University of Latvia

Faculty of Economics and Management

Marion Tenge

PUBLIC SOCIAL SOFTWARE PLATFORMS AND ECONOMIC NEED SATISFACTION OF AIRPORT ORGANIZATIONS - A SOCIAL CAPITAL APPROACH

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Dr. oec. publ., Professor Johann Lachhammer

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Annotation

Purpose: Public Social Software Platforms (SSP), such as the online social network Facebook, provide the infrastructure for organizations to extend beyond organizational boundaries and establish network connections with their customers. Network ties that cross organizational boundaries, i.e. bridging social capital, have been acknowledged by scholars of various disciplines as a major source of competitive advantage. The purpose of this promotional work was to model and test the relationship between the investment of airport organizations and their passengers in a mutual relationship on the SSP Facebook and their generated return-on-investment. **Design/Methodology/Approach:** The dissertation proposes a causal model, which links socio-psychological need satisfaction of passengers on Facebook with economic need satisfaction of airport organizations. The strategy of inquiry was mixed-methods cross-sectional survey research. **Findings:** Passengers with a higher degree of socio-psychological need satisfaction have been found to be more active on the airports' Facebook pages. Airports will be able to profit from increased passenger engagement as potential resource of economic need satisfaction only if they are able to generate appropriate need satisfiers they. While socio-psychological need satisfaction of passengers is a necessary condition for economic need satisfaction to occur, the study has demonstrated that it is not a sufficient condition. Well-developed dynamic capabilities are required to take advantage of the entrepreneurial opportunities inherent in passenger relationships on SSP. **Originality/Value:** A new theoretical model is suggested and submitted to empirical scrutiny, which links socio-psychological need satisfaction of passengers on SSP with economic need satisfaction of airport organizations. To develop a measurement concept for economic need satisfaction of airport organization on SSP the renowned Balanced Scorecard / Strategy Map framework proposed by Kaplan & Norton (2004a) was evolved by adding a social capital dimension to its learning and growth perspective. To develop a measurement concept for socio-psychological human need satisfaction of passengers on SSP, the dissertation applied an extended self-determination theory perspective (Dambmann, 2004; Ryan & Deci, 2000). Finally, the dissertation advances recommendations for airport organizations on how to further embrace SSP for economic benefit.

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List of Abbreviations

ACI:	Airports Council International
ASQ:	Airport Service Quality Survey
BSC:	Balanced Scorecard
RBV:	Resource-Based View
SDT:	Self-Determination Theory
SPSS:	Statistical Package for the Social Sciences
SSP:	Public Social Software Platforms
WOM:	Word-of-Mouth

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INTRODUCTION

The adoption of public Social Software Platforms by individuals and organizations is no longer in the state of infancy, but on "the verge of commoditization" (vor dem Esche & Hennig-Thurau, 2013, p. 30). Public Social Software Platforms can be described as "digital environments that support human communication and collaboration. Contributions and interactions are globally visible and persistent over time" (McAfee, 2006, n.p.). In Germany, 92.6 % of Internet users have registered with at least one public Social Software Platform, while the average German Internet user maintains a profile on three platforms (vor dem Esche & Hennig-Thurau, 2013, p. 13). Public Social Software Platforms provide the infrastructure for organizations to extend beyond organizational boundaries and establish network connections with their customers with the purpose of including the customer into the value creation process and by this increase the satisfaction of economic needs. Network ties with customers on public Social Software Platforms create a new type of organization: a virtual network organization. In a network organization, a clear cut distinction between employees and otherwise involved stakeholders, such as customers, cannot be drawn. Gummesson (2006, p. 267) describes a network organization with the human resource ratio, the *I/E* ratio. The I/E ratio emphasizes the fact that more human resources (people involved, *I*) are available for the company than the people employed (*E*).

The **object of research** is public Social Software Platforms.

The **subject of research** is the contribution of public Social Software Platforms (SSP) to the economic need satisfaction of airport organizations.

The **actuality of the research topic** comprises three main points.

1) SSP is a recent and still emerging phenomenon. With the advent of SSP, the social element gradually re-enters the relationship between organizations and their customers. Social capital theorist Lin (1999) suggests that the growing convergence of social and technological networks is resulting into "a revolutionary rise of social capital" and "a new era where social capital will soon supersede personal capital in significance and effect" (ibid, p. 45). While in the time period of industrialization marketing communication has been largely one-way in nature, SSP demand for a good knowledge of social interaction principles to encourage customer interactions for economic benefit. A recent IBM research study revealed that organizations are still unsure on how to manage SSP to increase their

organizational performance and consider SSP as one of the "most important entrepreneurial challenges" (IBM, 2011, p. 8). In this respect, Lin (1999) has proposed a research agenda that includes the fusion of socio-economic-technological elements in social relations behind the background of "the ever-presence of commercial interest" (ibid, p. 47).

2) SSP have become a popular research topic for interdisciplinary scholarship. Social interaction principles can now be observed at unprecedented levels of scale through the data generated by SSP. Also the company-to-customer relationship is taken to the public level on SSP. This offers scholars new and unobtrusive ways of exploring patterns of interaction. Kleinberg (2008, p.66) argued that "science advances whenever we can take something that was once invisible and make it visible; and this is now taking place with regard to social networks and social processes".

3) In the airport industry SSP establish the missing link to the passenger. While in the past the passenger relationship and data was exclusively owned by airlines and tour operators, SSP provide airport organizations with the technical infrastructure to establish network connections with passengers and leverage rich passenger knowledge.

The **purpose** of this mixed-methods study was to analyze how the interaction with customers on SSP contributes to the economic need satisfaction of organizations, while focusing on major German airports and their passengers.

The **tasks of promotional work** comprised the following activities:

1) To critically reflect the existing body of literature on general social capital theory in the light of a growing convergence of social and technological networks and to address implications for social capital theory and measures.

2) To study the relationship between social capital and organizational performance, while focusing on intra-organizational network connections and network connections crossing organizational boundaries in the online and offline environment.

