



SOCIAL MEDIA AS A TOOL FOR AIRLINE SERVICE QUALITY ASSESSMENT

Adam Buday
Air Transport Department
University of Žilina
Univerzitná 8215/1
010 26 Žilina

Benedikt Badánik
Air Transport Department
University of Žilina
Univerzitná 8215/1
010 26 Žilina

Abstract

Our study investigates the perception of service quality of 12 airlines by using a mixed-method approach that consists of numerical analysis of key performance indicators (KPIs) and qualitative examination of Twitter customer service. Our findings reveal that Twitter is the most popular social media platform in the airline industry, with U.S.-based airlines being the most active. The analysis of customer feedback on Twitter showed noticeable differences between full-service and low-cost carriers, with the former receiving more complaints regarding booking and in-flight service quality, and the latter receiving more complaints regarding delayed or cancelled flights and poor customer service. Overall, our research provides valuable insights into the significance of social media as a tool for promotional activities and customer service, while highlighting common issues in service quality perception by airline customers.

Keywords

airlines, social media, service quality, key performance indicators

1. INTRODUCTION

The growing significance of social media in the world of airline business management is hard to ignore, with the number of internet users around the globe increasing each year, with 59.4 % of world population using social media [1]. This trend is particularly evident in the airline industry, with airlines leveraging social media for purposes such as marketing, customer service, and revenue generation. The availability of social media data also provides airlines with a means of evaluating their service quality and customer satisfaction. This research paper proposes a methodology for analyzing social media channels to evaluate airline service quality. The paper examines the social media activity of 12 airlines on Facebook, Twitter, and Instagram, assessing the satisfaction of their customers with targeted KPIs. Additionally, the paper evaluates the customer service of these airlines on Twitter, analyzing their performance and quality of communication. Finally, the paper discusses the findings and compares them to Skytrax ratings, one of the most commonly used platforms for airline service quality evaluation.

2. STATE OF THE ART

2.1. Importance and utilisation of social media by airline industry

Dynamic implementation of new technologies, especially ICT, is currently typical for airline industry, in order to increase the quality and safety of provided services. Useful features of social media to airline industry include speed of change, immediate communication, and instant reply to customer's questions. Social media may be used in a long run to build a brand image, and to develop positive relationship with its customers, as well as a communication channel between airline representatives and customers [2]. Social media are also a way for airlines to promote positive word-of-mouth (e.g., indirect, by using third

parties, such as customer reviews) advertising, which is one of the largest influencers when it comes to making travel decisions, and ultimately, boosting revenues. Twitter officials state that a resolved negative tweet leads to three times more revenue potential in comparison to positive tweet [3]. Social media also offers a possibility to run advertising, or other kinds of marketing campaigns. As a number of global social media users grows, running social media campaigns may be one of the most effective ways to promote airline products, thus significantly increasing revenue. social media is becoming increasingly important to marketers as it represents an effective, highly economic marketing tool which provides fast and cheap dissemination of content. Knoblich et al. described a strong affinity of the social media users towards the social media activity of German airlines. Authors of this study described the roles of social media users mostly as a passive observers and recommended that social media users should be encouraged to engage in more interactive activities [4].

Before we discuss possible ways of utilisation of social media by the airline industry, it is important to note that each social media platform has its own unique features and should be used accordingly. While Facebook and Twitter are suitable for as a tool for providing up-to-date information, and for the purposes of social media customer service (especially Twitter), Instagram and YouTube are mostly utilised as a promotional platform.

2.1.1. Social media as a tool for sustainable marketing

Sustainable marketing can be defined as planning, controlling, pricing, and distributing products in a way that meets customer's needs and organizations' goals, but also meets other regards, such as environmental, or social. As general population demands more sustainability from the airline industry, there is an opportunity for airlines to strengthen its public relations. Social media provide a suitable space for airlines for sustainable marketing activities, as social media are known as very visual communication channels, which are likely to grab user's

attention. Lehtonen states that 11 % of the studied Instagram posts are promoted to promote sustainability, while most of the studied posts promoted social sustainability (e.g. equality). [5]

