intention for LCCs and a negative impact on the brand premium. Perceived value seems to refer to "low price" for LCC passenger; therefore, they seem to perceive the value when there is a low price which in turn translate into BI. It is apparent for the passenger who seeks for low-price not willing to pay a higher price for an LCC.

6.6 Brand Premium and Brand Intention

In the construction of ACBBE scale, three sets of items related to loyalty measures were proposed: intentional loyalty, willingness to pay more (brand premium) and overall satisfaction. Exploratory Factor Analysis revealed brand premium and brand intention

as two dimensions of loyalty. However, overall satisfaction did not appear as a separate construct and the items representing overall satisfaction have been dropped due to cross-loadings since they did not load on a particular construct across different samples (pre-test, FSCs and LCCs samples)(for eliminated items see Table 18). When these items are included, the overall satisfaction construct demonstrated a very high correlation with credibility and behavioural intention and therefore no discriminant validity established across different samples. As it is discussed in chapter four about distinctiveness of overall satisfaction and behavioural intention, the empirical results of this study also support the argument of Bennett & Rundle-Thiele (2004) and Dimitriades (2006) about the distinctiveness of satisfaction and behavioural intention loyalty Kos Koklic et al. (2017) reported a lack of discriminant validity between satisfaction and intention to recommend in their research on low-cost and full-service airlines. Satisfaction is not advocated frequently as a separate measure in brand equity constructs which is mainly because it does not apply to non-users / non-customers.

The fundamental purpose of a company's marketing activities is to increase, sustain and improve customer loyalty to the services and products that the company offers (Dick & Basu, 1978). Customers brand knowledge, and effective responses towards a brand need to translate into behavioural intention so that airlines guarantee future income.

All in all, Keller (2001) argue that airlines and banks are the two categories that few of them can be considered as a truly strong brand as because brands in these sectors have not revealed positive responses and intense and active loyalty which is mainly because of lack of strong, favourable and unique brand association attached to their brand meaning. As this research found, ACBBE dimensions are hierarchically in line with Keller (2013) and having three brand response dimensions namely: differentiation, value and credibility. Therefore, it seems critical for airlines to understand how these responses are eliciting and how they translate into brand loyalty. It can be concluded that airlines need to achieve a certain level of equilibrium among differentiation, credibility and value. In other words, they need to:

- differentiate themselves into their competitive environment at the same time convey their brand message consistently;
- keep their brand promises to establish credibility perceptions;
- achieve a value proposition so that they can establish loyalty.

As empirical results demonstrate that each brand response affects the different level of loyalty at a different rate.

This study provides a diagnostic tool (ACBBE scale) for the airline marketing professionals to track, audit and assess the performance and health of their brands. Clearly, monitoring their marketing efforts overtime with ACBBE scale to understand how well they are delivering their promises in the eyes of the customer may provide very valuable information for their marketing strategy and tactical decisions.

ACBBE scale allows researchers a better theoretical understanding of airline brand equity measurement and brand equity formation. In other words, researchers may have better understand about drivers of airline brands including different business models. ACBBE scale may also lead as a point of departure to develop more sophisticated airline brand equity valuation methods

7 CONCLUSIONS

This study systematically developed a valid, reliable and parsimonious scale to measure customer-based brand equity of airline brands which is practical in terms of guiding marketing strategy and tactical decisions, evaluating the effectiveness of marketing decisions, diagnostic and reflecting all dimensions of airline customer-based brand equity.

To realise this outcome four objectives were addressed;

- To identify dimensions of airline customer-based brand equity.
- To identify the most suitable set of measures for the determined brand equity dimensions.
- To test, validate the reliability and psychometric properties of the scale
- To test predictive capabilities of the dimensions of ACBBE

The necessity for the systematic development and validation of airline customer-based brand equity model was established through a review of the literature. The review highlighted that the previously developed model used to assess airline brand equity were a direct adaptation of the goods-based model without considering industry-specific factors, not least that the airlines operate as a service industry. Consequently, it was not possible to establish which dimensions were really driving airline brand equity.

Initially, 13 semi-structured interviews were conducted to identify measures relevant to the airline industry. This not only aimed to identify what is being used in the industry but also to identify any possible dimensions which may be relevant. Six main dimensions were identified, namely; awareness, service performance, credibility, differentiation, value and loyalty. Each measure was critically reviewed in the literature in conjunction with expert interviews findings. Considering measurement theories, a composite measurement approach (using formative and reflective measures) was found to be appropriate on the findings of the interviews and literature. However, this composite approach required that, firstly, dimensions that were measured reflectively or those

which were established in a reflective fashion in the literature (awareness, credibility, differentiation, value and loyalty measures) were conceptualised and set of candidate scale-items were identified. Secondly, formative measures of scale – functional and technical service performance – were conceptualised. A further study of airline passenger reviews was examined to identify key service attributes relevant to both low-cost and full-service airline passengers. This qualitative study revealed the constructs of ACBBE scale and candidate scale-items reflecting these constructs.

The item pool was given to a panel of expert to identify the most relevant items reflecting the constructs together with their definitions and to assess redundancy and wording. This assessment leads to an online survey. The analysis of the survey results was also examined for formative and reflective constructs, adopting appropriate analytical approaches.

First, the initial reliability assessment and the factor structure of the ACBBE scale were established through a pre-test study. Then, second round of passenger survey were collected. The survey results first examined with EFA. A range of EFA conducted on pooled data, LCC data and FSC data separately to identify items establishing the precise factor structure. Therefore, by analysis the data collected for different business models allowed cross-business/service level assessment of the ACBBE scale. Six factors clearly and consistently were established to reliably measure airline consumer-based brand equity; awareness, credibility, differentiation, value, brand intention and brand premium.

The final factor structure and items were then subjected to CFA, where the final refinements of the items took place, and the unidimensionality of the constructs was clearly established for both LCC and FSC models.

Then, the final refined reflective constructs and formative constructs (service performance) were evaluated in the measurement model with PLS-SEM. In the measurement model first, reflective constructs were evaluated for reliability, content, convergent, and discriminant validity. Then, the formative constructs were evaluated for content, convergent validity, collinearity assessment and significance and relevance

assessment of construct items. The validity and reliability of the ACBBE scale performed very well across its constructs.

In the final step, predictive capabilities of the scale were established on the proposed model. This assessment both allowed to the nomological assessment of the scale and the predictive relevance of each dimension which in turn demonstrated how the scale can be used in practice as a diagnostic and strategic tool for airline marketing. In addition to the proposed model, an alternative model was also assessed. The propose model was superior to the alternative model.

This process revealed psychometrically sound 28-item ACBBE scale for full-service carriers and 25-airline item ACBBE scale for low-cost carriers (for scale items see Appendix A).

7.1 Theoretical Contribution

This first attempt to systematically develop a valid and reliable airline brand equity scale makes an original contribution to the knowledge. Previous attempts to measure airline brand equity typically derived from product-based scales with minor modifications considering only four dimensions of brand equity (awareness, image, perceived quality and loyalty). They followed a deductive approach without considering industry-specific needs or any other measures available in the literature. Although these studies aimed to examine airline brand equity, their main purpose was not to develop an airline customer-based brand equity measure. Therefore, this research incorporates airline customer-based brand equity scale in a holistic approach by including airline marketing expert views, passenger views, critically examining existing theories and empirical studies. The research validates the measure through multiple passenger surveys and the associated reliability and validity assessments. This scale and its constitutional dimensions were constructed with triangulation and grounded on expert views, passenger reviews and to the literature; therefore, it allows a better theoretical understanding of airline brand equity measurement and brand equity formation.

The proposed model encapsulates the basic dimensions of brand equity advocated in the branding literature but also some measures which relatively new to airline branding literature and critical for air transport industry such as credibility, differentiation, value and brand premium that those measures were reflecting the potential source of the equity of airline brands.

The brand equity scale enables a more comprehensive understanding of airline passenger decision making by incorporating relevant dimensions of brand equity. This research also offers new dimensions to understand airline passenger decision making that may be used by researchers to examine the customer value creation process or to incorporate these dimensions in research to test theoretical models to better understand passenger behaviour. The antecedents (how advertising, promotions, social media actives etc. affect brand equity) and consequences (financial measures) of brand equity also can be investigated, an example of future work may include how promotions or advertising affect different components of the scale.

The proposed scale demonstrates generalisability since the scale developed on the views of airline marketing experts, consultants dealing with various airlines all around the world; besides, the passenger reviews (actual customer evaluations) from the 50 strongest brands in the world were incorporated. Additionally, this research both consider FSCs and LCCs and devices a brand equity scale for both airline business models. Empirical measurement properties of the scale demonstrate strong internal reliability, validity and predictive capability across different samples.

Brand equity scale development has traditionally been investigated in the classical test theory (reflective measurement) however, this research incorporates a formative measurement approach as well, which may provide a better conceptualisation of CBBE measures for different industries. Furthermore, its use of real passenger reviews, analysed using data mining techniques is different to previous studies, and may provide a more robust approach to identifying brand equity concepts in other industries.

This study contributes to airline brand equity research and customer behaviour research in several ways. It is the first attempt from a practical point of view to understand the

generation and measurement of airline brand equity which may lead to developing more sophisticated scales of measuring airline brand equity (e.g. financial and market-level measures can be included) and airline customer behaviour. In a broader perspective, the methodology used in this research can be applied to other industries to identify unique brand equity measures for different sectors.

7.2 Managerial Contribution

In practical terms, inarguably good management requires good measurement systems; thus, this study suggests measures relevant to airlines which enable accurate diagnostic information for marketing managers to monitor and to audit equity of their brand. Managers may understand clearly which area of the brand succeeds or fails, what drives brand success and to what extent by assessing the relevant dimensions of airline brand equity. Thus, they can make an efficient allocation of resources to maintain a balance among the brand equity dimensions.

This research investigated airline brand equity in a hierarchical approach which helps to understand the brand knowledge structure that the consumer has about an airline. Therefore, an airline can have a better understanding of their customers from the bottom level of awareness to the top-level of loyalty formation. The scale also demonstrated strong predictive capabilities among the dimensions for both FSCs and LCCs. Again, by assessing any potential problematic areas in this causal order, they can manage those problems more effectively. For example, if an airline aims to create a value proposition in the eyes of their customer, by applying this scale, they can understand how well they created this value proposition and to what extend this perception translates into brand intention and brand premium. They clearly should be able to see how their marketing efforts enhance value proposition or maybe if there is no improvement, they can change their marketing and communication strategies. In this way, airlines would utilise their sources and diagnose problematic areas clearly and would address well-directed solutions.

If airline marketing professionals use this scale to monitor the performance of their brand over time, they may clearly understand which areas of failure or success are. Therefore, this type of tracking enables an understanding of their long-term efforts to build and enhance the equity of their brand. For example, airline industry tends to be very competitive, an airline may wish to change brand positioning strategies in the long run as a response to the competition in a market. This is quite common practice in the industry. An airline pursuing full-service characteristics may behave like a low-cost carrier or vice versa or convert the business into a hybrid model. It is critical for an airline to understand the response of their customer to these types of long-term strategic marketing/business decisions. By using ACBBE scale, an airline should be able to understand, how equity of their brand, if anything, evolves over time. Besides, brand equity measurement can be linked with a business performance like financial results which would lead to a better understanding of their effort in terms of effecting business performance.

The tool can also be used in times of crisis such as accidents, strikes, adverse weather conditions, system failures etc., to enhance the resilience of airlines. The changes on the brand perceptions of passengers towards the remedial actions or marketing activities may be monitored, and the success and/or failures can be addressed, and the sources can be addressed correctly. For instance, an airline may lose its safe reputation and in turn may encounter a credibility problem due to an accident. The perceptions of the customer need to be fixed so that customer continue to purchase. It can be monitored and understood if any efforts, put forward to fix this problem, is useful by using ACBBE scale.

Airlines can use the scale to assess brand equity of their competitors and benchmark themselves against others. This type of assessment may enable them to take strategic actions. For example, by assessing the individual components of the scale, they can assess how they are being perceived as “different” to their competitors or to what extent they created a certain “value” proposition compared to their competitors. Therefore, understanding their position in the eyes of customers compared to other airlines allows them to set better strategic targets.

In addition to the brand equity scale, the analysis of online reviews can be used as a diagnostic tool by managers, and to take action regarding service failures. Online review analyses can provide a low-cost and reliable satisfaction assessment for airlines. Constantly monitoring and analysing passenger reviews may facilitate the management of E-WOM (e-word-of-mouth), which is critical for airlines due to their impact on customers' airline choice. TripAdvisor reviews have been essential for hotel and restaurant customers in terms of affecting their decision making. Although it is a relatively new platform for airlines, these reviews are likely to create E-WOM in terms of affecting passengers' airline choice. Airlines can also use this method to analyse their competitors' passenger feedback so that they can benchmark themselves against competitors.