3) To study the motivational pull of SSP for individuals. While it is evident that organizations engage with customers on SSP to increase their economic need satisfaction, a clear understanding on why customers join SSP was also needed.

4) To study theories of socio-psychological human needs as motivator of behavior with the purpose to select the most appropriate theory for explaining engagement motivation in an online environment.

5) Based on the general definition of social capital as "investment in social relations with expected return" (Lin 1999, p. 30), to define 'investment' and 'return' of a mutual relationship on SSP for both focal actors 'passenger' and 'airport organization' and to develop a theoretical framework based on literature on performance management theory and theories of socio-psychological fundamental human needs.

6) To construct a causal model, consisting of structural and measurement model, to propose cause-effect relationships between the investment of airport organizations and their passengers in a mutual relationship on the SSP Facebook and their generated return-on-investment.

7) To submit the proposed model to empirical test using quantitative and qualitative research methods.

8) Based on the results of the empirical test, to draw conclusions and to advance suggestions for airport organizations on how to further embrace SSP for economic benefit.

The beneficial relationship between social capital and economic need satisfaction has been demonstrated by a variety of research studies on organizational performance. However, existing research either focuses on the offline environment but does not cross organizational boundaries or reports on business-to-business relationships. There have been few attempts to explore the customer-organization relationship in an online environment. Existing studies are represented in the form of whitepapers of consulting companies. However, the whitepapers focus on the customer perspective, not on the organizational perspective. There seems to be still a "lack of rigorous scientific findings" (vor dem Esche & Hennig-Thurau, 2013, p. 5) regarding research associated with SSP. Against this background the **novelty of research** is established through three main points:

1) Development and test of a new theoretical model that links socio-psychological need satisfaction of passengers on SSP with economic need satisfaction of airport organizations.

2) Development of a measurement concept for economic need satisfaction of airport organizations on SSP based on the renown Balanced Scorecard / strategy map framework of Kaplan & Norton. The BSC / strategy map framework has been enhanced in the dissertation by adding a social capital dimension to its learning and growth perspective. Various scholars have criticized the framework for being still too internally focused, failing to acknowledge collaborative approaches and a human relations view and not considering the extended value creation chain as an essential element of today`s networked organizations. Development of a measurement concept for socio-psychological human need satisfaction of passengers on SSP based on an extended self-determination theory perspective and an adaptation and amendment of the Basic Psychological Needs Scale in an online context.

3) Identification of satisfiers for socio-psychological human needs on SSP. The defined satisfiers can be applied by airport managers to foster passenger engagement for economic benefit.

The overarching **research question** of the promotional work was formulated as follows: "How does the interaction with passengers on SSP contribute to the economic need satisfaction of airport organizations?"

Main hypothesis: "***The interaction with passengers on SSP increases the economic need satisfaction of airport organizations, if also the socio-psychological need satisfaction of passengers increases".***

The hypothesis is concerned with the norms of reciprocity that govern social relationships. Meaning that both actors need to profit from the relationship on SSP, as in absence of reciprocal behaviour relationships have a discount rate (Flap, 2001, p. 37). The future value of the relationship will decrease and so will the investment of effort in maintaining the relationship (Lindenberg, 1990, p. 743).

The following **main theses to defend** are advanced:

1) The higher the investment of airport organizations in the relationship with passengers in terms of number and type of human resources assigned to SSP management by the airport, the higher their economic need satisfaction.

2) The higher the investment of passengers in the relationship with airport organizations, in terms of the type of interactions initiated by passengers, the higher their socio-psychological need satisfaction.

3) The higher the socio-psychological need satisfaction of passengers, the higher the economic need satisfaction of airport organizations.

Methods of research applied in this study included the analysis of literature as well as cross-sectional qualitative and quantitative survey research in terms of questionnaire-based personal expert interviews and questionnaire-based online survey conduction. Qualitative and quantitative survey research were identified as the preferred data collection method to a) quantitatively describe specific aspects of a given population, such as attitudes of airport organizations and their passengers towards SSP and b) provide context by qualitatively describing the subjective dimension of behaviour. To assess the population characteristics of major German airport organizations, semi-structured expert interviews were deemed most appropriate although involving high effort for the interviewer, such as considerable travel time and travel costs. To assess the population characteristics of passengers connected to major German airport organizations on Facebook, an online survey distributed via the Facebook pages of the sampled airports was considered to be most appropriate, as the airport communities formed on Facebook "exist only in cyberspace" (Wright, 2005, n.p.).

Quantitative data obtained from both surveys was analysed using the methods of statistical analysis with the software SPSS. Construct validity was assessed for both reflective and formative constructs. Construct validation for reflectively measured constructs was performed through reliability testing (Cronbach's Alpha) and confirmatory factor analysis (principal axis factoring). Construct validation for formative constructs was assessed through review of inter-correlations between constructs (Spearman's Rho) to provide indication that there was no duplication of measurement. The descriptive results of the airport and passenger survey were computed including an analysis of the distribution of variables after aggregation of items to variables (median, mean, standard deviation). The Kolmogorov-Smirnov test was applied to test for normality. The tests of the causal model utilized correlation analysis (Spearman's Rho) and the analysis of differences between groups (Man-Whitney U). Qualitative data obtained from the expert interviews were submitted to content analysis. Items were coded manually based on frequency of occurrence.

Approbation: The author of this promotional work has presented the findings of her research to the scientific community on **several national and international conferences** in Austria, Estonia, Germany, Latvia, Portugal, and The United Kingdom:

1) International Conference Recent Developments in Business Management Research, Fulda University, Fulda, Germany, December 2-4, 2011, with report “Co-Creating a Better Airport Experience by Fostering Customer Engagement on Social Software Platforms” (Best Session Presenter Award).

2) 70th National University of Latvia Scientific Conference, University of Latvia, Riga, Latvia, January 25, 2012, with report “Understanding the Motivational Pull of Social Software Platforms (SSP): Success Factors for Airport Organizations for Fostering Customer Engagement and Achieving Economic Goals”.