2.1.2. Social media as a tool for customer communication

Technology advancement, such as the introduction of Internet, has enabled customers to participate in more interactive means of communication, and to maintain a constant dialogue between customers and airlines. One of the latest developments of such technology is introduction of social media, which led to the increase of real-time communication between customers and airlines. With the introduction of AI-based chatbots, there is a possibility to automate responses to the frequently asked questions. [6] Zhang and Lin state (as of 2015) that airlines are lacking in the area of social media communication. From the sample of 20 airlines, authors have shown 40 % response rate on airline-authored posts and 47 % response rate on customer-authored posts [7]. Social media may be also an important tool for the purpose of crisis communication, as many people may need to be informed in a short period of time. The good example of how crisis should be communicated by social media, is the case of crash of Germanwings flight 4U9525. In total, Lufthansa and Germanwings posted over 200 updates regarding the crash on Twitter. The intense and clear communication of both companies helped to mitigate the negative effect of the accident and to restore their reputation more quickly [8].

2.1.3. Social media as a tool for revenue boosting

With the rapid expansion of social media and mobile applications, the new era of digital world provides new opportunities for airline industry to promote, and to increase revenue. Since there are multiple social media, and other digital platforms, target marketing and customer analysis needs to be emphasized. 2021 Air Transport Insight states that in 2020, 88 % of the airlines were using mobile applications, including social media, for passenger services, while this figure is expected to grow in upcoming years. Airlines, as any other businesses, are using social media to obtain wide range of customers' personal information, to explore their opinions and preferences. Thus, social media can be seen as a tool for market segmentation to develop different marketing strategies for different groups of people. Social media may also be used to persuade passengers into taking revenue boosting actions. Significant example of doing so may be the 'Christmas Miracle' video uploaded by WestJet. WestJet generated 1,6 million \$ in additional revenue and about 6000 new bookings from the campaign. Utilisation of social media by KLM may serve as a good example of revenue boosting through social media. Over the last years, KLM has introduced a number of successful social media campaigns. In addition, social media of KLM are being monitored non-stop. By doing so, KLM is able to generate 3 € in each 1 € spent on social media campaigns [9].

2.2. Current approach to service quality assessment

Service quality assessment is multi-disciplinary topic, which has been used in many disciplines, such as marketing, or operational management. As customers are increasingly using social media

to share their experiences associated with a product, or service, exploring the customer-generated social media feed will generate rich and valuable information about the product, or service quality. It is relatively easy and cost-effective to collect a large amount of data by using social media, in comparison to traditional survey-based methods. Taking advantage of social media content to measure service quality is becoming a promising tool for business analytics.

2.2.1. Key performance indicators

In a relation to social media, key performance indicators (KPIs) can be described as a measurable metrics that displays how effectively is company achieving critical business objectives. Monitoring KPIs may provide suitable real-time overview of the social media performance. We may divide KPIs into several focus groups. Engagement refers to the amount of interaction that social media posts receive. As engagement grows, more potential customers will see company's content. Reach indicates how many people have seen company's message. Unlike engagement, the value of reach is often estimated. Leads indicate the number of engaging fans, which are interested in making a purchase. Measuring leads is a suitable tool for the purposes of market segmentation. Finally, customers refer to number of users, which made a purchase generating from social media campaigns. All mentioned groups may be represented by various constructs or indicators [10].

Measuring KPIs – current approach

In the case of social media performance of airlines, there are several KPI-based methods for the purposes of social media service quality evaluation. Leung, Schuckert and Yeung proposed a use of 13 types of KPIs in order to evaluate the 4 areas of interest: ability to connect (linkage from other apps, n. of likes) engage (mentions, posts per day, comment replies), influence (posts, shares, comments) and integrate (n. of external apps) with customers. This method, applied to Facebook pages, was used to find relation between the size of the airline's social media channels and engagement ratio of customers. Prados-Pena et al. proposed a method for examining crisis communication on Facebook. Posts of the airline, regarded as a crisis communication, were examined based on 4 areas of interest: popularity (reach, likes, mentions), customer brand (number of total posts related to crisis communication), engagement, and virality (number of shares, percentage of shared posts). This method was used to evaluate the effectiveness of crisis communication of two Spanish airlines during the COVID-19 lockdowns. Carnein et al. proposed a method for evaluation of average response rate time, and its relation to the time of the year, or other events. Response rate KPI may reach 2 values: 1 if answered, 0 if not. Average response time was calculated based on the response time of a large sample of individual posts by using API tools and MySQL database. Athari proposed more complex KPI-based method for the social media performance analysis of 4 airlines. Author used a set of 8 KPIs. While some KPIs were collected as a form of quantitative data (e.g. response rate, response time), the main method of determining KPIs was based on proving their validity based on interviews, or other sources. Based on their social media performance, airlines were divided into 3 categories. While this method is suitable for evaluating social media

competencies, limitations may include a lack of qualitative testing and a potential informational bias.