7.3 Limitations and Future Studies

Although this study followed a systematic approach to develop an airline customer-based brand equity scale, the scale requires further testing. The empirical testing of the scale is conducted on UK passengers only. Thus, this measurement scale requires further research to be generalisable to other cultures and countries and maybe passenger segments. Therefore, testing the model in a different context is highly likely to provide further insights. This study is also essentially cross-sectional; therefore, a longitudinal study would enable the stability of the scale over time.

In this study, a Prolific panel was used for a passenger survey. Although crowdsourcing platforms are mostly representative of the demographics of the internet-using population and comparative studies indicate identical results between the conventional surveys and crowdsourcing based survey, this study only covers passengers who are members of the panel. Therefore, it may not be representative of the overall population. The scale may require further calibration on other populations.

Although this research provides a step towards the use of online textual data, it is vital to highlight the limitations. The sample of reviews is collected only from TripAdvisor.com as a representative platform. Therefore, the results are limited to one particular

website. Furthermore, it is essential to highlight that only reviews in English were considered for the analysis so the results of the analysis may not reflect views by passengers writing in other languages. Another limitation of this study is the methodology used for text mining. LSA does not consider sentence-level individual document meaning emerging from word order, and it is an inherent limitation of bag-of-words analysis methods (Evangelopoulos, 2013). Lastly, although LSA is conducted through a range of systematic, statistical analyses, human involvement takes place in the interpretation and factor labelling phase, which poses subjectivity. Labelling factors by two independent researchers address this limitation.

Future research is strongly suggested to test the scale in the different cultures, and airlines to examine the scale further. Longitudinal research may be conducted to measure stability of the scale over time as well as it can be correlated with financial measures to assess the performance of the construct. An overall approach to brand equity measurement would provide a better understanding of brand equity formation, thus market-level and financial-level measures may incorporate. The scale can be applied to examine equity of a number of different airline brands which would allow a comparison of different airlines.

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APPENDICES

Appendix A Questionnaire Items for ACBBE Model

Awareness	I know what this airline's symbol or logo looks like.	
	I can recognise this airline among other competing airlines.	
Credibility	This airline delivers what it promises.	
	This airline's service claims are believable.	
	This airline has the ability to deliver what it promises.	
	Over time, my experiences with this airline have led me to expect it to keep its promises.	
	This airline is committed to delivering on its claims.	
Differentiation	This airline really stands out from other brands of airlines.	
	This airline is very different from other brands of airlines.	
	This airline is unique from other brands of airlines.	
Brand Premium	I am willing to pay a lot more for this airline than other brands of airlines.	
	I am willing to pay a higher price for this airline than for other brands of airlines.	
Brand Intention	How likely is it that you would recommend (XXX) to a friend or colleague?	
	How likely is it that you will fly with (XXX) again in the future?	
Value	The ticket price of this airline is reasonable.	
	Compared to other brands of airlines, this airline is a good value for money.	
	When I use this airline, I feel I am getting my money's worth.	
Service Performance	***FSCs***	***LCCs***
	Technical Performance	
	This airline has comfortable seats and legroom.	This airline has comfortable seats and legroom.
	This airline serves various food and beverage options.	This airline departs and arrives on-time.
	This airline has modern aircraft.	This airline offers cheap ticket fares.
	This airline serves high-quality food and beverages.	This airline has acceptable ancillary charges (Excess baggage, onboard food).
	This airline departs and arrives on-time.	
	This airline delivers baggage on-time.	
	Functional Performance	
	This airline provides hassle-free customer experience and care.	Employees of this airline are courteous.
	Employees of this airline are professional.	Cabin crew of this airline deliver good service.
	Employees of this airline are friendly.	Employees of this airline are friendly.
	This airline delivers good in-flight service.	This airline cares for its customer when things go wrong (in case of flight disruptions).
	Employees of this airline are helpful.	

Appendix B Interview Participation Letter

Subject: Participation in research

I am Eren Sezgen, a doctoral researcher at Cranfield University, Centre for Air Transport Management and doing research on airline branding under the supervision of Prof. Keith Mason and Dr Robert Mayer. The aim of the research is to develop a valid and reliable customer-based brand equity measurement tool for airlines. I am particularly interested in the following areas: what are the challenges encountered in brand building and management at your airline, and how brand equity is measured, and which factors do you use to assess brand success across the industry.

This research will contribute to the academic literature by building an airline specific customer-based brand equity scale. This research also could potentially be a starting point for researchers to develop more sophisticated methods for the valuation of airline brands and could be used by managers to benchmark and to develop their brand tracking practices.

I would be really thankful to you if you could give me some of your precious time, no more than 60 minutes, to discuss airline customer-based brand equity measurement in view of your knowledge and expertise. In appreciation for your time, I would be pleased to send you a copy of the final report upon completion. If you have any questions regarding the interview, please feel free to contact with me (e.sezgen@cranfield.ac.uk) or my supervisors (K.Mason@cranfield.ac.uk) or (r.mayer@cranfield.ac.uk).

I would appreciate your assistance with this project and look forward to meeting with you soon.

Sincerely,

Eren Sezgen

PhD Researcher in Centre for Air Transport Management

Cranfield University, Bedford, MK43 0AL, UK E: e.sezgen@cranfield.ac.uk M: +44 (0)7532 71103

Appendix C Informed Consent Form for Interviews

Title of the project:	Development and validation of an airline-specific customer-based brand equity scale.
Name of the researcher:	Eren Sezgen
Researcher's contact details:	E-mail: e.sezgen@cranfield.ac.uk Mobile: +44 (0) 7532 711033
Participant number:	*11*
Date:	

1. I confirm that I have been informed about the aim and objectives of this research project and agree to give my inputs.
2. I understand that all personal information that I provide will be treated with the strictest confidence and my name will not be used in any report, publication or presentation.
3. I understand that the data I provide will be used by Cranfield University for the purpose of research. It will be stored on a secure network accessed only by authorised users in accordance with the Data Protection Act (1998).
4. I have been provided with a participant number as shown above. The researcher(s) will record data against my participant number instead of recording my name. The file linking my name to my participant number will be accessible only to the two main researchers and will be securely destroyed after 14 days.
5. I understand that I am free to withdraw from this project at any stage by informing a member of the research team, for whom contact details have been provided. I also understand that I can also withdraw my data for a period of up to 14 days from today, as after this time it will not be possible to identify my individual data from the aggregated results as explained in point 4.
   - The recordings will be transcribed and saved as text files. Identifiers such as name, age, and location will be removed/replaced during transcription.

     I am happy for my transcript to be published: Yes / No
     (delete as appropriate)
   - An analysis of all results will be made in statistical software, aggregating results. Direct identifiers such as names will be excluded, and all reasonable steps will be made to anonymise this data as far as possible.

   I understand that the final analysis will be published in support of the research findings. ☐

I confirm that I have read and fully understand the information provided on this form and therefore give my consent to taking part in this research.

Participant's signature:		**Date:**	
Participant's name:			
Researcher's signature:		**Date:**	

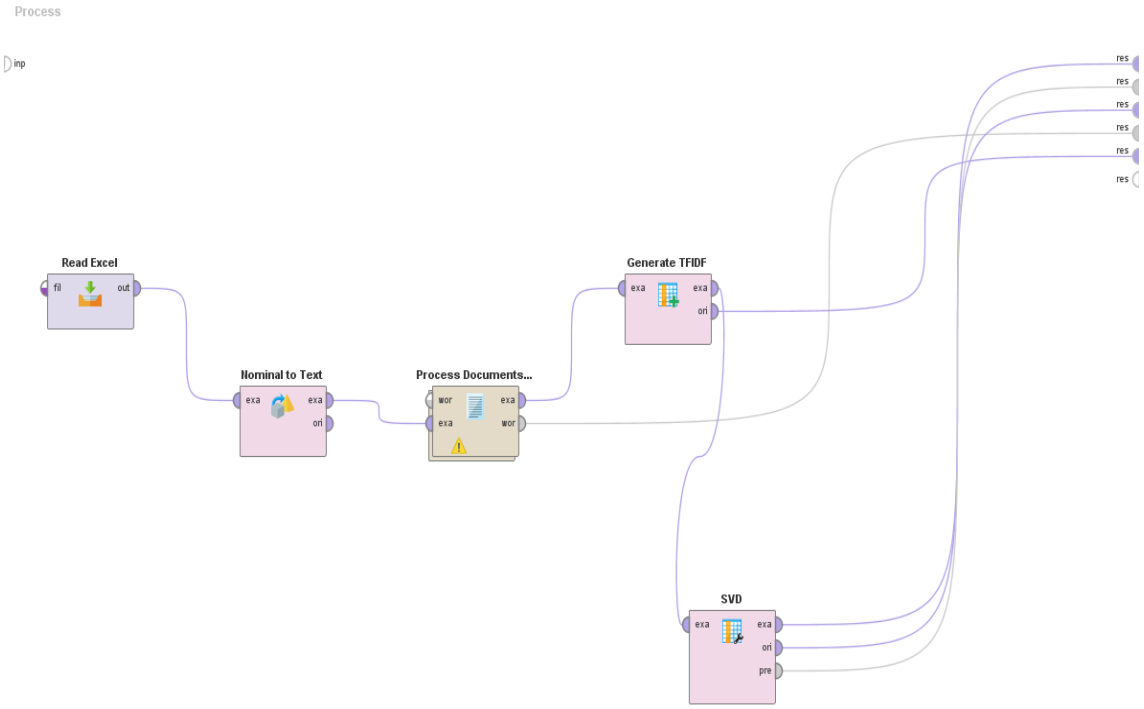
Appendix D Interview Code Book

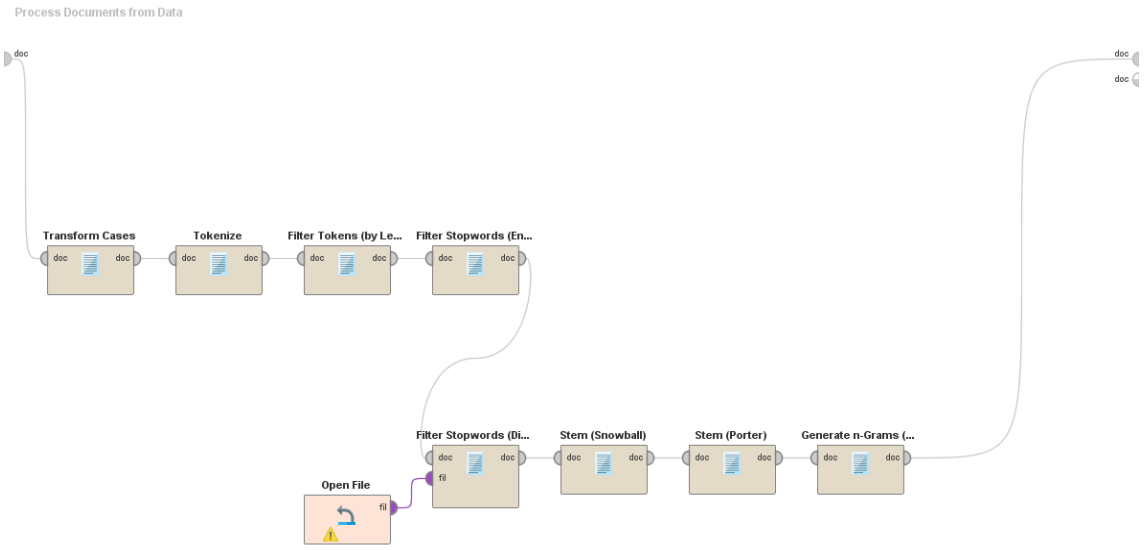
Name	References
awareness	29
salience	3
TOMA	3
credibility	3
brand meaning	6
clear brand proposition	18
image consistency	21
inconsistency	7
service consistency	15
keeping brand promise and expectations	12
meeting expectation	3
organisational associations	2
trust	5
differentiation	35
personality	7
friendly	2
innovation	4
place differentiation	5
authentic	4
product differentiation	4
loyalty	13
customer satisfaction	18
net promoter score	34
willingness to recommend	5
price premium	12
willingness to purchase	9
quality	7
brand experience and touch points	27
employee service	41
friendliness	3
hard service attributes	36
comfortable seats	3
on-time performance	13
service delivery	6
value	11