3) Conference New Challenges of Economic and Business Development, University of Latvia, Riga, Latvia, May 10-12, 2012 with report ”Social Software Platforms as Motor of Operational Airport Efficiency”.

4) International Conference for Business Research, Kufstein University of Applied Sciences, Kufstein, Austria, August 3-5, 2012, with report: “Public Social Software Platforms as Extension of Airport Organizations – A Social Capital Approach for Building Organizational Performance” (Best Session Presenter Award).

5) International Conference New Challenges of Economic and Business Development, University of Latvia, Riga, Latvia, May 9-11, 2013, with report: “Leveraging Social Capital for Economic Need Satisfaction in the Airport Industry” (Best Session Presenter Award).

6) International 6th Annual EuroMed Conference, EuroMed Academy of Business, Estoril, Portugal, September 23-24, 2013, with report: “Increasing Economic Need Satisfaction on the Social Software Platform Facebook – Insights from the Airport Industry” (Session Discussant).

7) International Conference Current Approaches of Modern Management and Strategy Research, Kufstein University of Applied Sciences, Kufstein, Austria, November 29-30, 2013, with report: “Increasing Passenger Engagement on Social Software Platforms – An Extended Self-Determination Theory Perspective”.

8) International Conference New Challenges of Economic and Business Development, University of Latvia, Riga, Latvia, May 8-10, 2014, with report: "Satisfaction of Economic Needs on Public Social Software Platforms – Evidence from the Airport Industry" (Best Session Presentation Award).

9) International Research Symposium in Service Management, University of Tartu, Parnu, Estonia, June 8-12, 2014, with report: "Leveraging Public Social Software Platforms for Relationship Marketing – an Empirical Study with Focus on the Airport Industry" (Young Service Researcher Award).

10) Economics, Finance, MIS & International Business Research Conference, The Journal of American Academy of Business, London, July 10-12, 2014, with report: "Leveraging Public Social Software Platforms for Economic Need Satisfaction in the Airport Industry".

The following **publications** are associated with the promotional work:

1) Tenge, M. (2012). Social Software Platforms as Motor of Relationship Marketing in Services: A Conceptual Framework with Focus on the Airport Industry. In H. Kaufmann, & M. Panni (Eds.). Customer-Centric Marketing Strategies: Tools for Building Organizational Performance (pp. 280-296). Hershey: Business Science Reference. Pages: 676. http://www.igi-global.com/chapter/content/71073

2) Tenge, M. (2013a). Social Software Platforms as Motor of Operational Airport Efficiency. In: „New Challenges of Economic and Business Development – 2013", Conference Proceedings, University of Latvia, Riga, May 2013, pp. 601-613. http://www.evf.lu.lv/fileadmin/user_upload/lu_portal/projekti/evf/konferences/konference_2013/preceeding/ConferencePreceedings_601_716.pdf

3) Tenge, M. (2013b). Leveraging Social Capital for Economic Need Satisfaction in the Airport Industry. In: "New Challenges of Economic and Business Development – 2013", Conference Proceedings, University of Latvia, Riga, May 2013, pp. 614-622. http://www.evf.lu.lv/fileadmin/user_upload/lu_portal/projekti/evf/konferences/konference_2013/preceeding/ConferencePreceedings_601_716.pdf

4) Tenge, M. (2013c). Increasing Economic Need Satisfaction on the Social Software Platform Facebook – Insights from the Airport Industry (Extended Abstract). In: "6th Annual Conference of the EuroMed Academy of Business - Confronting Contemporary Business Challenges through Management Innovation", Conference Proceedings, EuroMed Press, Estoril, Cascais, Portugal, October 2013, pp. 2807-2810. http://emrbi.org/wp-content/uploads/2014/09/euromed-6-2013.pdf

5) Tenge, M. (2014a). Renaissance of a Social Relationship between Organizations and Customers: A Critical Reflection of Social Capital Theory and Measures in the Light of a Growing Convergence of Social and Technological Networks. Journal of Economics and Management Research, Volume 3, pp. 102-115. http://www.evf.lu.lv/fileadmin/user_upload/lu_portal/apgads/PDF/Journal-E_MR_3_.pdf

6) Tenge, M. (2014b). The Social Side of Consumerism: Human Need Satisfaction as Antecedents of Economic Need Satisfaction in an Online Environment – Empirical Evidence from the Airport Industry. In H. Kaufmann, & M. Panni (Eds.). Consumerism in Business and Marketing: Concepts and Practices (pp. 473-499). Hershey: Business Science Reference. Pages: 668. http://www.igi-global.com/chapter/the-social-side-of-consumerism/105850

7) Tenge, M. (2014c). "Leveraging Public Social Software Platforms for Economic Need Satisfaction in the Airport Industry". In: Journal of American Academy of Business, Volume 20 (1), pp. 149-156. http://jaabc.com/jaabcv20n1preview.html

8) Tenge, M. (2014d). Public Social Software Platforms as Extension of Airport Organizations – A Social Capital Approach for Building Organizational Performance. In Neuert, J. (Ed.). Contemporary Approaches of International Business Management Research. Pages 159. http://www.epubli.de/shop/buch/Contemporary-Approaches-of-International-Business-Management-Economics-and-Social-Research-Josef-Neuert-Prof-Dr-9783737513296/40760

9) Hille, R.; Schmitz, B.; Tenge, M. (2014e). Modernisierung des EU-Beihilferechts. Kurswechsel für deutsche Verkehrsflughäfen? In: Internationales Verkehrswesen, (66) 4, pp. 15-17. http://www.internationalesverkehrswesen.de/fileadmin/user_upload/pdfs/IV_04_2014_inhalt.pdf

The **content of the dissertation** is structured in four chapters. The first chapter is devoted to the reflection of the theoretical foundations used and the researches already done on the topic. Based on the theoretical foundations, the second chapter postulates a causal model consisting of a structural and measurement model and its underlying assumptions. The third chapter reflects the empirical design and research methods applied in the study. The fourth chapter summarizes the empirical results, conclusions and recommendations.