2.2.2. *Examining perception and behaviour of customers*

Social media has become an important tool for delivering reviews of products, or services. By looking at social media reviews, customers can quickly assess service quality of given company, as social media reviews are great electronic word-of-mouth carriers. It is important to note that social media reviews are highly subjective, hence they may provide less clear image about service quality. There is a growing concern about fake, or irrelevant reviews, which may be difficult to filter out. Currently, there is no unified approach to review-based service quality assessment [11].

Examining perception and behaviour of customers – current approach

Ma et al. described a twitter-based method for evaluation of crisis communication of United Airlines and reaction of customers after 2017 overbooking incident. This method was aimed to collect key words related to this incident (such as overbook, drag, CEO, apology...). Authors examined the frequency of the key words related to the incident during the first 24 hours. Response rhetoric of the company was divided into 7 types of answers. Following feedback from the users was divided into groups and rated based on a sentiment analysis, where higher values represented more negative sentiment. Gunarathne et al. proposed a method for examination of differential customer treatment on social media. Over 7300 tweets related to seven airlines were analysed. Each tweet was reviewed whether it contains harsh words, hashtags, mentions of other users, or URL address. Tweets were divided into several types of complaints. Authors have proposed numerical approach, describing different variables in empirical analysis. Brochado et al. proposed a method for evaluating main themes in social media reviews. While this method is not explicitly tied to service quality assessment, it helps to highlight the most problematic areas among passengers. This research used both quantitative and qualitative analysis to examine the data originating from 1200 reviewers of six airlines. Authors revealed the existence of 9 main themes in social media reviews. Each category was evaluated based on its value for money, which can be described as a trade-off between what customer gets and has to give up. Value for money for each category was rated from 1 (worst) to 5 (best) by each reviewer.

2.2.3. *Effect of social media on purchase intentions*

To the author’s best knowledge, the ability of company to generate revenue via social media may be seen as a most significant indicator of service quality. It is often the case that while airline may have good social media service quality results by using other methods, the ability to generate revenue is lacking. Revenue generating ability may be described by a set of specific KPIs, primarily from the leads and customers KPI groups. Academic scholars have also described the ability of third parties’ content to help the companies to engage with potential customers, thus increasing revenue. Despite the wide adaptation of social media, the revenue-generating abilities of social media remain widely unknown to companies [12].

Tümer et al. proposed on method for evaluating the impact of social media marketing on customers’ brand trust and purchase intentions in the Turkish airline market. Authors used a method of collecting questionnaires from 365 Turkey-based airlines passengers. A set of 25 questions was used to evaluate the brand trust and purchase intention of passengers.

3. METHODOLOGY

Our research aims to assess the overall satisfaction with social media service quality of selected airlines from the point-of-view of airline passengers and social media users. We have chosen a sample of 12 airlines operating with both FSC and LCC business models, divided into three geographic markets: Europe, USA, and Middle East. We will assess social media service quality based on data obtained from Facebook, Instagram, and Twitter. Our research is divided into three main parts: analysis of airlines' social media activity, numerical evaluation of overall satisfaction with social media service quality, and evaluation of social media communication between customers and airlines. For the first and second parts, we will use KPIs specifically targeted to measure user activity and Fanpage Karma analytical tool, considering data from 1. January 2023 until 15. March 2023. For the third part, we will use data obtained from Twitter to determine the quality of social media reviews and analyze the most occurring themes in reviews and responses from airlines, considering Twitter data from 16. April 2023 until 18. April 2023.