Appendix E Number of Passenger Reviews

	Country	Airlines	Busines Model	Number of Reviews		Country	Airlines	Busines Model	Number of Reviews
1	USA	American Airlines	FSC	100	26	Hong Kong	Cathay Pacific	FSC	103
2	USA	Delta	FSC	100	27	New Zeeland	Air New Zealand	FSC	104
3	USA	United Airlines	FSC	103	28	Taiwan	Eva Airways	FSC	104
4	USA	Southwest Airlines	LCC	100	29	South Korea	Asiana Airlines	FSC	102
5	Canada	Air Canada	FSC	105	30	Taiwan	China Airlines	FSC	102
6	USA	Alaska Airlines	FSC	96	31	Australia	Jetstar	LCC	102
7	USA	Jetblue Airways	LCC	98	32	Australia	Virgin Australia	FSC	101
8	Canada	Westjet Airlines	LCC	104	33	UK	British Airways	FSC	103
9	USA	Spirit Airlines	LCC	98	34	Germany	Lufthansa	FSC	106
10	USA	Hawaiian	FSC	97	35	Turkey	Turkish Airlines	FSC	102
11	UAE	FlyDubai	LCC	91	36	Ireland	Ryanair	LCC	106
12	UAE	Emirates	FSC	107	37	France	Air France	FSC	106
13	Qatar	Qatar Airways	FSC	105	38	UK	Easyjet	LCC	102
14	UAE	Etihad Airways	FSC	102	39	Russia	Aeroflot	FSC	106
15	Saudi Ara	Saudia	FSC	99	40	Norway	Norwegian Air	LCC	106
16	China	China Southern China	FSC	103	41	Netherlands	KLM	FSC	105
17	China	China Eastern China	FSC	104	42	Spain	Iberia	FSC	106
18	China	Air China	FSC	104	43	Switzerland	Swiss	FSC	104
19	Japan	ANA Japan	FSC	103	44	Sweden	Scandinavian Airline	FSC	104
20	Japan	Japan Airlines	FSC	100	45	Hungary	Wizz Air	LCC	102
21	Australia	Qantas	FSC	104	46	UK	Virgin Atlantic	FSC	106
22	Korea	Korean Air Lines	FSC	101	47	Chilie	LATAM	FSC	106
23	Singapor	Singapore Airlines	FSC	104	48	Mexico	Aeromexico	FSC	101
24	Thailand	Thai Airways	FSC	102	49	Colombia	Avianca	FSC	103
25	Malaysia	Airasia	LCC	98	50	Ethiopia	Ethiopian	FSC	100

Appendix F RapidMiner Model





Appendix G Expert Judgements

Initial Item Pool

The aim of this study is to identify the most representative questionnaire items from an item pool. You will be given 7 definitions for the constructs or KPIs (Awareness, Service Performance, Credibility, Perceived Value, Differentiation, Satisfaction, and Behavioural Intention.) which are expected to measure the health of an airline brand from the eyes of passengers. We identified a range of questionnaire items from the literature to measure the intended constructs which are stated with different wording. You are expected to assess to the degree to which questionnaire items "represent" the construct's definition as well as their suitability and wording clarity with three-point scale; (1) "Not Suitable," (2) "Reasonable Measure," (3) "Good Measure"

Awareness shows the presence of the brand in the customer's mind. Brand familiarity/recognition and recall are the main components of brand awareness. Recognition is related to the consumers' ability to identify brand which has been seen or heard in the past, and recall is the consumers' ability to retrieve the brand from memory.	Not Suitable	Reasonable Measure	Good Measure
I know what this airline's symbol or logo looks like.	**1**	**2**	**3**
I can recognize this airline among other competing airlines.	**1**	**2**	**3**
When I think of airlines, this airline is the brand that first comes to mind.	**1**	**2**	**3**
This airline is a brand of airlines, I am very familiar with.	**1**	**2**	**3**
I am aware of this airline.	**1**	**2**	**3**
Some characteristics of this airline come to my mind quickly.	**1**	**2**	**3**
I can quickly recall the symbol or the logo of this airline.	**1**	**2**	**3**
I know what this airline looks like	**1**	**2**	**3**
Service performance defined as encounter specific quality judgments of airline passengers including quality judgments related to key employee service delivery attributes and key functional service attributes.			

*These attributes include both LCC and FSC. They will differ in the survey based on our findings in the data mining paper.	Not Suitable	Reasonable Measure	Good Measure
This airline has comfortable seats and legroom.	**1**	**2**	**3**
This airline has modern aircraft.	**1**	**2**	**3**
This airline serves high-quality food and beverages.	**1**	**2**	**3**
This airline departs and arrives on-time.	**1**	**2**	**3**
This airline delivers baggage on-time.	**1**	**2**	**3**
Employees of this airline are professional.	**1**	**2**	**3**
Employees of this airline are friendly.	**1**	**2**	**3**
Employees of this airline are helpful.	**1**	**2**	**3**
This airline provides hassle-free customer experience and care.	**1**	**2**	**3**
This airline delivers good in-flight service.	**1**	**2**	**3**
This airline offers cheap ticket fares.	**1**	**2**	**3**
This airline has acceptable ancillary charges (Excess baggage, onboard food etc.)	**1**	**2**	**3**
Employees of this airline are courteous.	**1**	**2**	**3**
The cabin crew of this airline deliver good service.	**1**	**2**	**3**
This airline cares for its customer when things go wrong (in case of flight disruptions).	**1**	**2**	**3**
This airline serves various food and beverage options.	**1**	**2**	**3**

Brand credibility defined as the believability of a product/service information encapsulated in a brand. Trustworthiness expertise and likeability are the components of credibility, so consumers need to perceive that the brand is able to and willing to deliver this promise over time.	Not Suitable	Reasonable Measure	Good Measure
This airline delivers what it promises. (Trustworthiness)	**1**	**2**	**3**
This airline's service claims are believable.	**1**	**2**	**3**
Over time, my experiences with this airline have led me to expect it to keep its promises.	**1**	**2**	**3**
This airline is committed to delivering on its claims	**1**	**2**	**3**

This airline doesn't pretend to be something it isn't	**1**	**2**	**3**
This airline has a name you can trust	**1**	**2**	**3**
This airline can be trusted	**1**	**2**	**3**
This airline has the ability to deliver what it promises	**1**	**2**	**3**
This airline reminds me of someone who's competent and knows what he/she is doing	**1**	**2**	**3**
I like this airline	**1**	**2**	**3**
I admire this airline	**1**	**2**	**3**
Differentiation/Uniqueness refers to how a brand is seen as different/distinct from competing brands in the eyes of consumers.	Not Suitable	Reasonable Measure	Good Measure
This airline is distinct from other brands of airlines.	**1**	**2**	**3**
This airline really stands out from other brands of airlines.	**1**	**2**	**3**
This airline is very different from other brands of airlines.	**1**	**2**	**3**
This airline is unique from other brands of airlines.	**1**	**2**	**3**
This airline is different from other brands.	**1**	**2**	**3**
This airline is basically the same as the other brands.	**1**	**2**	**3**
Perceived value is the consumer's overall assessment of the utility of a product/service based on perceptions of what is received and what is given.	Not Suitable	Reasonable Measure	Good Measure
This airline is well priced.	**1**	**2**	**3**
Considering what I would pay for this airline, I will get more than my money's worth.	**1**	**2**	**3**
I consider this airline to be a bargain because of the benefits I receive.	**1**	**2**	**3**
Considering the ticket price, I pay for this airline, I believe that the airline offers sufficient services.	**1**	**2**	**3**
The ticket price of this airline is reasonable.	**1**	**2**	**3**
Compared to other brands of airlines, this airline is a good value for money.	**1**	**2**	**3**
When I use this airline, I feel I am getting my money's worth.	**1**	**2**	**3**

Satisfaction is a judgement that a product or service feature or the product or service itself, is providing a pleasurable level of consumption-related fulfilment, including levels of under or over fulfilment	Not Suitable	Reasonable Measure	Good Measure
I am satisfied with my decision to buy a ticket from this airline.	**1**	**2**	**3**
My choice to fly with this airline was a wise one.	**1**	**2**	**3**
I have truly enjoyed using this airline.	**1**	**2**	**3**
Using this airline has been a good experience.	**1**	**2**	**3**
I am sure it was the right thing to buy a ticket from this airline.	**1**	**2**	**3**
This is one of the best airlines I could have flown.	**1**	**2**	**3**
Flying with this airline has been a good experience.	**1**	**2**	**3**
I am not happy that I used this airline.	**1**	**2**	**3**
This airline always fulfils my expectations.	**1**	**2**	**3**
All the contacts made with this airline are satisfactory.	**1**	**2**	**3**
In general, I am satisfied with this airline.	**1**	**2**	**3**

Behavioural intention is defined as one's subjective probability, whether someone will act some behaviour or not. **Brand premium to the amount of money which a customer is a willingness to pay to a brand with respect to another brand offering similar or fewer benefits**	Not Suitable	Reasonable Measure	Good Measure
The price of this airline would have to go up quite a bit before I would switch to another brand of the airline.	**1**	**2**	**3**
I am willing to pay a lot more for this airline than other brands of airlines.	**1**	**2**	**3**
I am willing to pay ___% more for this airline over other brands of airlines. (0%, 5%,10%,15%,20%,25%,30% or more)	**1**	**2**	**3**
I am willing to pay a higher price for this airline brand of airline than for other brands of airlines.	**1**	**2**	**3**

How likely is it that you would recommend this airline to a friend or colleague?	**1**	**2**	**3**
How likely is it that you will fly this airline again in the future?	**1**	**2**	**3**
How likely you will use this Airline the next time you need to travel.	**1**	**2**	**3**
How likely you will take more than 50% of your flights with this airline.	**1**	**2**	**3**

Appendix H Passenger Survey

Cranfield University, Centre for Air Transport Management

Dear Participant,

We sincerely thank you for your contribution, help and taking time to participate in this study. This research is being done as a part of doctoral research conducted at Cranfield University, Centre for Air Transport Management, with the purpose of developing a tool for airlines to measure equity of their brands which may enable them to have a better understanding about their customers and may help them to improve their services and products. In this study, you will be asked to indicate your level of agreement/disagreement about the statements related to the airline you travelled with. The average completion time of this study is 5 minutes.
Your responses will be used for research purposes and will be treated with confidence. All information will be anonymised, and no personal identifiers will be used between the data and you. The data will be stored securely on our UK-based Qualtrics system, accessible only to the research team at Cranfield University. In the case of scientific publication, your aggregated depersonalised responses may be shared in the journal's respiratory.
Your participation in this study is completely voluntary. If you begin the study and do not want to continue with it, you may withdraw at any time during the study for any reason by simply closing the browser window. If you would like to withdraw your data after submission of the survey, you can contact the researcher with your Prolific ID for whom contact details have been provided below. If you need further information about the research, please feel free to contact; Eren Sezgen, at e.sezgen@cranfield.ac.uk. We hope you will enjoy engaging with this study and your help is highly appreciated. If you have read and understood this consent form, please indicate below your consent for the participation of this study

- ○ Yes, I consent
- ○ No, I do not consent

Before you start,

It is very important to understand each question and read them carefully that this study is being conducted for scientific purposes. You may be asked some **"controlling/attention"** questions during the survey which you may need to respond carefully to be eligible for the compensation.

Thank you for your interest in this study.

Please paste your Prolific ID into the box below.

_____

How many trips have you taken in the past 12 months?
Please count an outbound and return flight as one round trip.

- ○ Between 1 and 4
- ○ Between 5 and 10
- ○ More than 10

What was the purpose of your travel?

- ☐ Business
- ☐ Leisure
- ☐ Visiting friends and relatives
- ☐ Other

Which class did you usually use when flying in the past 12 months?