The following **limitations of the research study** need to be addressed: The study exclusively focuses on the SSP Facebook. While this decision affects external validity, as the results of this promotional work cannot be generalized to other SSP, it was necessary to narrow the focus. All major German airports maintain a corporate profile on Facebook. However, this is not the case for other SSP such as Google+ (37.5 % of airports) or Twitter (87.5 % of airports). Therefore, an examination of several SSP was not feasible. Against the background of the negative evolution patterns of earlier SSP, such as MySpace, it must be noted that the further development of Facebook will depend on its ability to compete against new market entrants. Notwithstanding the emergence of new potential platforms, the philosophy of SSP as facilitator of human communication and collaboration will persist. As SSP is a fast changing phenomena and SSP adoption varies by country and industry, the conduction of longitudinal studies, cross-country studies or studies with focus on other industries could be fruitful avenues for further research. Though the developed strategy map approach focuses on the airport industry, it can be adapted to any other industry. Other scholars are invited to refine, correct or expand on it in the future.

Main results of empirical analysis:

1) The number and type of human resources assigned to Facebook management and the perceived economic need satisfaction of airport organizations was found to be strongly positively related ($r = +0.820$). The associated probability level of $p = 0.046$ showed that such a result is unlikely to have arisen by sampling error. The number and type of human resources assigned to Facebook management is positively associated with the perceived economic need satisfaction of airport organizations. Airports that have set up a new job role ‘Social Media Manager’ with a dedicated resource and have chosen an interdisciplinary approach to Facebook management have a higher economic need satisfaction as compared with airports that do not assign a dedicated resource to Facebook management and/or take only a departmental approach.

2) The results of the Man Whitney U-Test confirmed that the mean rank of socio-psychological need satisfaction increases with an increasing activity level of the passenger on Facebook.
   a) reading content on the airports' Facebook page (mean rank of need satisfaction: 313.50, all passengers indicated that they read the content of the airports Facebook page)
   b) liking content on the airports' Facebook page, i.e. clicking the 'Like-Button' to indicate content as interesting (mean rank of need satisfaction, if activity is performed: 347.41; if activity is not performed: 265.14, $p < 0.001$)
   c) sharing content of the airports' Facebook page with others (mean rank of need satisfaction, if activity is performed: 348.47; if activity is not performed: 292.54, $p < 0.001$)
   d) commenting on existing content on the airports' Facebook page (mean rank of need satisfaction, if activity is performed: 388.93; if activity is not performed: 278.86, $p < 0.001$)
   e) posting own (new) content on the airports' Facebook page (mean rank of need satisfaction, if activity is performed: 408.49; if activity is not performed: 300.77, $p < 0.001$)
3) The results of correlation analyses showed statistically significant strong positive relationships between the following variables: socio-psychological need for competence and economic need for operational process efficiency ($r = +0.820$, $p = 0.046$); socio-psychological need for meaning and economic need for operational process efficiency ($r = +0.924$, $p = 0.008$); socio-psychological need for relatedness and economic need for operational process efficiency ($r = +0.907$, $p = 0.013$). From the perspective of airport organizations, operational process efficiency is currently related to the speed of passenger communication on Facebook. The results of the content analysis have shown that airports consider Facebook as a suitable tool for fast information dissemination and reaction to passenger request in times of crisis, incidents or air traffic irregularities. Mobile Facebook access further facilitates real-time communication on Facebook. The study has shown that 73.3 % of passengers access Facebook with their smartphones. The results of the correlation analyses therefore suggest a link between real-time communication and the satisfaction of the human needs for competence, meaning and relatedness. Real-time communication enables passenger to satisfy their innate need for competence, as compared to traditional communication channels, passengers are able to more quickly achieve expected outcomes on SSP. The need for competence is also associated with the feeling of

curiosity and interest, which is satisfied by gaining access to the most recent information of the airport without a time lag. The need for meaning is addressed by the airports by quickly providing information and orientation in uncertain situations. An immediate reaction of airports in uncertain situation to passenger requests also generates satisfiers for the need for relatedness, as passengers feel cared for by the airport. Moreover, virtual real-time communication also approximates human communication.

Correlation analysis also indicated a statistically significant strong negative relationship between the variables: socio-psychological need for self-determination and economic need for customer satisfaction ($r = -0.822$, $p = 0.045$). The satisfaction of the need for self-determination on Facebook requires passengers to feel free to express their ideas and opinions with regard to the airport and their services. While passengers have reported an increase in the need satisfaction for self-determination when communicating with airports on Facebook, the results of the airport expert interviews have revealed that airports do not consider Facebook as a tool for complaint management; have not yet set up the internal processes to manage complaints on Facebook; or even do not intend to publicly discuss complaints on Facebook at all. Furthermore, no link exists between the Facebook activities of airports and their respective impact on passenger satisfaction scores. The negative correlation suggests that critical customer feedback on Facebook is not yet considered as an opportunity to improve processes, but that the public visibility of feedback is rather considered as a threat by airport organizations.

Regarding the economic needs for customer insights, innovative strength and customer advocacy no significant correlation with one of the socio-psychological needs has been found. This result supports the findings obtained from content analysis. Regarding all three economic needs, airport managers have emphasized the lack of representativeness of passenger feedback (too little active passenger participation on Facebook, not all target groups can be reached on Facebook). Also from the results of the passenger survey, it became evident that there is still a lack of balance on Facebook regarding for example age, gender or the ratio of business and leisure passengers.

4) The relationship between the number of interactions initiated by airport organizations on Facebook and their economic need satisfaction was found to be strong positively related ($r = +0.771$). However, the correlation was not significant ($p = 0.072$). The mere quantity of airport interactions on Facebook does not seem to be associated with the economic need satisfaction of airport organizations.

5) The relationship between the number of interactions initiated by passengers on Facebook and their perceived socio-psychological need satisfaction was found to be moderately negatively related (r = -0.486). The correlation was not significant (p = 0.329). The mere quantity of interactions initiated by passenger on Facebook is not associated with their perceived socio-psychological need satisfaction.