4. SOCIAL MEDIA AS A TOOL FOR AIRLINE SERVICE QUALITY ASSESSMENT

4.1. Choice of the airlines

Table 1: Choice of the airlines, FSC segment

Airline	Geographical market
Lufthansa	Europe
KLM Royal Dutch Airlines	Europe
American Airlines	USA
Delta Airlines	USA
Emirates Airlines	Middle East
Etihad Airways	Middle East

Table 2: Choice of the airlines, LCC segment

Airline	Geographical market
Ryanair	Europe
EasyJet	Europe
Southwest Airlines	USA
JetBlue	USA
flyDubai	Middle East
Air Arabia	Middle East

Airlines examined in our research are all present and active on all types of social media, with the only exception being the presence of flyDubai on Twitter – which has not posted any content since its creation in April 2011, has the overall lowest number of followers, and does not have verified account.

4.2. Airlines social media activity evaluation

This chapter evaluates the social media activity of airlines and the efforts of their online marketing teams. It assesses the frequency of content posting using the average daily posts KPI and the size of the follower base on all social media channels. Additionally, the Advertisement value KPI is used to determine the cost of social media marketing, but only for Facebook pages due to limited access on Twitter and Instagram. The data collected covers the period from January 1, 2023, to March 15, 2023. This data is compared with other KPIs used to assess the perception of social media service quality, providing a more comprehensive view of the research area.

On Twitter, U.S.-based airlines have the highest number of average daily tweets, which is contributed to their use of Twitter as a customer service platform. In the case of Facebook, average daily posts are more constant than on Twitter, with values for the selected airlines much smaller as it is mostly utilized for promotional purposes. Instagram also sees lower average daily posts and is more suitable as a solely promotional platform, with LCC airlines utilizing it more actively than FCC airlines. Some airlines repost the same content on all social media channels. Based on the analysis of Twitter, Facebook, and Instagram accounts of selected airlines, it is clear that the number of followers is not solely related to the frequency of posting, but also to the quality of content and customer service. KLM and Emirates have the highest number of followers on Twitter and Facebook respectively, which may be attributed to their effective social media marketing strategies and strong brand image. Instagram is primarily used for promotional purposes, and airlines from the Middle East area are currently utilizing it the most. The size of an airline's Facebook advertisement budget is generally related to its size, but there is little correlation between the budget size and the number of followers. KLM has the highest number of Facebook followers despite having a low advertising budget, while Etihad has the highest budget but is only ranked fifth in terms of Facebook followers.

Analysis of the sample of airlines reveals that Twitter is the most utilized social network in the airline industry, both in terms of average followers and average daily posts. This is because Twitter is the most suitable social network for the purpose of social media customer service. Twitter is predominantly used by US-based airlines, with the highest number of average daily posts, which includes replies to customer inquiries. This supports the findings in the first chapter. Our study also found very little to no relation between the average number of daily posts and the number of followers. Moreover, there is no clear relation between the estimated size of the Facebook marketing budget and the number of followers. In this area, the quality of the content posted is likely the most important factor.

4.3. Perception of airline social media service quality by customers

This chapter presents a numerical analysis of social media user feedback on the content posted by airlines, with the aim of evaluating customer-perceived service quality. Key Performance Indicators (KPIs) such as follower growth, post interaction, engagement, total reactions, and mentions (in the case of Twitter) were used to evaluate user feedback and interaction on each social media platform. The performance of selected airlines was compared using performance analysis, with top-performing airlines being analyzed further. Data obtained from January 1, 2023, to March 15, 2023, were used for the analysis.

Most airlines experienced low follower growth on Facebook, with the exception of Lufthansa which had a 56% increase likely due to their crisis communication during airport strikes. FlyDubai had the highest follower growth on Instagram and Twitter, but the reasons for this remain unknown. KLM and JetBlue experienced negative follower growth, indicating a decline in their social media performance. Post interaction is the average number of interactions on a profile's post per follower per post, indicating the success of individual posts in encouraging user interaction. Southwest and Etihad achieved the highest post interaction on Facebook, while Southwest, American Airlines, and Delta scored the highest on Instagram. The success of Southwest's post interaction may be due to its sentimental marketing strategy, while the high post interaction of Emirates may be due to its luxury image and frequent content posting. Engagement is the average number of interactions on an airline's posts per follower per day, indicating how successfully the airline encourages users to interact. Etihad reached the highest Engagement on Facebook (0.72%), while Ryanair achieved the highest Engagement on Instagram and Twitter, which may be attributed to its unique approach to social media marketing. The values of Engagement tend to be lower than Post Interaction, as it is calculated to one follower per day. Emirates had the highest number of total reactions on Instagram, likely due to their large number of followers on the platform. However, Ryanair and Southwest also achieved significant numbers of total reactions despite having fewer followers, indicating that their content may be more engaging or shareable. Overall, the type of content being posted is likely a key factor in driving total interactions on social media.