- ○ Economy
- ○ Premium economy
- ○ Business-class
- ○ First-class

Please indicate your agreement /disagreement with the following statement about (XXX)
(1= "strongly agree", 7= "strongly disagree")

	Strongly agree	Agree	Some what agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
I know what this airline's symbol or logo looks like.	○	○	○	○	○	○	○
This airline delivers what it promises.	○	○	○	○	○	○	○
I consider this airline to be a bargain because of the benefits I receive.	○	○	○	○	○	○	○
The price of this airline would have to go up quite a bit before I would switch to another brand of airline.	○	○	○	○	○	○	○
I am willing to pay a lot more for this airline than other brands of airlines.	○	○	○	○	○	○	○
I have truly enjoyed using this airline.	○	○	○	○	○	○	○
This airline has comfortable seats and legroom.	○	○	○	○	○	○	○

Please indicate your agreement /disagreement with the following statement about (XXX)
(1= "strongly agree", 7= "strongly disagree")

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
I can recognise this airline among other competing airlines.	○	○	○	○	○	○	○
This airline has modern aircraft.	○	○	○	○	○	○	○
This airline's service claims are believable.	○	○	○	○	○	○	○
The ticket price of this airline is reasonable.	○	○	○	○	○	○	○
This airline is distinct from other brands of airlines.	○	○	○	○	○	○	○
This airline has the ability to deliver what it promises.	○	○	○	○	○	○	○
This airline serves high-quality food and beverages.	○	○	○	○	○	○	○

Please indicate your agreement /disagreement with the following statement about (XXX)
(1= "strongly agree", 7= "strongly disagree")

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
This airline departs and arrives on-time.	○	○	○	○	○	○	○
Over time, my experiences with this airline have led me to expect it to keep its promises.	○	○	○	○	○	○	○
This airline really stands out from other brands of airlines.	○	○	○	○	○	○	○
Compared to other brands of airlines, this airline is a good value for money.	○	○	○	○	○	○	○
I like this airline.	○	○	○	○	○	○	○
This airline delivers baggage on-time.	○	○	○	○	○	○	○
This airline provides hassle-free customer experience and care.	○	○	○	○	○	○	○

Please indicate your agreement /disagreement with the following statement about (XXX)
(1= "strongly agree", 7= "strongly disagree")

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
I am aware of this airline.	○	○	○	○	○	○	○
Employees of this airline are professional.	○	○	○	○	○	○	○
This airline is committed to delivering on its claims.	○	○	○	○	○	○	○
Using this airline has been a good experience.	○	○	○	○	○	○	○
This airline is very different from other brands of airlines.	○	○	○	○	○	○	○
When I use this airline, I feel I am getting my money's worth.	○	○	○	○	○	○	○
Employees of this airline are friendly.	○	○	○	○	○	○	○
This airline delivers good in-flight service.	○	○	○	○	○	○	○

Please indicate your agreement /disagreement with the following statement about (XXX)
(1= "strongly agree", 7= "strongly disagree")

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Employees of this airline are helpful.	○	○	○	○	○	○	○
This airline has a name you can trust.	○	○	○	○	○	○	○
This airline is unique from other brands of airlines.	○	○	○	○	○	○	○
I am willing to pay a higher price for this airline than for other brands of airlines.	○	○	○	○	○	○	○
I am satisfied with my decision to buy a ticket from this airline.	○	○	○	○	○	○	○
This airline serves various food and beverage options.	○	○	○	○	○	○	○

How likely is it that you would recommend (XXX) to a friend or colleague?

- ○ Extremely likely
- ○ Moderately likely
- ○ Slightly likely
- ○ Neither likely nor unlikely
- ○ Slightly unlikely
- ○ Moderately unlikely
- ○ Extremely unlikely

How likely is it that you will fly with (XXX) again in the future?

- ○ Extremely likely
- ○ Moderately likely
- ○ Slightly likely
- ○ Neither likely nor unlikely
- ○ Slightly unlikely
- ○ Moderately unlikely
- ○ Extremely unlikely

What is your age?

- ○ Under 21
- ○ 21-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ 65+

What is your gender?

- ○ Male
- ○ Female

In which country do you currently reside?

▼ Afghanistan ... Zimbabwe

Would you please give your best guess? What is your household income in (previous year) before taxes?

- ○ Less than £10,000
- ○ £10,000 to £19,999
- ○ £20,000 to £29,999
- ○ £30,000 to £39,999
- ○ £40,000 to £49,999
- ○ £50,000 to £59,999
- ○ £60,000 to £69,999
- ○ £70,000 to £79,999
- ○ £80,000 to £89,999
- ○ £90,000 to £99,999
- ○ £100,000 to £149,999

£150,000 or more

Appendix I Research Ethics Form

26 June 2019

Dear Mr Sezgen ,

Reference: CURES/8698/2019
Title: Development and validation of an Airline Specific Customer-based Brand Equity Scale

Thank you for your application to the Cranfield University Research Ethics System (CURES).

We are pleased to inform you your CURES application, reference CURES/8698/2019 **has been reviewed. You may now proceed with the research activities you have sought approval for.**

If you have any queries, please contact CURES Support.

We wish you every success with your project.

Regards,

CURES Team

Appendix J Descriptive Statistics of Passenger Surveys

Descriptive Statistics FSCs										
	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IT1	453	1	7	6.01	1.099	1.208	-1.665	0.115	3.884	0.229
IT2	453	2	7	6.21	0.892	0.796	-1.747	0.115	5.006	0.229
IT5	453	4	7	6.71	0.575	0.331	-2.196	0.115	5.283	0.229
IT9	453	1	7	5.58	1.081	1.168	-1.223	0.115	2.119	0.229
IT10	453	1	7	5.41	1.167	1.362	-1.084	0.115	1.689	0.229
IT16	453	1	7	5.45	1.06	1.124	-0.898	0.115	1.115	0.229
IT11	453	1	7	5.4	1.164	1.356	-1.112	0.115	1.582	0.229
IT18	453	1	7	5.73	1.143	1.307	-1.186	0.115	1.874	0.229
IT12	453	1	7	5.6	1.05	1.103	-0.97	0.115	1.277	0.229
IT14	453	1	7	5.81	1.09	1.188	-1.338	0.115	2.576	0.229
IT20	453	1	7	5.23	1.24	1.537	-0.713	0.115	0.151	0.229
IT21	453	1	7	5.07	1.306	1.705	-0.656	0.115	-0.027	0.229
IT22	453	1	7	4.72	1.341	1.798	-0.454	0.115	-0.463	0.229
IT23	453	1	7	4.86	1.338	1.791	-0.509	0.115	-0.332	0.229
IT44	453	1	7	4.06	1.607	2.583	0.025	0.115	-0.921	0.229
IT45	453	1	7	3.57	1.548	2.397	0.14	0.115	-0.765	0.229
IT47	453	1	7	3.98	1.566	2.453	-0.137	0.115	-0.751	0.229
IT48	453	1	7	5.83	1.271	1.616	-1.607	0.115	2.931	0.229
IT49	453	1	7	6.31	1.073	1.151	-2.416	0.115	7.586	0.229
PER1	453	1	7	5.2	1.281	1.642	-0.87	0.115	0.665	0.229
PER10	453	1	7	5.94	0.958	0.917	-1.707	0.115	5.076	0.229
PER11	453	1	7	5.43	1.206	1.454	-1.156	0.115	1.836	0.229
PER2	453	2	7	5.74	1.076	1.158	-1.062	0.115	1.348	0.229
PER3	453	1	7	5.01	1.405	1.973	-0.848	0.115	0.451	0.229
PER4	453	1	7	5.37	1.133	1.283	-1.064	0.115	1.212	0.229
PER5	453	1	7	5.56	1.14	1.3	-1.173	0.115	1.898	0.229
PER6	453	1	7	5.38	1.214	1.475	-1.132	0.115	1.699	0.229
PER7	453	1	7	6.04	0.939	0.881	-1.712	0.115	5.119	0.229
PER8	453	1	7	5.88	0.97	0.94	-1.49	0.115	4.176	0.229
PER9	453	1	7	5.74	1.06	1.124	-1.211	0.115	2.101	0.229
IT35	453	1	7	5.31	1.299	1.687	-0.856	0.115	0.791	0.229
IT36	453	1	7	5.75	1.14	1.299	-1.583	0.115	3.45	0.229
IT33	453	1	7	5.54	1.104	1.218	-1.099	0.115	1.79	0.229
IT28	453	1	7	4.44	1.324	1.752	-0.217	0.115	-0.245	0.229
IT30	453	1	7	4.85	1.17	1.368	-0.906	0.115	1.02	0.229
IT31	453	1	7	4.82	1.274	1.622	-0.599	0.115	0.218	0.229
IT32	453	1	7	5.13	1.247	1.556	-0.743	0.115	0.485	0.229
Valid N (listwise)	453									

Descriptive Statistics LCCs										
	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IT1	508	1	7	6.13	1.117	1.247	-1.943	0.108	5.039	0.216
IT2	508	2	7	6.28	0.762	0.58	-1.083	0.108	2.215	0.216
IT5	508	4	7	6.69	0.52	0.27	-1.483	0.108	1.78	0.216
IT9	508	1	7	5.5	1.117	1.249	-1.014	0.108	1.292	0.216
IT10	508	1	7	4.97	1.181	1.396	-0.458	0.108	-0.138	0.216
IT16	508	1	7	5.25	1.093	1.194	-0.855	0.108	1.031	0.216
IT11	508	1	7	5.12	1.237	1.529	-0.752	0.108	0.353	0.216
IT18	508	1	7	5.21	1.329	1.766	-0.97	0.108	1.013	0.216
IT12	508	1	7	5.22	1.085	1.176	-0.586	0.108	0.598	0.216
IT14	508	1	7	4.92	1.38	1.903	-0.655	0.108	0.083	0.216
IT20	508	1	7	5.05	1.214	1.473	-0.404	0.108	-0.306	0.216
IT21	508	1	7	4.62	1.305	1.704	-0.132	0.108	-0.432	0.216
IT22	508	1	7	4.19	1.355	1.836	0.148	0.108	-0.462	0.216
IT23	508	1	7	4.2	1.409	1.986	0.066	0.108	-0.575	0.216
IT44	508	1	7	4.38	1.583	2.505	-0.213	0.108	-0.678	0.216
IT45	508	1	7	3.01	1.472	2.168	0.527	0.108	-0.149	0.216
IT47	508	1	7	2.64	1.445	2.089	0.74	0.108	-0.116	0.216
IT48	508	1	7	5.38	1.464	2.142	-1.162	0.108	1.007	0.216
IT49	508	1	7	6.28	1.079	1.164	-2.248	0.108	6.506	0.216
PER1	508	1	7	5.66	0.932	0.869	-0.994	0.108	2.063	0.216
PER2	508	2	7	5.58	1.03	1.061	-0.811	0.108	0.67	0.216
PER3	508	1	7	4.45	1.51	2.279	-0.338	0.108	-0.679	0.216
PER4	508	1	7	5.02	1.362	1.856	-0.873	0.108	0.32	0.216
PER5	508	1	7	5.57	1.019	1.039	-0.94	0.108	1.474	0.216
PER6	508	2	7	5.88	0.977	0.955	-0.822	0.108	0.645	0.216
PER7	508	1	7	4.23	1.34	1.795	-0.249	0.108	0.186	0.216
PER8	508	1	7	4.13	1.612	2.597	-0.115	0.108	-0.827	0.216
IT35	508	1	7	4.91	1.395	1.945	-0.462	0.108	-0.248	0.216
IT36	508	1	7	5.34	1.271	1.614	-1.058	0.108	1.005	0.216
IT33	508	1	7	5.42	1.139	1.298	-1.24	0.108	2.439	0.216
IT28	508	1	7	4.92	1.359	1.846	-0.455	0.108	-0.313	0.216
IT30	508	1	7	5.7	0.942	0.888	-1.023	0.108	2.093	0.216
IT31	508	1	7	5.42	1.104	1.218	-0.81	0.108	1.281	0.216
IT32	508	1	7	5.2	1.172	1.374	-0.706	0.108	0.601	0.216
Valid N (listwise)	508									

	Descriptive Statistics Pooled								
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IT1	961	1	7	6.07	1.11	-1.802	0.079	4.418	0.158
IT2	961	2	7	6.24	0.826	-1.502	0.079	4.212	0.158
IT5	961	4	7	6.7	0.546	-1.871	0.079	3.779	0.158
IT9	961	1	7	5.54	1.101	-1.107	0.079	1.634	0.158
IT10	961	1	7	5.18	1.195	-0.714	0.079	0.434	0.158
IT16	961	1	7	5.34	1.082	-0.87	0.079	1.048	0.158
IT11	961	1	7	5.25	1.21	-0.908	0.079	0.796	0.158
IT18	961	1	7	5.46	1.271	-1.076	0.079	1.359	0.158
IT12	961	1	7	5.4	1.085	-0.738	0.079	0.732	0.158
IT14	961	1	7	5.34	1.326	-0.936	0.079	0.676	0.158
IT20	961	1	7	5.14	1.229	-0.545	0.079	-0.135	0.158
IT21	961	1	7	4.83	1.324	-0.361	0.079	-0.406	0.158
IT22	961	1	7	4.44	1.374	-0.128	0.079	-0.655	0.158
IT23	961	1	7	4.51	1.414	-0.201	0.079	-0.657	0.158
IT44	961	1	7	4.23	1.602	-0.101	0.079	-0.828	0.158
IT45	961	1	7	3.27	1.533	0.341	0.079	-0.555	0.158
IT47	961	1	7	3.27	1.646	0.299	0.079	-0.865	0.158
IT48	961	1	7	5.59	1.393	-1.348	0.079	1.68	0.158
IT49	961	1	7	6.29	1.076	-2.323	0.079	6.961	0.158
IT35	961	1	7	5.1	1.364	-0.638	0.079	0.098	0.158
IT36	961	1	7	5.53	1.227	-1.267	0.079	1.801	0.158
IT33	961	1	7	5.48	1.123	-1.176	0.079	2.155	0.158
IT28	961	1	7	4.7	1.362	-0.319	0.079	-0.358	0.158
IT30	961	1	7	5.3	1.137	-0.984	0.079	1.432	0.158
IT31	961	1	7	5.14	1.223	-0.732	0.079	0.653	0.158
IT32	961	1	7	5.17	1.208	-0.73	0.079	0.553	0.158
Valid N (listwise)	961								