6) The number of interactions initiated by airport organizations and the number of interactions initiated by the passengers were found to be strongly positively related (r = +0.943). The associated probability level of p = 0.005 showed that such result is unlikely to have arisen by sampling error alone. The result is in line with the norms of reciprocity that have been found to govern social relationships.

Overall, the results of the empirical analysis have provided support for the postulated main hypothesis (H_A*: The interaction with passengers on SSP increases the economic need satisfaction of airport organizations, if also the socio-psychological need satisfaction of passengers increases*). The results of the statistical tests suggest that socio-psychological need satisfaction of passengers can be considered as a vital source of engagement motivation in an online environment. The mean rank of socio-psychological need satisfaction of passengers increases with an increasing activity level on Facebook. The findings of the study add to the growing body of literature on self-determination theory by providing additional evidence in the context of SSP. Only if airports are able to generate need satisfiers, they will profit from sufficient passenger engagement as potential resource of economic need satisfaction. If passenger needs are impaired, those potential resources cannot be harvested and no benefits will be provided for airports. The study has shown that airports still suffer from a lack of passenger participation on SSP. The current situation points to the need to further enhance the airports' understanding of social interaction principles and the notion of reciprocal exchanges incorporated in the social capital concept.

The following main **literature sources** have been used in the dissertation: the theoretical basis for the research was developed by studying works of social capital theorists (Bourdieu, 1986; Burt, 2000; Colemann, 1988; Flap, 2001; Fukuyama, 2002; Granovetter, 1973; Lin, 1999; Portes, 1998; Putnam, 2000; van der Gaag, 2005; Woolcock & Narajan, 2000), while organizing the different perspectives into the three dimensions 'structural', 'relational' and 'cognitive' as proposed by Nahapiet & Goshal (1998). For evaluating the relationship between social capital and economic need satisfaction the author of this dissertation relied on the well-known publications of Kaplan & Norton (1992; 1996a; 1996b;

2001a; 2001b; 2001c; 2004a; 2004b), as the Balanced Scorecard / strategy map framework considers intangible assets as the most important source of competitive advantage. Furthermore, publications of scholars criticizing the framework for being still too internally focused were studied (Norreklit, 2000; Akkermanns & Oorschot, 2005; Dinesh & Palmer, 1998; Marr & Adams, 2004; Mooraj et al., 1999). For evaluating the relationship between social capital and human need satisfaction, theories of need hierarchies (Alderfer, 1969; Maslow, 1943) and interrelated need systems (Dambmann, 2004; Max-Neef, 1992; Ryan & Deci, 2000) have been studied. For linkage of human need satisfaction to engagement motivation the application of self-determination theory (Deci & Ryan, 2000, Ryan & Deci, 2000) has been deemed to be most appropriate, as already a considerable amount of research has provided support for the theory. Methodology for development of the causal models has been studied in contributions of Bollen (1989), Buckler (2001), Byrne (2001), Bollen & Lennox (1991), Jarvis et al. (2003) and Diamantopoulos & Winklhofer (2001). To study the methodology of mixed-methods research and survey research, the author of this dissertation relied on works by Babbie (1990) and Creswell (2009). Specifically for online survey research, the works of Wright (2005) and Evans & Mathur (2005) were also studied.

Words of gratitude: This dissertation would never have come to fruition without the support of many individuals, and it is with gratitude that the researcher acknowledges their efforts. In particular, the researcher is profoundly indebted to her supervisor, Prof. Dr. Johann Lachhammer, for his patience and continuous guidance in the past years and for always challenging and enriching the researcher's ideas. She is also especially grateful for the on-going efforts of Prof. Dr. Josef Neuert, Prof. Dr. Māris Purgailis, Prof. Dr. Baiba Šavriņa, Prof. Dr. Ērika Šumilo and Prof. Dr. Inesa Vorončuka associated with the establishment and maintenance of the structured doctorate program in management science. Their dedication made it possible for the researcher to combine doctorate studies and academic research with her professional career. Gratitude is also expressed to Prof. Dr. Josef Neuert for his review of both the causal model and statistical analyses conducted in this study and his helpful advice. Furthermore, sincere gratitude is indebted to Dr. Ulrike Dambmann, Director of the 'infos Institute', for sharing her insightful knowledge on fundamental human needs theory in the context of brain research with the researcher. The researcher would also like to take the opportunity to thank Ms. Gudrun Benne, Head of Marketing and Market Research of Hannover Airport, for her helpful comments regarding the development of the two survey questionnaires prior to pre-test submission. Profound gratitude is extended to the research subjects, both airport experts and passengers, who supported the study without any

immediate benefit for themselves. Finally, the researcher wishes to thank the professors, lecturers and academic staff of the University of Latvia and the University of Applied Sciences Kufstein for their support during the coursework of the doctorate studies. Notwithstanding all of the above support, the researcher is fully responsible for any mistakes, problems, and flaws that this piece of work may contain.

1 SOCIAL CAPITAL – A CONCEPTUAL AND EMPIRICAL REVIEW IN THE LIGHT OF EMERGING PUBLIC SOCIAL SOFTWARE PLATFORMS

Social capital theorists consider network ties that cross organizational boundaries as an important source of organizational advantage (see for example Burt, 1995; Granovetter, 1973, Granovetter, 1992). With the emergence of public Social Software Platforms (SSP) organizations are provided with the opportunity to re-establish network ties with their customers. The era of the passive customer and the old top-down-view of the Internet, where the few published and the many consumed information has come to an end (Poynter & Lawrence, 2007, p. 597). SSP can be described as "digital environments that support human communication and collaboration. Contributions and interactions are globally visible and persistent over time" (McAfee, 2006, n.p.). SSP, such as online social networks or micro-blogging services, embrace customer participation while drawing on the ideological and technological advances of Web 2.0. One of the main principles of Web 2.0 is the definition of the internet as a platform for facilitated collaboration, idea sharing and joint value creation in a democratic manner (O'Reilly, 2007, pp. 22-24). In this respect, SSP have also resulted in a renaissance of the social relationship between organizations and customers.