Facebook has 7 types of reactions that represent different emotions, and for this research, each reaction type has a different sentimental value. "LOVE" was the most occurring reaction, representing 75.6% of all types of reactions, and "CARE" reactions were excluded from the analysis. "HAHA" was the most common reaction for Ryanair, as their ironic content seems to be highly effective in social media marketing. Lufthansa had a higher proportion of "ANGRY," "SURPRISED," and "SAD" reactions, likely due to flight cancellations during strikes at German airports.

The analysis shows that KPI-based analysis provides limited insight into social media users' perception of service quality. The type of social media marketing strategy employed by airlines has a stronger correlation with users' reactions than overall service quality. Sentiment and reactions are also influenced by real-time events. Overall, the analysis of reaction types on Facebook provides valuable insight into users' perception of service quality. The unique social media strategy of Ryanair improves its

online word-of-mouth, despite perceived weaknesses in service quality. Lastly, we have concluded that social media users' perception of service quality is not necessarily linked to an airline's business model or geographical location.

4.4. Examination of customers feedback

This section of the research focuses on analysing the customer service provided by airlines on Twitter, which is the most utilized social media platform for customer inquiries. The analysis will consider the number of inquiries, average response time, and the most occurring remarks of social media customers. FSC and LCC airlines will be analysed separately, and separate Twitter channels for customer service will be considered, if being used by airlines. The findings will be compared with Skytrax rating of the selected airlines.

FSC airlines received a similar number of customer requests on Twitter, with US-based airlines receiving slightly more. Delta performed the best in terms of response time and answering the highest number of customer inquiries. Complaints about the booking system were the most common, followed by complaints about in-flight service and lost baggage. FSC airlines generally avoided responding publicly to customer inquiries, redirecting them to private messaging or other means of communication. In general, average response time on Twitter has decreased compared to the findings in the literature review, with Delta having the lowest response time among FSC airlines, followed by Lufthansa and Etihad.

LCC airlines received slightly more customer remarks than FSC airlines, with Southwest, Ryanair, and JetBlue receiving the highest numbers. US-based LCC airlines tend to respond more to customer remarks than European or Middle Eastern LCC airlines. LCC airlines receive more complaints about delayed or cancelled flights and issues with the booking system, but fewer complaints about in-flight services and missing or damaged baggage. LCC airlines also receive more public praises, mainly related to good service of the staff. Ryanair faces a significant number of customer demands for compensation for cancelled or delayed flights and has been unresponsive to their requests, which could harm their service quality in the long-term and have legal implications. Response times among LCC airlines varied, with JetBlue achieving the shortest response time of 3.02 minutes and Air Arabia having the longest response time of 978.2 minutes (over 16 hours) for the lowest number of requests answered.

4.5. Comparing skytrax rating with our findings

The Skytrax consultancy and rating agency specializes in evaluating airline and airport service quality worldwide. They provide comprehensive annual ratings of airlines using a star system, where 1 star represents the worst service quality and 5 stars the best. The ratings are based on various factors, and the company is widely recognized as a leading authority in service quality assessment [13]. Our analysis compares Skytrax ratings with perceived service quality gathered from social media, highlighting three of the worst aspects of service quality for each airline. KPI-based analysis has some correlation with Skytrax ratings in terms of Facebook PPI values and post interaction, but little correlation was found on Twitter and Instagram. Analysis of customer service on Twitter provided better insight into perceived service quality, as airlines with lower values of

average response time tended to have higher Skytrax ratings, and we found some association between the most occurring themes and the most problematic areas in Skytrax ratings. Our analysis shows some correlation with Skytrax ratings primarily in terms of in-flight service quality.