	Descriptive Statistics Pre-test									
	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IT1	200	1	7	5.77	1.321	1.746	-1.338	0.172	1.766	0.342
IT2	200	2	7	5.99	0.959	0.92	-1.233	0.172	2.017	0.342
IT3	200	1	7	4.92	1.564	2.446	-0.63	0.172	-0.299	0.342
IT5	200	3	7	6.53	0.782	0.612	-2.135	0.172	5.578	0.342
IT9	200	1	7	5.5	1.156	1.337	-1.202	0.172	1.825	0.342
IT10	200	1	7	5.08	1.113	1.24	-0.689	0.172	0.871	0.342
IT16	200	2	7	5.28	1.079	1.165	-0.882	0.172	0.925	0.342
IT11	200	1	7	5.17	1.349	1.82	-0.934	0.172	0.462	0.342
IT18	200	1	7	5.38	1.298	1.684	-0.806	0.172	0.652	0.342
IT12	200	1	7	5.32	1.133	1.284	-0.718	0.172	0.825	0.342
IT14	200	1	7	5.34	1.266	1.602	-1.009	0.172	1.179	0.342
IT25	200	1	7	3.78	1.401	1.964	0.175	0.172	-0.668	0.342
IT20	200	2	7	4.82	1.243	1.545	-0.414	0.172	-0.293	0.342
IT21	200	1	7	4.62	1.409	1.986	-0.248	0.172	-0.679	0.342
IT22	200	1	7	4.26	1.367	1.869	0.185	0.172	-0.716	0.342
IT23	200	1	7	4.22	1.46	2.132	-0.007	0.172	-0.733	0.342
IT44	200	1	7	4.37	1.511	2.283	-0.153	0.172	-0.552	0.342
IT45	200	1	7	2.92	1.553	2.411	0.63	0.172	-0.242	0.342
IT47	200	1	7	3.09	1.581	2.5	0.506	0.172	-0.495	0.342
IT48	200	1	7	5.67	1.315	1.73	-1.218	0.172	1.389	0.342
IT49	200	1	7	6.29	1.019	1.039	-1.948	0.172	5.111	0.342
IT40	200	1	7	5.34	1.475	2.175	-1.031	0.172	0.547	0.342
IT35	200	1	7	5.02	1.356	1.839	-0.598	0.172	0.27	0.342
IT36	200	1	7	5.45	1.239	1.535	-1.133	0.172	1.303	0.342
IT33	200	2	7	5.41	1.081	1.169	-0.863	0.172	0.888	0.342
IT28	200	1	7	4.79	1.388	1.926	-0.393	0.172	-0.369	0.342
IT30	200	2	7	5.42	1.062	1.128	-0.715	0.172	0.669	0.342
IT31	200	1	7	5.19	1.221	1.491	-0.721	0.172	0.456	0.342
IT32	200	2	7	5.13	1.217	1.481	-0.657	0.172	0.143	0.342
Valid N (listwise)	200									

Appendix K Journal Paper

Voice of airline passenger: A text mining approach to understand customer satisfaction

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Keywords:
Customer satisfaction
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ABSTRACT

This paper investigates the key drivers of customer satisfaction and dissatisfaction towards both, full-service and low-cost carriers and also towards, economy and premium cabins. Latent Semantic Analysis - a text mining and categorisation technique — is applied to analyse online user-generated airline reviews. Over five thousand passenger reviews for fifty (50) airlines were collected from the online review site, TripAdvisor. Findings show that there are fundamental differences in the drivers of passenger satisfaction depending on the class of air travel purchased, and whether the airline is a low cost or a full service carrier. Friendliness and helpfulness of staff are the key factors for those travelling in Economy Class, product value is key for those in premium cabins, and a low price is the key satisfaction driver for those that choose to travel on a low cost airline. The research also shows that the service attributes seat comfort and legroom, luggage/flight disruptions and staff behaviours are the main reasons for passengers' dissatisfaction among all groups. This study provides an alternative customer satisfaction analysis for managers to hear the voice of their customers by using a well-established text mining technique and by analysing the reviews of satisfied and dissatisfied customers.

1. Introduction

Fierce competition in the airline industry requires effective customer relations management both online and offline to retain customer satisfaction, and so drive future income. Customer feedback, in particular, is critical since it is an actuator source for business growth and performance, improvement of customer experience and innovative product and service offerings (Siering et al., 2018). Satisfying passengers and translating this satisfaction into behavioural commitment is key for airlines to remain competitive.

There are numerous ways to asses and address customer satisfaction, and behavioural intentions. Managers generally rely on customer feedback both to identify future managerial goals and to monitor the performance of a firm through customer satisfaction and loyalty scores, such as Net Promoter Scores and average customer satisfaction scores (Morgan and Rego, 2006). The International Air Transport Association (IATA) provides a passenger satisfaction benchmarking study called Airs@t. The scale incorporates 70 travel attributes including pre-flight, in-flight and post-flight attributes of overall travel experience (IATA, 2018). In the academic context, various service quality frameworks—SERVQUAL, AIRQUAL, Kano and SERVPERF— have been used to investigate the relationship among airline service quality attributes, and satisfaction, and loyalty (Chiou and Chen, 2010; Chen, 2008; Park et al., 2004; Ekiz et al., 2006; Basfirinci and Mitra, 2015; Hussain et al., 2015; Rajaguru, 2016). Antecedents and drivers of airline passenger satisfaction and loyalty (Forgas et al., 2010; Mikulić and Prebežac, 2011; Akamavi et al., 2014; Vlachos and Lin, 2014) and/or airline service attributes (Vlachos and Lin, 2014; Medina-Muñoz et al., 2018) have also been investigated by a number of researchers. A large number of airline service attributes identified and used in the literature (See Appendix A) to analyse how these attributes lead to customer satisfaction, loyalty and willingness to recommend are either based on airline business model and/or service class, or are at an aggregated level. However, there is no agreement reached in the literature on which service attributes establishes service quality and satisfaction (Medina-Muñoz et al., 2018). It is critical to understand what the key service attributes leading to passenger satisfaction are and how they differ among different airline business models and service classes.

Online platforms (such as Twitter, Facebook and Skytrax) allow customers to share information, opinions, and knowledge about products, services and brands (Filieri and McLeay, 2014). Today, an increasing number of consumers read and share online travel-related content particularly if those are posted or created by their friends (Gretzel et al., 2007). Customer feedback and reviews on online fora are boosting the expansion of word-of-mouth (WOM) on the web (Filieri and McLeay, 2014). They are especially relevant for service industries

because of intangible characteristics of services which include purchase risks (Nikookar et al., 2015). Sotiriadis and van Zyl (2013) found that online reviews and recommendations affect the decision-making process of tourists towards tourism services and WOM has a significant impact on the subjective norms and attitudes towards an airline, and a customer's willingness to recommend (Nikookar et al., 2015). According to the Pew Research Centre (2016), 82% of US adults tend to read online reviews and ratings prior to purchasing a product or service for the first time. In the US, reading reviews is particularly common for those who under 50. In the age group 18–29, 53% and in the age group 30–49 year 47% always read reviews when buying something first time. This proportion is lower in the 50–64 age group at 34% and 23% for 65 and older. Although reading reviews is popular, one-in-ten of Americans *always* share, and almost 50% *sometimes* share reviews about product and services they used (Smith and Anderson, 2016).

The increasing presence of customer engagement in online fora provides a large amount of useful data for airline marketers and researchers. Effective analysis of these unstructured data can enable real-time customer feedback analysis, compared to traditional data analysing techniques (Liau and Tan, 2014). Although it is desirable for airlines to assess customer satisfaction, and to put forward remedial actions, it appears difficult to obtain genuine passenger feedback through traditional methods. The majority of customers are not always willing to share genuine feedback with their service provider, particularly feedback about their dissatisfaction (Berezina et al., 2016). Research shows that complaint behaviour of airline passengers varies based on demographic characteristics, and they voice their complaints either directly to the company or privately (WOM) or via a third party platform (Kim and Lee, 2009). It would be very useful for airlines to better understand their diverse customer base in order to take service improvement strategies since airlines are inherently multicultural businesses. The internet enables airlines to do this as customers share their experiences through various online platforms (Berezina et al., 2016). However, only a few studies in the airline sector have used online customer-generated content by conducting sentiment analysis of fora such as Twitter (Liau and Tan, 2014; Misopoulos et al., 2014) and Skytrax airline reviews (Siering et al., 2018; Xu et al., 2018) to identify critical elements of airline services. Online data are generally unstructured, and it is very difficult to analyse this large amount of data manually and objectively. However, this study uses a well-established statistical method, Latent Semantic Analysis (LSA) that reveals hidden meanings in unstructured data. The main purpose of this study is, therefore, to analyse airline user-generated reviews to identify which service attributes lead to passenger satisfaction and dissatisfaction based on different airline business models and service class.

The main contribution of this study is to investigate TripAdvisor customer reviews of airlines through the use of a well-established text mining method (LSA). To the best of the authors' knowledge, no previous research has been undertaken using LSA technique, and TripAdvisor reviews in an airlines context. Furthermore, contrary to previous research, this study does not only consider passenger satisfaction attributes, but also takes into account customer dissatisfaction attributes and their importance rankings, by comparing airline business model and service class. This study also offers an alternative method to airlines to assess the satisfaction and dissatisfaction of their customers.

The paper is structured as follows; Section 2-3 explains theoretical background and relevant literature. Section 4 gives background information about LSA, Section 5 explains the research method including data collection, and LSA application, Sections 6 and 7 present research findings and discussion, and finally Section 8, concludes with a discussion and implications of the findings, and considers future research requirements.

2. Theoretical background

2.1. Customer satisfaction

Customer satisfaction is an output resulting from purchase or consumption and it emerges from the customers' comparison between the benefits and costs together with the expected consequences. It can be assessed as the cumulation of the satisfactions originating from various product and/or service attributes (Churchill and Surprenant, 1982). Oliver (1980) approach to customer satisfaction has widely accepted in the literature who expresses customer satisfaction as a function of expectation and expectancy disconfirmation.

This research is also grounded on expectancy disconfirmation theory which explains customer satisfaction and dissatisfaction. The theory suggests that consumers have expectations about a product or service prior to its purchase which then becomes a standard for them for the product or service in question. Once the product or service is used, the outcomes or perceptions are compared to pre-purchase expectations. This comparison leads to three scenarios, if the perceived performance matches with expectations, confirmation (satisfaction) occurs, if the expectations are exceeded, positive disconfirmation occurs, and if the expectations are not met negative disconfirmation (dissatisfaction) occurs (Yuksel, 2001).

Distinguishing airlines from one another in terms of their business models, and describing them by using a uniform formulation is difficult, especially considering the dynamic nature of the industry (Mason and Morrison, 2009). However, from the customer point of view, expectations prior to purchase, and perceptions after consumption of airline service may differ based on the airline's business model due to the nature of service and products offered by low-cost carriers (LCCs) and full-service network carriers (FSNCs) may show differences. Passengers may form different expectations for low-cost carriers and as opposed to full-service carriers, which then translates into dis/satisfaction based on their overall assessment of service performance and expectations from the airline.

Similarly, different products of an airline (economy/premium) may also form different passenger expectations and perceptions which lead to dis/satisfaction based on service delivered. Consumer utility expectations may increase proportionality to the amount they pay. Since value is a trade-off between what you give and what you get, value perceptions form customer expectations and perceptions, and so their satisfaction towards the different service classes (Zeithaml, 1988). Economy and premium passengers may value different service attributes differently and therefore their satisfaction level would differ since passengers' level of service expectation regarding service class would determine their level of satisfaction (Laming and Mason, 2014).

3. Literature review

3.1. Customer satisfaction and airline business model and service class

Continuous customer interest in products or services can be provided by ensuring a satisfactory purchase experience which can lead to repeated purchase behaviour (Oliver, 1993). There is a large number of service marketing literature that identifies the critical impact of service quality and customer satisfaction on purchase intention formation (Taylor and Baker, 1994). The importance of customer satisfaction has attracted great deal of interest on this topic for researchers who are interested in understanding customer purchasing behaviour. Various studies in this area confirm that there is a positive relationship between airline customer satisfaction and brand loyalty and/or behavioural intention (Park et al., 2004; Forgas et al., 2010; Hussain et al., 2015; Rajaguru, 2016). Additionally, a number of literature below highlight that there are different drivers of satisfaction for both full-service and low-cost passenger and economy and premium passenger.