As SSP is a relatively new phenomenon, this chapter critically reflects the existing body of literature on general social capital theory in the light of a growing convergence of social and technological networks. Implications for social capital theory are addressed. As a second step, the relationship between social capital and organizational performance is discussed, while addressing gaps in both existing performance management frameworks and empirical research. The third part of the chapter discusses the relationship between social capital and human need satisfaction, as for a mutually beneficial relationship to evolve on SSP, the relationship between organizations and their customers needs to be reciprocal. Human need satisfaction has also been acknowledged as a major source of human motivation to engage in a task (Deci & Ryan, 2000). Therefore, especially research streams on human need satisfaction as a source of engagement motivation in an online environment are analyzed. In conclusion, the author summarizes how to use the discussed theoretical and empirical foundations for her own research.

1.1 Implications of Social Software Platforms for Social Capital Theory

SSP "emerge as a major source of social capital" (Lin, 1999, p. 48) for individuals and organizations. A general definition of social capital consistent with the renditions of other scholars has been posited as "investments in social relations with expected return" (ibid, p. 30). Put in other words, investing time in maintaining relationships is beneficial, as often the support of others is needed with regard to human need satisfaction or economic goal attainment. It is those others, who are the source of advantage (Bourdieu, 1986, p. 51; Portes, 1998, p. 7). The overall notion of an organizational social capital theory is that relationship networks and other aspects "unrelated to money can help organizations succeed economically" (Cohen & Prusak, 2001, p.10). Social capital plays an important role in the creation of intellectual capital as antecedents of organizational performance (Nahapiet & Goshal, 1998, p. 245), as organizational innovation derives from knowledge exchange and learning from social network connections that cross organizational boundaries. The term 'social network' was coined by anthropologist Barnes (1954), who defined the term as an association of people drawn together by kinship, friendship or neighbourhood. To describe a social network Barnes used the image of a set of points, some of which are connected by lines. The points represent people or groups, while the lines indicate which people or groups interact with each other, i.e. share mutual network ties (ibid, pp. 43-44). Social networks "constitute a valuable resource for the conduit of social affairs" (Nahapiet & Goshal, 1998, p. 243). Thorelli (1986) focuses in his definition of social networks on organizations as part of a network: "Generically, a network may be viewed as consisting of nodes or positions (occupied by firms, households, strategic business units in a diversified concern, trade associations or other types of organizations) and links manifested by interactions between positions" (ibid, p. 38).

SSP is a recent phenomenon. Hence, new aspects and implications for social capital theory arise that may not yet be considered in the existing body of literature:

- Level of analysis: SSP enable the formation of network ties between 'customers' and 'organizations'. Though social capital research also bridges the micro and macro level, for example individual and community level, these two focal actors are novel to social capital research.
- Network size: The number of network ties of an actor may be able to grow substantially because connections can be cheaply and easily maintained on SSP (Donath & Boyd, 2004, p.77).

- Network structure: Customers are able to connect to organizations on SSP without explicit permission of the organization. Thus, structural holes within a network's structure may decrease substantially, as they can be easily spanned with a mouse-click.
- Network interactions: The interactions (dialogue) between organizations and customers on SSP are publicly visible and persistent.

Given the implications of SSP for social capital theory, a review of existing theoretical foundations and measurement approaches is needed. While scholars commonly agree that social relations act as a mediator for need satisfaction, they often focus on different aspects of social capital in their definitions and conceptualizations. Nahapiet & Goshal (1998) integrated the different lines of thought into three dimensions of social capital: structural, relational and cognitive. Notwithstanding the limitation that these dimensions are "highly interrelated" (ibid, p. 243), the author of this promotional work shares the view that a distinction in dimensions is beneficial for analytical reasons. Hence, the implications of SSP for social capital theory and measures of social capital are analyzed separately for each of the three dimensions.

1.2 Review of Social Capital Dimensions and Existing Measures

Table 1 provides an evaluation of the different measurement approaches for the structural, relational and cognitive dimension of social capital in the context SSP.

Table 1. Review of existing measurement approaches of social capital in the context of SSP

Dimension	Focus	Measurement	Criticism of measurement approach	Implications of SSP for measurement approach regarding the focal actors 'organization' / 'customer'
Structural	Network location	• Access to bridges that span structural holes (Burt, 1995) • Bridging network ties and strength of tie (Granovetter, 1973)	• Network location per se does not predict existence of and access to network resources valued by the actor (Lin, 1999)	Importance of network location will decrease: • Structural hole that separates customers and organizations can be easily spanned with a mouse-click • Customer requires no permission of organization for establishing a connection on SSP • Organizations lose control over information flow, as conversation on SSP is publicly visible
Structural	Embedded network resources	• Valued resources of others, e.g. wealth, power, status (Lin, 1999)	• Existence of valued network resource per se does not predict that the actor is able to mobilize the resource for his own benefit	• Measurement approach difficult to apply for large scale online social networks • Focal actor 'organization' is an impersonal legal entity
Relational	Trust, norms of reciprocity	• Latent constructs	• Tautological reasoning (Adam and Roncevic, 2003; Portes, 1998)	• Dialogue on SSP is publicly visible and enables a clear cut distinction between cause and effect
Cognitive	Shared goals	• Latent constructs	• No explicit criticism mentioned in literature; shared goals need to be defined context-specific	• Shared goal: customer satisfaction • Motivational pull of SSP demands for a holistic approach for achieving customer satisfaction (Tenge, 2012). Organizations must take fundamental human needs into account. Focusing only on customer needs reduces the human being into a "into a category of restricted existence" (Max-Neef, 1992, p. 201).