5. CONCLUSIONS

In summary, our analysis reveals that Twitter is the most widely used social network by airlines, mainly due to its effectiveness in providing customer service. U.S. airlines tend to use Twitter more frequently than others, with the highest number of daily posts, including responses to customer inquiries. There is little correlation between airline geographic market and preferred social media platforms, but airline size does not significantly impact social media followers, except on Instagram. KPI-based analysis provides limited insight into "real-life" service quality perception by customers, except for Facebook, which is complemented by sentiment analysis of Facebook reactions. Our analysis of Twitter customer service shows differences in customer feedback between FSC and LCC airlines, with FSCs receiving more complaints about booking system issues and in-flight service quality, while LCCs received more complaints about delayed or cancelled flights and poor customer service. The response time to customer inquiries varied greatly among airlines, with significant differences in how they prioritize and handle customer service inquiries. Finally, there is some correlation between Skytrax rating and PPI values on Facebook but little correlation in the case of Twitter and Instagram. Our research highlights the significance of Twitter for customer service and the value of KPI-based analysis for gaining insight into service quality perception by customers on social media.

It is important to note that our research has some limitations. Author was unable to obtain Twitter API access, which would allow for more in-depth analysis. Future research could employ this tool for the purpose of analysis of Twitter customer service among given airlines. In addition, the utilisation of social media by Chinese airlines, such as Weibo, or WeChat, with the respective perception of service quality among airline passengers could be examined.

REFERENCES

- [1] Global Social Media Statistics [online]. Available at: <https://datareportal.com/social-media-users> (cit. 2023-01-20)
- [2] ZELENKA, J. – HRUŠKA, J. 2018. *Ways and effectiveness of social media utilization by airlines*. In: *Tourism*. 2018, vol. 66, n. 2, p. 227-238. ISSN 1332-7461.
- [3] Airlines Are Second-Most Responsive Industry on Social Media, Yet 76% Questions and Complaints Go Unanswered [online]. Available at: <https://www.aviationpros.com/airlines/press-release/21270040/airlines-are-secondmost-responsive-industry-on-social-media-yet-76-of-customer-questions-and-complaints-go-unanswered> (cit. 2023-01-22)
- [4] KNOBLICH, S. et al. 2016. *Keys to success in Social Media Marketing (SMM) – Prospects for the German airline industry*. In: *Tourism and Hospitality Research*. 2016, vol. 17, n. 2, p. 147-164. ISSN 1742-9692.

- [5] LEHTONEN, S. 2021. *The role of social media in sustainable marketing communication - a study on airline industry on Instagram*. [masters thesis]. Turku: University of Turku, 2021. 82 p.
- [6] AREZZA, M.K.B. 2022. *The quality of service and user satisfaction of airline chatbots*. In: *Journal of Business on Hospitality and Tourism*. 2019, vol. 8, n. 1, p. 197 – 215. ISSN 2527-6921.
- [7] ZHANG, C.B. – LIN, Y.H. 2015. *Exploring interactive communication using social media*. In: *The Service Industries Journal*. 2015, vol. 35, n. 11 – 12, p. 670 – 693. DOI 10.1080/02642069.2015.1064396.
- [8] RODRIGUES-TOUBES, D., DOMINIQUEZ-LOPEZ, Y. 2017. *Social Media in Crisis Communication: Germanwings Flight 4U9525*. [online]. In *Media and Metamedia Management. Advances in Intelligent Systems and Computing*. 2017, n. 503, p. 243 – 249. [cit. 2023-01-28]. ISBN 978-3-319-46068-0.
- [9] BARTOŠ, M. – BADÁNIK, B. 2019. *Flying social media course*. In: *Transportation Research Procedia*. 2019, vol. 43, p. 119 – 128. ISSN 2352-1457.
- [10] NASTIŠIN, L. 2017. *Research on the most important KPIs in social media that should be tracked*. [online]. In *Journal of Global Science*. 2017, p. 1 – 6. [cit. 2023-02-04]. ISSN 2453-756X. Available at: http://joqsc.com/pdf/2017/3/research_on_the_most.pdf
- [11] HA, E.Y – LEE, H. 2018. *Projecting service quality: The effects of social media reviews on service perception*. In *International Journal of Hospitality Management*. 2018, vol. 69, p. 132 – 141. ISSN 0278-4319.
- [12] LEUNG, D. et al. 2013. *Social media in tourism and hospitality: A literature review*. In *Journal of Travel and Tourism Marketing*. 2013, vol. 30, n. 2, p. 3 – 22. ISSN 1540-7306.
- [13] Skytrax Research [online]. Available at: <https://skytraxresearch.com/> (cit. 2023-04-10)