Forgas et al., (2010) conducted a survey on passengers of three

airlines, operating the Barcelona-London pair, to find out the antecedents of passenger loyalty based on low-cost carrier (LCC) versus full-service network carrier (FSNC) business models. They found that satisfaction and trust are the main antecedents of passenger loyalty for both types, whereas there are significant differences in the antecedents of satisfaction based on business types. While service quality and monetary cost are the main attributes that make satisfaction for LCC passenger, professionalism of the staff is the key satisfaction attribute for FSNCs. Similarly, the effect of value for money and service quality on customer satisfaction and behavioural intention on both airline types is examined by Rajaguru (2016) through a survey on 15 FSNCs and 6 LCCs customers. It is found that value for money is the main determinant to achieve satisfaction and behavioural intention for LCCs, whilst the balance between value for money and service quality attributes is important for FSNC passengers. Similarly, Kos Koklic et al., (2017) found a strong positive relationship between customer satisfaction and quality of staff and airline tangibles (seat comfort, leg room and extra offers) for FSCs than LCCs. Lee et al.'s (2018) results also support previous research that they found significant differences in service expectations, satisfaction and loyalty formation of LCCs and FSC passenger. On the other hand, Loureiro & Fialho, (2017) in their study, based on 304 airline passengers' flight experience in Europe, in which they examined how in-flight ambiance (temperature, odour etc.), space/function (seat configuration/comfort, in-flight amenities etc.) and crew attributes lead to satisfaction, trust, affective commitment, and finally behavioural intention. They did not find significant differences in the antecedents of satisfaction for FSNCs and LCCs.

Previous research shows that passenger perceptions differ based on service class. Park (2007) conducted a survey to analyse the purchase behaviour of airline passengers in different segments with 11 factors for both Korean and Australian passengers. He found that business/first class passengers rate value of service, in-flight service and overall service quality higher than economy passengers. Similarly, An & Noh (2009) in their study found that six attributes are important for premium passengers respectively; alcoholic beverage and non-alcoholic beverage, responsiveness and empathy, reliability, assurance, presentation style of food, and food quality, whereas five attributes are observed as important for economy passenger in descending order; responsiveness and empathy, food quality, alcoholic beverage, non-alcoholic beverage, and reliability. Vlachos and Lin (2014) in their research specified 10 key attributes based on a review of literature and interviews. Their survey of 462 business passengers found the relationship between attributes and loyalty of business passengers. Reputation, in-flight service, frequent flyer program, and aircraft were found to be the main attributes driving business passengers loyalty. Similarly, Dolnicar et al. (2011) found that loyalty programs are key to business passengers' loyalty.

Most of the previous research on airline passenger behaviour confirms the difference of the drivers of passenger satisfaction and loyalty for different airline business models and cabin class and they emphasis on the difference of passenger expectations. However, there is no consensus reached in the literature which service attributes or set of attributes establishing passenger satisfaction for different business models and cabin class. Therefore research used or identified the service attributes for a particular region or markets or they are validated for a particular markets (e.g. Lee et al., 2018; Forgas et al., 2010). It could be quite important to determine these key attributes in a broader context. As well as, examination of user generated reviews would be complimentary to the traditional research and it may enable a comprehensive examination of customer satisfaction due to the open structure of the reviews and the availability of reaching a large number of passengers and the anonymity of respondents (Xu et al., 2017).

3.2. Customer dissatisfaction

Passenger interaction with an airline does not necessarily result in satisfaction. Dissatisfaction is an apparent reality in the industry. When the expectations are not met, negative disconfirmation occurs due to the gap between passenger expectation and service performance perceptions. Failure in the service delivery often results in customer dissatisfaction and complaint behaviour such as; negative word-of-mouth (WOM), complaints, and customer turnover (Lee et al., 2011). It is, thus, very important to understand the attributes that lead to passenger dissatisfaction. Kano et al., (1984) explain these attributes in their customer satisfaction model, under two categories; "must-be" and "one-dimensional requirement". Particularly unfulfilled "must-be" elements cause excessive dissatisfaction, but their presence does not enhance satisfaction since they are perceived as guaranteed features. On the other hand, customer satisfaction increases proportionally when "one dimensional" requirements are realised (Matzler and Hinterhuber, 1998).

4. Latent Semantic Analysis (LSA) background

LSA is realised throughout the computation of high-dimensional semantic vectors, or context vectors of words from their co-occurrence statistics (Kanerva et al., 2000). Fundamentally LSA uncovers common factors by collecting all of the context within which words appear (Sidorova et al., 2008). LSA uses a system of coordinates of reduced dimensionality to link similar ideas, and its foundation emerges from a vector space model (VSM). In the VSM, documents (passenger reviews) are considered as a bag-of-words and the grammatical and syntactical structure of a text are disregarded. Documents are transformed into a mathematical vector in a multi-dimensional space and every single term (word) in the document library refers to a dimension (Visinescu and Evangelopoulos, 2014).

The usage of automatic text mining and natural language processing (NPL) methods has gained increasing attention in academic research to analyse unstructured texts. However LSA provides a range of advantages over other frequency-count methods (Ahmad and Laroche, 2017). LSA is completely automatic mathematical and statistical method and it does not use human-built dictionaries, knowledge bases, semantic networks, grammars, syntactic, parsers, and morphologies as in traditional NLP or artificial intelligence software (Landauer et al., 1998). It is suggested in psychology research that LSA works in a similar way as the human brain interprets text meaning (Sidorova et al., 2008).

In this study, the well-accepted statistical text analysis technique, LSA will be used because of its advantages over other techniques. The manual analysis of unstructured textual data, a sample of 5,120 reviews, is not practical enough using traditional qualitative methods, so text mining methods come into play to render them in an interpretable form (Lee et al., 2010).

Methodology

5.1. Data collection

The data for this research are gathered from TripAdvisor.com, a website which enables travellers to review and share their experiences, photos, express their views on hotels, airlines, restaurants, and destinations (Berezina et al., 2016). TripAdvisor examine all the data entered by the users to make sure they comply with content guidelines. Approved reviews are posted on the hotel/airlines page. Summary rating scores are provided as a result of user ratings (O'Connor, 2010). After the introduction of an airline reviews platform in 2016, users can access user-generated information about airlines or they can review their flight experiences. Additionally, the website allows users to rate both their overall flight experience and specific experiences about seat comfort and customer service to demonstrates their satisfaction level with an airline on a five-point scale.

For this study, 5,120 user-generated airline reviews, 2,584 positive and 2,536 negative, were collected from the website. The sample only

include reviews written in English by international passengers (and excludes passengers travelling domestically). The sample covers reviews of the top 50 most valuable airline brands from around the world. The airlines were selected proportionally to their global market share based on Revenue Passenger Kilometres (IATA, 2018b), the global market share of airline business models (Full-service/legacy 77% and leisure/low-cost 23%) (IATA, 2017) and passenger class (economy 82%, premium-class 18%). Brand Finance's annual report of airline brand values (BrandFinance, 2018) was used to select the most valuable airline brands in the world. However, only 45 airlines on the list are considered for the sample since the remaining five (Hainan Airlines, Shenzhen Airlines, Juneyao Airlines, Xiamen Airlines, and Shanghai Airlines) did not have a sufficient number of reviews for the data collection period (See 45 airlines from; BrandFinance, 2018). Instead, the following airlines were selected to be included in the sample by assessing the market shares in their respective regions (LATAM, Aero-mexico, Avianca, Hawaiian, and Ethiopian). Based on these two criteria, the airline sample is distributed by region as follows; 2% Africa, 34% Asia-Pacific, 28% Europe, 6% Latin America, 10% Middle East and 20% North America, and by airline type; 22% low-cost, 78% traditional.

On average 102 airline passenger reviews (includes positive and negative) per airline -reviewed in the 12 months period between January 2017 to December 2017- were collected based on predefined indices for each month (beginning, mid and end of month) with the purpose of elimination of any seasonality impact on reviews. In certain periods of the year, customer complaints or satisfactions may gather due to seasonality (peak) or industry-specific factors like weather, strikes. For each review, user-related information country, contribution level (calculated based on the number of previous reviews) and the number of reviews, date of review, overall satisfaction rating, review, and cabin class information were collected.

5.2. Data analysis

5.2.1. Steps and application of LSA

In line with previous studies (Sidorova et al., 2008; Yalcinkaya and Singh, 2015; Kulkarni et al., 2014; Xu and Li, 2016; Ahmad and Laroche, 2017) Latent Semantic Analysis is realised in the following four steps; 1) textual data processing, 2) term frequency-inverse document frequency transformation and singular value decomposition, 3) analysis of factors, and 4) factor rotation and labelling (Fig. 1)

Step 1: *Quantification of textual data (Text processing).*

Airline passenger reviews are separated into positive and negative reviews for each airline business model and passenger class. The dissatisfied economy passenger analysis will be used as an example to clarify the LSA process. The following procedures are applied to process the data sets in Rapid Miner 9.0 studio and Matlab for the subsequent analysis; customer reviews are transformed into lowercase letters. The reviews are then broken into small units by a tokenisation function with a non-letter separator, and tokens with fewer than two letters are removed since these words do not present meaningful information. After tokenisation, English stop words like “the”, “and”, “so” and “is” are filtered/removed, and airline names removed from the analysis. Then term-stemming techniques are applied in which different variants of the word such as; “absolutely”, “absolute”, “absoluteness” are truncated into the single token “absolut” in order to bring single word concepts together. As the last step, an N-grams algorithm is applied to identify phrases in which two terms are often found together throughout the data such as; “leg_room”, “comfortable_seat”. Consequently, initial term-by-document matrices are generated for positive and negative reviews for each airline business model and service class.

An initial term-by-document matrix (of 68,186 × 1,545) was generated as a result of this term processing. 81% of terms are removed from the matrix since 55,158 of the terms (tokens) occurred once only in one document and resulting 13,020 × 1,545 term-by-document. However, the matrix was still large enough for effective subsequent analysis. A prune method is applied (Yalcinkaya and Singh, 2015) by which any terms occurring less than five times in the dataset are removed which results in a final 3,309 × 1,545 term-by-document matrix for further analysis.

Step 2: *Term frequency and inverse document frequency (TF-IDF) weighting of the term-document matrix and dimensionality reduction with SVD.*

The 3,309 × 1,545 term-by-document matrix was then subjected to a preliminary TF-IDF method, where the relative frequency of a word in a particular document identified against the inverse proportion of that specific word over the whole document corpus. In other words, this calculation demonstrates the relevancy of a given word in a specific document (Ramos, 2003). TF-IDF is calculated as follow;

$$idf_i = \log_2 \left(\frac{N}{n_i} \right) + 1$$

TF-IDF (weighted) score is calculated by; $w_{ij} = tf_{ij} * idf_i$

idf_i = demonstrates the rarity of term i in the entire corpus, N = the number of documents in the corpus, n_i = the term frequency of term i

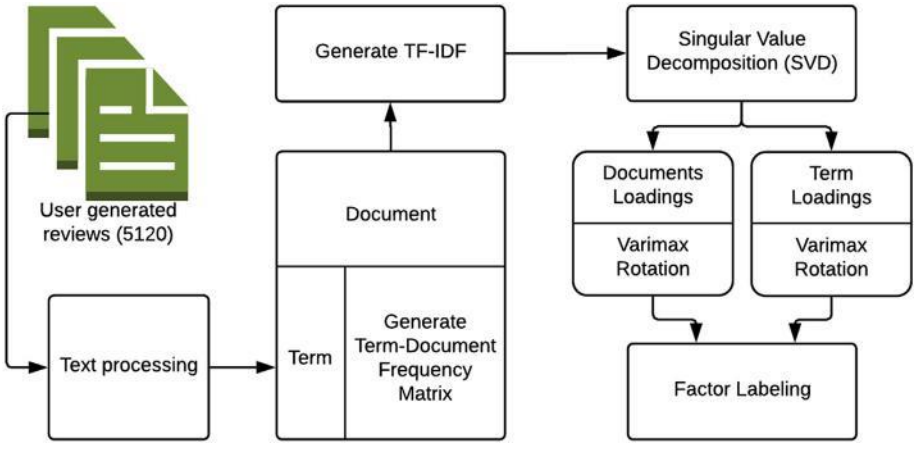

Fig. 1. Latent Semantic Analysis process.

Source: Generated based on previous LSA applications (Sidorova et al., 2008; Yalcinkaya and Singh, 2015; Kulkarni et al., 2014; Xu and Li, 2016; Ahmad and Laroche, 2017).

Table 1
Factors related to customer satisfaction and associated terms.