Source: information compiled by author

The *structural dimension of social capital* focuses on the existence or absence of network connections between focal actors within a social network, i.e. the impersonal network configuration (Nahapiet & Goshal, 1998, p. 244). It also comprises the "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu & Wacquant, 1992, p. 119). Thus, the structural dimension of social capital consists of both the network per se and the actual or potential resources that may be mobilized through that network. In the structural perspective, social capital is most commonly divided into bridging and bonding social capital touching on the seminal work of sociologist Granovetter (1973): 'The Strength of Weak Ties'. Bonding social capital is referred to as reflecting strong ties with family and close friends, who might be in the position to provide emotional support or access to limited resources (Putnam, 2000, pp. 22-24). Bridging social capital defines loose connections, i.e. weak ties, between focal actors governed by norms of reciprocity. Granovetter describes a weak tie as a bridge that spans parts of a social network and connects otherwise disconnected social groups (Granovetter, 1973, p. 1361). For information diffusion across a network, bridging ties are the most valuable (Putnam, 2000, p. 22-24). Burt (1995, p. 208) refers to the weaker network connections between non-redundant relations in a social network as structural holes. If an actor's network is rich in structural holes, entrepreneurial opportunity, information and control benefits increase. Burt compares structural holes to buffers acting like insulators in an electric circuit: people on either side of the structural hole circulate in different flows of information. If the structural hole can be spanned, the individual gets access to non-redundant sources of information and is able to control the projects that bring individuals from both sides of the structural hole together. In the view of Burt and Granovetter, economic outcomes are influenced by overall network configuration. Accordingly, network location is considered as one measure of social capital in literature.

The network-location-approach focuses on the best infrastructure that must be present for accessing social capital, but does not necessarily predict access to resources (Lin, 1999, p. 36). The author of this dissertation argues that in the light of a growing adoption of SSP the importance of network configuration will decrease. With customers being able to connect to organizations on SSP without explicit permission of organizations, structural holes can be easily spanned with a mouse-click. Control benefits based on network configuration also diminish. As the dialogue between customers and organizations is publicly visible on SSP, it is no longer possible for organizations to filter information or to control the flow of

information (McAfee, 2009, p. 162). Therefore, network location must not be treated as a measure of social capital when analyzing the relationship between customers and organizations on SSP. A second measurement approach focuses on the embedded resources in social networks. Existing measures concentrate on valued resources of others, such as wealth, power or status. Measurement instruments include for example 'name generator', 'position generator' or 'resource generator' (see van der Gaag, 2005, for a detailed description). However, the existence of valued network resources per se does not predict that the actor is able to mobilize the resource to attain his goals. Complexity is added by the fact that the measurement approach is difficult to apply to large scale online social networks. Furthermore, it cannot be applied to the focal actor 'organization", as it is an impersonal legal entity.

While the structural dimension of social capital focuses on impersonal network structure and embedded resources, the *relational dimension of social capital* reflects the quality of network ties, i.e. the type of "personal relationships people have developed with each other through a history of interactions" (Nahapiet & Goshal, 1998, p. 244). Trust and norms of reciprocity facilitate exchange and lower transaction costs (Coleman, 1988, p. 98; Fukuyama, 2002, pp. 32-33; Woolcock & Narayan, 2000, p.16). The relational dimension of social capital has been given much less empirical attention, as scholars have been careful to avoid tautological reasoning. As trust can be considered as both cause and effect of durable social relations, trust must not be equated with an indicator for the existence of social capital (Adam & Roncevic, 2003, p. 164; Portes, 1998, p. 5). Granovetter describes relational embeddedness as the degree to which focal actors reciprocally consider one another's needs and goals (Granovetter, 1992, pp. 33-34.). Hence, it can be postulated that a mutually beneficial relationship between organizations and customers on SSP is only possible if the relationship is valued by both actors, i.e. if the needs of the customer are satisfied by the organization and the needs of the organization are satisfied by the customer. Otherwise the relationship has a discount rate (Flap, 2001, p. 37). Empirical studies suggest that neurological phenomena respond favorably to social cooperation from human partners and negatively to defection from partners (Rilling et al., 2002, p. 403). For weaker network ties, such as ties between organizations and their customers, tie maintenance is more frequently needed than for strong ties as there is less mutual trust (van der Gaag, 2005, p. 32).

SSP makes the 'investments' in social relations visible. In addition to the frequency of interactions, researchers are also able to analyze the content of interactions as contributions on SSP are persistent. The author argues that the content, which is exchanged on SSP, contributes

to need satisfaction of the focal actors. Need satisfaction can therefore be considered as the 'return on investment' in social relations. This approach might offer a fruitful new avenue for the development of a rigorous measurement model of social capital in an online environment.

The *cognitive dimension of social capital* focuses on a shared meaning or understanding between actors (Fukuyama, 2002, p. 27; Nahapiet & Goshal, 1998, p. 244). In terms of organizational strategy, the cognitive perspective of social capital can be described as the motivation to work towards a common goal. If this reasoning is applied to the focal actors 'customer' and 'organization', a shared goal is the achievement of customer satisfaction as a basis for a mutually beneficial relationship on SSP. For organizations, customer satisfaction can be seen as a driver of profitability. Satisfied customers are likely to establish a strong relationship to an organization resulting in customer loyalty (Storbacka et al., 1994, p. 94). The author argues that the convergence of social and technological networks demands for a holistic approach to achieve customer satisfaction on SSP, as "people in virtual communities do just about everything people do in real life, but we leave our bodies behind" (Rheingold, 2000, p. 3). In real life, individuals maintain network ties to leverage social support to satisfy their fundamental human needs. In line with this reasoning organizations must not only consider the customer as a customer, but first of all as a human being (Tenge, 2012, p. 291). Focusing only on customer needs reduces the human being into a "into a category of restricted existence" (Max-Neef, 1992, p. 201).