Factors	Singular values	High loading terms
Economy cabin passengers		
F1	4.073	Great, great_service, staff, great_staff, service, great_experience, experience, friendly, great_flight, staff_friendly, professional, friendly_staff, excel, travel, helpful, polite
F2	2.020	Crew, check, airport, connect, time, arrive, good_food, connect_flight luggage, cabin, flight, board, hour, air, book, cabin_crew, plane, get, journey, destination, customer_service, efficient
F3	1.887	Good, comfortable, seat, nice, great, good_service, seat_comfort, entertainment comfortable_seat, leg, excel, room, leg_room, comfortable_flight, space
Premium cabin passengers		
F4	2.372	Money, worth, recommend, value, upgrade, nice_food, class, crew, trip, flight, value_money, airline, outstanding, entertainment, extra, staff, upgrade_class, priority
F5	1.335	Respectful, aspect, exceptional, nice, helpful, happy, airline, friendly, staff, flight_staff, friendly_helpful, efficient, friendly_staff,
F6	1.213	flight, quality Menu, nice, style, western, standard, feel, nice_food, meal, choice, food, love, dish, super, vegetarian, plenty, food
F7	1.199	Good, excel, great, wine, food, service, good_service, entertainment, seat, bed, on-board, comfort, food_wine, plane, great_service, flat, service_good, smile
Low cost airline passengers		
F8	2.851	Cost, time, price, low, low_cost, airlin, company, cheap, budget, board, plane, check, air, service, travel, budget_airline, paid, money, good_price
F9	1.715	Love, friendly_staff, frill, accommodate, easy, friendly, staff, efficient, polite, found, hostess, get_good, smile.
F10	1.613	Attendant, excel, enjoy, great, crew, made, trip, kind, flight_attendant, nice, person, flown, love, rate, funny, flight, service, flight_crew, excel_ service

in the entire corpus, and tf_{ij} = the number of occurrences of term i in document j.

Using this method, rare terms are promoted whereas, more common words are given less weight (Sidorova et al., 2008; Husbands et al., 2005). As a final step, the TF-IDF weighted 3,309 × 1,545 term-by-document matrix is subjected to singular value decomposition (SVD) analysis. SVD is a variation of a factor analysis (Landauer et al., 1998). SVD is defined as "$X = WSP$". X refers to a weighted matrix of terms-by-documents (words-by-reviews). SVD analysis decomposes the weighted terms-by-documents matrix into three matrices. The two orthonormal singular vectors, "W" and "P" correspond to terms and documents respectively, and the last one to a diagonal "S" matrix of singular values (square roots of eigenvalues) (Landauer et al., 2004). The singular values demonstrate the importance of each factor in descending order. Multiplication of singular values with singular term vectors generates a term-by-factor matrix of term loadings and, in the same way a document-by-factor matrix of document loadings is produced (Sidorova et al., 2008). The number of factors produced in this way is equal to the number of documents (1,545 in this study). To assess the key service attributes, the number of factors are reduced via dimensionality reduction (Yalcinkaya and Singh, 2015). The optimum number of factors is retained for each data set based on following procedure.

Step 3: *Identifying the number of factors reflecting key service attributes leading customer satisfaction and dissatisfaction.*

As is in factor analysis, LSA enables researchers to identify or specify the number of relevant factors in a dataset and to determine the level of aggregation so that common themes are identified (Sidorova et al., 2008). However, identifying the optimum number of dimensions is one of the open research areas that proceed from dimensionality reduction in the principal component analysis. The issue is addressed by authors differently such as; empirically testing and comparing different level factor solutions, quantitative estimation approach, and a more common approach is to use a scree plot of eigenvalues. Once the plot is drawn, diminishing returns or the "elbow" point is considered to decide the number of factors (Evangelopoulos et al., 2015). To identify the numbers of factors in this dataset, both a scree plot is drawn, and empirically different levels of factors are tested for each corpus and then the optimum meaningful number of factors is decided via examination of associated words.

Step 4: *Factor Rotation and Labelling.*

Factor rotation in traditional factor analysis makes interpretation of factors easier by simplifying factor associations (Sidorova et al., 2008; Yalcinkaya and Singh, 2015). Once the number of factors is decided, Varimax rotation is applied with the purpose of increasing the variance of the factor loadings, which either maximise factor loadings or minimise them under a specific factor (Visinescu and Evangelopoulos, 2014) thus the associations between factors and loading variables become clear which makes factor interpretation more easy (Evangelopoulos et al., 2012). Varimax rotation is applied both on to the term and document loadings so that they can be interpreted in the same semantic space. Both terms and documents are reviewed together for each factor solutions so that they can be labelled. As the last step, extracted factors for both terms and documents are reviewed and interpreted by two researchers independently through the examination of high-loading terms and documents. Discrepancies are eliminated with a final discussion.

6. Results

A Latent Semantic Analysis, as described above, was applied to airline passenger reviews in order to assess service attributes that lead to customer satisfaction and dissatisfaction for LCC, FSNC and premium passenger. The results of LSA are shown in the Tables 1 and 2. These tables include satisfaction (Table 1) and dissatisfaction (Table 2) attributes, the high-loading terms associated with each factor, and a ranking (singular values) of satisfaction and dissatisfaction attributes based on airline business model and service class. The singular values (Eigenvalues) demonstrate the importance of each factor in descending order (Sidorova et al., 2008). The higher a singular value is, the greater that factor's importance.

6.1. Positive reviews

As a result of the examination of satisfied customer reviews with LSA, three factors were retained for economy class passengers. Four factors were retained for customers of premium cabins and three factors for passengers using LCCs (Table 1). For each passenger group, factors are labelled both by examining the associated terms and the passenger reviews falling under a particular factor. Then the extent of each factor labels are explained in the section below.

6.1.1. Economy cabin passengers

- *Factor 1 (Friendly-helpful staff):* In this factor, passengers express the friendliness and helpfulness of staff and this is linked with the greatness of service. The main expressions clarify the factor are; "great_service", "friendly_staff", "helpful".
- *Factor 2 (Hassle-free customer experience and care):* This factor is about the overall assessment of passenger journey ranging from check-in, airport, connecting flights, baggage claim and boarding.

Table 2
Factors related to customer dissatisfaction and associated terms.

Factor	Singular values	High loading terms
Economy cabin passengers		
F1	3.382	Seat, leg, entertainment, economy, uncomfortable, poor, room, leg_room, comfort, old, plane, class, space, legroom, cabin, aircraft, cramp Luggage, delay, day, customer, bag, connect, call, told, hour, cancel, book, airport, air, help, check-in, customer_service, lost,
F2	1.914	wait, miss Crew, staff, knowledge, require, crew, staff, cabin_crew, flight_crew, crew_member, apology, airways, language_barrier,
F3	1.796	major, inconvenient, ground_crew, air_hostess
F4	1.661	Bad flight, bad_food, bad_service, food, service, bad_bad, average, avoid_future, dirty, future, avoid, attendant, beer, control, flight_attendant
Premium cabin passengers		
F5	2.169	Respect, passenger, cancel_flight, communication, paid, curtain, separate, steward, paid_business, economy_passenger, hassle, treat,
F6	2.044	unacceptable Old, seat, plane, expect, interior, business_class, comfort, clean, bad, bed, quality, poor, limited, suffer, terrible, aircraft, leg,
F7	1.255	flat, seat_bed, old_plane, recline Bag, delay, luggage, day, arrive, check, get, told, hour, customer, information, airline, cancel, airport, connection, miss, travel, wait, customer_service, time, board, suffer, worst
Low cost airline passengers		
F8	2.503	Leg, seat, leg_room, room, comfort, plane, price, low, leg_space, space, expect, paid, choose, book, get, limit, uncomfortable, flight_seat
F9	1.909	Connect, delay, connecting_flight, unprofessional, avoid, customer, provide, total, airline, layover, customer_service, flight_delay, spent, staff, delay_hour, time, miss_connection, late, service
F10	1.435	Flown, problem, expect, low, time, huge, mistake, different, life, airline, end, book, budget_airline, crew_member, budget, unfriendly, change, cabin_crew, sign, kid, believe, avoid
F11	1.391	Hour, late, cancel, flight_delay, wait, flight, day, service, minute, airport, experience, bad, arrive, crew, custom, poor, boarding, staff, customer_service, worst, information, communication
F12	1.320	Luggage, book, bag, charge, ticket, euro, service, paid, check, meal, online, full, busy, reserve, baggage, print, show, extra, hand, company, cost, seat

- *Factor 3 (Comfortable seats and legroom):* Passengers put particular attention to the comfort of seats and the sufficiency of leg room.

6.1.2. Premium cabin passengers

- *Factor 4 (Value):* This factor corresponds to cost-benefit ratio. In this factor, the passenger compares the amount of extra money paid for the premium product with the overall worth of experience or service.
- *Factor 5 (Friendly-helpful staff):* Similar to economy passengers, staff attitudes are quite important for premium passenger to establish satisfaction with an airline.
- *Factor 6 (Food and beverages):* In this factor passengers emphasise the availability of different food options. “Menu”, “choice”, and “plenty” are the main words associated with the factor.
- *Factor 7 (In-flight service):* This factor corresponds to the overall in-flight service assessment of passenger ranging from core aspects; seats, IFE and food, to customer care and attentiveness of staff.

6.1.3. Low-cost airline passengers

- *Factor 8 (Low price):* Low fares are the main factor that drives passenger satisfaction for LCC passenger. The value in this factor is price. It does not directly reflect the trade-off between quality and price. “Cheap”, “price”, “good_price” are the main words associated with this factor.
- *Factor 9 (Friendly and courtesy of staff):* Friendliness of staff is an important attribute for LCC passengers. The “staff” in this factor correspond to all staff from check-in to arrival.
- *Factor 10 (Good cabin crew service):* This factor particularly corresponds to cabin crew and it evaluates the overall cabin crew service.

6.2. Negative reviews

Dissatisfied customer reviews are examined with LSA which resulted 4-, 3- and 5-factors solutions for economy, premium and LCC passenger respectively (Table 2). Similar to positive reviews, factors are labelled based on the associated words and the customer reviews for the specific factors.

6.2.1. Economy cabin passengers

- *Factor 1 (Uncomfortable seats and poor leg room):* The main words associated with this factor are; “legroom”, “uncomfortable”, “seat”. In this factor, insufficient leg room causes comfort problems which is the most important factor for dissatisfaction of economy passengers. Seat comfort is also found in Skytrax research among one of the top customer complaints (Skytrax, 2015).
- *Factor 2 (Baggage & flight disruptions):* Delays and cancellations have always been quite important issue for airlines. Passengers showed their level of dissatisfaction in the reviews, particularly for the delays resulted with missing connecting flights.
- *Factor 3 (Unprofessionalism of staff):* This factor mostly explains the lack of occupational competence of staff particularly cabin crew. The primary associated words are; “language_barrier”, “knowledge”, “require”.
- *Factor 4 (Poor service and food & beverages):* This factor is about overall customer service experience where prominently food & beverages-related complaints take place. "bad_service”, “food”, “dirty”, “beer” are particular terms related to the factor.

6.2.2. Premium cabin passengers

- *Factor 5 (Unprofessionalism of staff):* The main emphasis of this factor is on inappropriate staff attitudes towards passengers. This factor marginally differs from the label used for economy passengers.
- *Factor 6 (Uncomfortable seats and old aircraft):* Customer complaints that fall under this factor are about overall seat comfort and the interior ambience of aircraft. “Old”, “seat”, “plane”, “interior”, “recline” are the words related to the factor.
- *Factor 7 (Baggage & flight disruptions):* This factor corresponds to baggage and flight disruptions similar to F2 for the economy passenger.

6.2.3. Low-cost airline passengers

- *Factor 8 (Uncomfortable seats and poor leg room):* Legroom and uncomfortable are common words under this factor. Passengers main comfort issue is related to the lack of leg room.
- *Factor 9 (Flight disruptions):* Customer complaints clustering under this factor are mostly about the long waiting time at airports and missing connecting flights because of flight delays and cancellations. This can be seen in the associated terms; “Cancel”, “hour”, “flight_delay”, “spent”, “hour”.
- *Factor 10 (Consistent poor service delivery):* This factor is related with the frustration of passengers in terms of having consistently poor service, particularly staff behaviours are the main reason for the complaints. “Problems”, “expect”, “avoid”, “cabin_crew” are the terms that are associated with the factor.

- *Factor 11 (Poor customer care)* This factor is generally related to flight disruptions, but while the complaint is not related to the disruption itself, it is more about the ability of the airline in terms of providing passenger recovery services and keeping passengers informed. The particular words linked with the factor are; "Experience", "customer_service", "worst", "information", "communication".
- *Factor 12 (Extra or hidden charges):* Ancillary fees of LCCs can be very expensive especially if they are not purchased prior to travel that cause passenger dissatisfaction such as; seat selection, excess baggage, printing tickets.

7. Discussion

The findings show that passenger satisfaction and dissatisfaction attributes differ depending on airline flown or service class. Furthermore, it is found that their level of importance shows some differences. However, these attributes do not demonstrate dramatic differences. The fundamental differences that establish passenger satisfaction reveal from the delivery of core business/service values. Friendly and helpful staff**,** value and low price are the most important factors for economy, premium and low-cost passenger respectively (Tables 1 and 2).

Primarily, FSNC economy passenger value a friendly and helpful approach from staff and they expect hassle-free customer experience throughout the different touch points. Air travel tends to be stressful and different from other forms of transport particularly due to the uncontrollability of aspects such as when to board, where to sit or when to exit airplane. Furthermore, passengers are subjected to rigid security checks, and the air travel environment may provoke anxious and angry behaviour from passengers due to long queues, flight disruptions and bad behaviour from other passengers (Bricker, 2005). Resulting from this, it is therefore not surprising that passengers are expecting a good customer experience and care. Finally, comfortable seats are another determinant of passenger satisfaction which is not unexpected when descending leg-room and seat comfort in the economy cabin is considered.

The results also confirm previous findings of Forgas et al. (2010) that monetary cost and service quality are the main attributes that make satisfaction for LCC passenger, professionalism of the staff is the key satisfaction attribute for FSNCs. LCCs were able to meet specific needs (service-price) of price-sensitive passengers in the past but there is a considerable shift in the passenger mix based on airline type as a result of changing customer behaviours and airlines (Cho and Min, 2018). An evolving business environment makes the lines between LCCs and FSNCs unclear since there is not always significant variation in ticket fares among business models due to increasing operational efficiency capabilities of FSNCs over time (Siering et al., 2018). LCC passengers still look for monetary value, which also confirms previous research by O'Connell and Williams (2005); and Rajaguru (2016). It is interesting that monetary value is not the only factor, as passengers also expect to have some customer service, particularly from staff.

The results show that attributes that drive passenger satisfaction based on service class do not show major differences. The fundamental difference between premium and economy passengers is that the premium passengers expect more value which is the most important feature for the premium passenger. Park (2007) also found that the business passenger rates value for money higher than the economy passenger. The trade-off between what is given and what is received, is

quite important to satisfy premium passengers. Premium products of airlines are (usually) more expensive so it is likely that premium passengers have high expectation from an airline. Therefore, airlines need to meet these higher expectations. Different from economy passenger, premium passengers seek for premium service attributes such as good range of food and beverage options, and comfortable flat-bed seats together with a good in-flight entertainment for their money's worth.

As for customer dissatisfaction attributes, they are rather similar to each other. Mainly, seat comfort/legroom, flight disruptions and staff service are the main factors causing passenger dissatisfaction for FSNC economy and LCC passenger. According to Skytrax (2015), lost luggage, flight delays, and aircraft seats are the main sources of passenger complaints.

The differences among the attributes pertain to their business model. Baggage disruptions and food & beverages complaints are specific for economy passengers. Increasing costs and increasing competition force FSNCs, either to remove in-flight catering or to reduce the quality and/or quantity of meals which then translates into customer dissatisfaction. Whereas "extra charges" are generally LCC-specific factor causing dissatisfaction. LCCs have complicated ancillary fare rules which require to a passenger to spend the time to read. Transparency of this information differ from airline to airline, while only a small number of customers take time to read this information (Skytrax, 2015). These ancillaries can be a very expensive last minute purchase which causes excessive level of dissatisfaction.

There is marginal difference in attributes causing passenger dissatisfaction for premium and economy passenger. Seat and aircraft-related issues, unprofessional staff behaviour, baggage loss and delays are the common dissatisfaction reasons for each group. Poor service and catering is another dissatisfaction reason for economy passengers. However, their rankings differ in each group.

It is important to note that some of the dissatisfaction attributes like flight and baggage disruptions was not observed among the satisfaction attributes. This can be well explained by Kano et al. (1984)`s approach that on-time performance can be regarded as a "must-be" or hygiene category which is not seen as satisfaction attribute, but deficiency of on-time performance causes an excessive level of dissatisfaction. Additionally, staff attitudes which could be positioned as "one-dimensional feature" of air travel since Kano et al. (1984) states that when this features are met, they increase satisfaction proportionally. Staff service is observed as an important satisfaction and dissatisfaction attribute for all passenger groups. Specifically, for LCC passenger, extra charges cause dissatisfaction whereas the key satisfaction driver for LCC passenger is low-cost travel that could be regarded as "one dimensional" factor for LCC passenger since extra charges may increase the cost of travel significantly.

8. Conclusion

This research finds the key driving factors of passenger satisfaction and dissatisfaction and their differences among airline business models and service class through online generated customer reviews. By using a well-established mathematical text mining technique, factors leading to satisfaction and dissatisfaction that are hidden in unstructured textual data are revealed. Results demonstrate that the determinants and importance of customer satisfaction and dissatisfaction vary slightly based on airline business model and service class.

This research provides clear managerial and academic implications. In the academic sense, various service attributes are used in the airline customer behaviour research to measure service quality and passenger loyalty. Using large numbers of attributes to measure satisfaction through passenger surveys is likely to cause fatigue which may cause validity and reliability problems. Therefore, standardised set of attributes may not be relevant for different passenger segments and airline types. However, unlike the previous research, this research highlights only the key drivers that satisfy passenger and compare them among different passenger groups. These key attributes may be used by researchers to re-examine the customer value creation process or to test theoretical models to have better understanding of airline passenger behaviour.

In practice, the analysis of online reviews can be used as a diagnostic tool by managers since customer feedback is important for airlines to improve services and products, and to take action regarding service failures. The analysis also provides the level of importance of these service attributes so airlines can allocate their resources accordingly. Online review analyses can provide a low-cost and reliable satisfaction assessment to airlines. This analysis and constantly monitoring passenger reviews may facilitate management of E-WOM (e-word-of-mouth) which is critical for airlines due to their impact on customers' airline choice. TripAdvisor reviews have been important for hotel and restaurant customer in terms of affecting their decision making. Although it is a relatively new platform for airlines, these reviews are likely to create E-WOM in terms of affecting passengers' airline choice. Airlines can also use this method to analyse their competitors' passenger feedbacks so that they can benchmark themselves against competitors in terms of passenger satisfaction, therefore, these reviews can be used for strategic marketing decisions against competitors. All in all, for airlines customer satisfaction can be established by focusing on and/or improving the attributes leading satisfactions and by providing improvement on the service attributes causing dissatisfaction thus they can guarantee their future customers and so revenue.

9. Limitations and future research suggestions

Although this research provides a step towards the use of online textual data, it is important to highlight the limitations. The sample of reviews are collected only from TripAdvisor.com as representative platform, therefore our results are limited to one particular website. Furthermore, it is important to highlight that only reviews in English were considered for the analysis so the results of the analysis may not reflect views by passengers writing in other languages. Another limitation of this study is the methodology used for text mining. LSA does not consider sentence-level individual document meaning emerging from word order, it is an inherent limitation of bag-of-word analysis methods (Evangelopoulos, 2013). Lastly, although LSA is conducted through a range of systematic, statistical analyses, human involvement takes place in the interpretation and factor labelling phase which poses subjectivity. This limitation is addressed by labelling factors by two independent researchers. Recommendation for future research would be to focus on satisfaction and dissatisfaction attributes for short-haul and long-haul passenger and examination of satisfaction and dissatisfaction attributes on a country level to see how these attributes differ. It would also be interesting to conduct LSA analysis to different online customer generated reviews such as Skytrax, Twitter and Face-book, as well as comparing the results of different websites

Appendix A. Frequently Used Airline Service Attributes

Services Attributes (Airs@t)	ACSI	IATA	Literature
Reservation		Number of Attributes	
Flight schedule	✓		Ahn et al. (2015); Medina-Muñoz et al. (2018); Vlachos and Lin (2014); Chen and Chao (2015); Kim and Park (2017)
Frequency			Vlachos and Lin (2014)
Direct-Connecting Flight			Chen and Chao (2015); Kim and Park (2017)
Call centre	✓		
Website	✓	✓ (4)	Chen and Chao (2015)
Staff			
Flight attendant's attractiveness			Ahn et al. (2015); Kim et al. (2016)
Service Performance			Ahn et al. (2015); Kim et al. (2016)
Flight crew (courtesy, helpfulness and friendly)	✓	✓ (7)	Vlachos and Lin (2014); Chen and Chao (2015); Kim and Park (2017)
Professionalism of staff			Forgas et al. (2010)
Assurance (Courtesy and knowledge)			Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016)
Cabin/Aircraft			
Seat comfort	✓	✓ (6)	Medina-Muñoz et al. (2018); Forgas et al. (2010); Han et al. (2014); Chen and Chao (2015); Kim and Park (2017)
Cabin (Interior)		✓ (7)	Vlachos and Lin (2014); Han et al. (2014); Chen and Chao (2015)
In-flight baggage space			Medina-Muñoz et al. (2018); Kim and Park (2017)
Odour, temperature, air quality, noise			Han et al. (2014)
Airline Tangibles			Suki (2014); Kim et al. (2016); Kos Koklic et al., 2017; Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016)
Aircraft type			Chen and Chao (2015)
Environment and facilities			Ahn et al. (2015)
In-Flight entertainment	✓	✓ (11)	Ahn et al. (2015); Medina-Muñoz et al. (2018); Kim et al. (2016); Han et al. (2014); Chen and Chao (2015)
Ground			
On-Time arrival	✓	✓	Forgas et al. (2010); Suki (2014); Vlachos and Lin (2014); Chen and Chao (2015)
Baggage handling	✓	✓	Ahn et al. (2015); Medina-Muñoz et al. (2018); Chen and Chao (2015)
Boarding (Ground services)	✓	✓ (4)	Medina-Muñoz et al. (2018); Chen and Chao (2015); Kim and Park (2017)
Check-In	✓	✓ (6)	Ahn et al. (2015)
Airport			Forgas et al. (2010); Suki (2014)
Lounge		✓ (7)	Ahn et al. (2015)
In-Flight			
Food and Beverages		✓ (7)	Ahn et al. (2015); Medina-Muñoz et al. (2018); Vlachos and Lin (2014); Kim et al. (2016); Chen and Chao (2015)
Duty free items			Chen and Chao (2015)
Other			
Loyalty programs (FFP)	✓ ✓ (4)		Ahn et al. (2015); Vlachos and Lin (2014); Chen and Chao (2015)
Safety/Reliability			Medina-Muñoz et al. (2018); Forgas et al. (2010); Vlachos and Lin (2014); Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016); Chen and Chao (2015)
Price			Medina-Muñoz et al. (2018); Forgas et al. (2010); Vlachos and Lin (2014); Calisir et al. (2016); Chen and Chao (2015)
Reputation			Vlachos and Lin (2014); Calisir et al. (2016); Chen and Chao (2015)
Empathy			Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016)
Responsiveness			Leong et al. (2015); Calisir et al. (2016); Rajaguru (2016); Chen and Chao (2015)
Communication			Chen and Chao (2015)
Additional Charges			Kim and Park (2017)

Appendix B. The list of airlines and the number of reviews collected

Country	Airlines	Business Model	Number of Reviews	Country	Airlines	Business Model	Number of Reviews
1USA	American Airlines	FSC	100	26 Hong Kong	Cathay Pacific	FSC	103
2USA	Delta	FSC	100	27 New Zeeland	Air New Zealand	FSC	104
3USA	United Airlines	FSC	103	28 Taiwan	Eva Airways	FSC	104
4USA	Southwest Airlines	LCC	100	29 South Korea	Asiana Airlines	FSC	102
5Canada	Air Canada	FSC	105	30 Taiwan	China Airlines	FSC	102
6USA	Alaska Airlines	FSC	96	31 Australia	Jetstar	LCC	102
7USA	Jetblue Airways	LCC	98	32 Australia	Virgin Australia	FSC	101
8Canada	Westjet Airlines	LCC	104	33 UK	British Airways	FSC	103
9USA	Spirit Airlines	LCC	98	34 Germany	Lufthansa	FSC	106
10USA	Hawaiian	FSC	97	35 Turkey	Turkish Airlines	FSC	102
11UAE	FlyDubai	LCC	91	36 Ireland	Ryanair	LCC	106
12UAE	Emirates	FSC	107	37 France	Air France	FSC	106
13Qatar	Qatar Airways	FSC	105	38 UK	Easyjet	LCC	102
14UAE	Etihad Airways	FSC	102	39 Russia	Aeroflot	FSC	106
15Saudi Arabia	Saudia	FSC	99	40 Norway	Norwegian Air	LCC	106
16China	China Southern China	FSC	103	41 Netherlands	KLM	FSC	105
17China	China Eastern China	FSC	104	42 Spain	Iberia	FSC	106
18China	Air China	FSC	104	43 Switzerland	Swiss	FSC	104
19Japan	ANA Japan	FSC	103	44 Sweden	Scandinavian Airlines	FSC	104
20Japan	Japan Airlines	FSC	100	45 Hungary	Wizz Air	LCC	102
21Australia	Qantas	FSC	104	46 UK	Virgin Atlantic	FSC	106
22Korea	Korean Air Lines	FSC	101	47 Chilie	LATAM	FSC	106
23Singapore	Singapore Airlines	FSC	104	48 Mexico	Aeromexico	FSC	101
24Thailand	Thai Airways	FSC	102	49 Colombia	Avianca	FSC	103
25Malaysia	Airasia	LCC	98	50 Ethiopia	Ethiopian	FSC	100

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