1.3 Social Capital and Organizational Performance

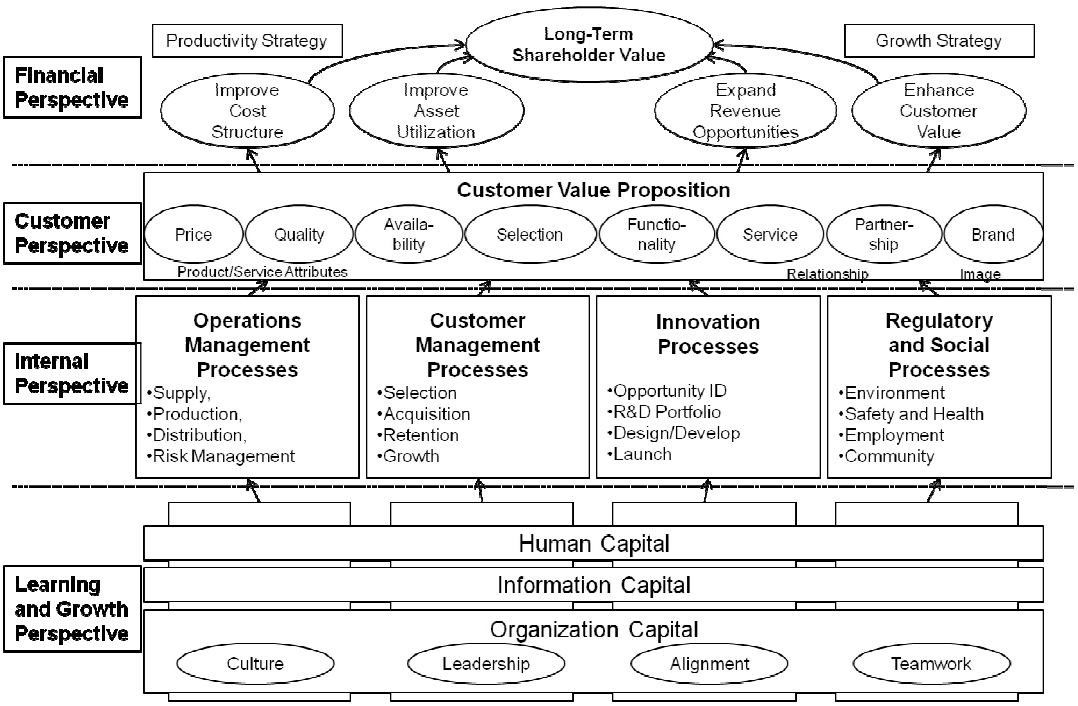
This sub-chapter describes the relationship between social capital as an intangible asset and organizational performance using as theoretical framework the renown Balanced Scorecard (BSC) / strategy map concept of Kaplan & Norton (1992; 1996a; 1996b; 2001a; 2001b; 2001c; 2004a; 2004b; 2004c). The BSC / strategy map approach is not only the most cited theory in the field of performance management (Marr & Schiuma, 2003, pp. 681-684) and widely adopted by practitioners (Kennerley & Neely, 2003, p. 215), but also considers intangible assets "as the ultimate source of competitive advantage" (Kaplan & Norton, 2004a, p. 10) in today's knowledge society. Marr & Schiuma (2003) further note that the BSC/ strategy approach "brings together seemingly disparate elements of corporations," (ibid, p. 683) such as finance and accounting, innovation research or operations management. This ensures a holistic view of the organization instead of concentrating only on partially bounded processes. As a second step, the chapter analyses existing research findings of scholars with regard to social capital and economic need satisfaction in the offline and online environment.

1.3.1 Performance Management: The Balanced Scorecard /Strategy Map Framework

Performance management has gained considerable momentum in both managerial and academic contest. Until the 80's the vast majority of performance measures used have been purely financial measures, such as return on investment (Kennerley & Neely, 2003, p. 214). With increasing competitive and volatile markets, many scholars acknowledged that focusing exclusively on lagging financial outcome indicators might promote organizational behavior that is targeted at maximizing short-term performance, while sacrificing sustainable future growth. Non-financial measures provide present or future indicators of performance by describing "how well the firm *is* doing" (Johnson, 1999, p. 563) and provide valuable indications *how* the performance is achieved (Kennerley & Neely, 2003, p. 215). The BSC places the emphasis on the enablers of performance (Mooraj et al., 1999, p. 481) and reduces complexity (Atkinson, 2006, p. 1454) by forcing managers "to focus on the handful of measures that are most critical" (Kaplan & Norton, 1992, p. 73). The BSC organizes strategic objectives and measures in four different perspectives: financial perspective, customer perspective, internal process perspective and learning and growth perspective and provides answers to four basic questions (Kaplan & Norton, 1992, p. 72; Kaplan & Norton, 1996b, p. 4):

1. Financial perspective: To succeed financially, how should we appear to our shareholders?
   The financial perspective focuses on the view of the shareholders and is concerned with the lagging financial indicators such as profitability, growth and shareholder value.
2. Customer perspective: To achieve our vision, how should we appear to our customers?
   The customer perspective defines the customer value proposition. Focus is on creating customer satisfaction through an attractive value proposition, increase customer loyalty and advocacy. Customer satisfaction can be seen as a driver of profitability. Satisfied customers are likely to establish a strong relationship to a service provider resulting in customer loyalty (Storbacka et al., 1994, p. 94).
3. Internal process perspective: To satisfy our shareholders and customers, what business processes must we excel at?
   The internal process perspective focuses on the internal processes the organizations needs to excel at to deliver the customer value proposition. Thus, organizations need to concentrate on processes that have the greatest impact on customer satisfaction and retention.
4. Learning and growth perspective: To achieve our vision, how will we sustain our ability to change and improve?
   The learning and growth perspective describes how the intangible assets of an organization (human capital, information capital, organization capital) are integrated and aligned with strategy to create value. Learning and growth measures are lead indicators for internal process, customer and financial performance,

While the early BSC concept does not consider cause-effect-relationships (Malmi, 2001, p. 208), it was later evolved to the BSC / strategy map approach to include cause-effect relationships between the four perspectives (Kaplan & Norton, 2001c, p. 483). Figure 1 (next page) shows a generic strategy map example.



Source: Author's illustration based on Kaplan & Norton (2004a, p. 12)

Figure 1. Generic strategy map

Strategy maps are a "natural extension to balanced scorecards" and enable them to operate as second generation measurement frameworks (Neely et al., 2003, p. 130). Strategy maps can be used by organizations for review and clarification of strategy, communication of strategy, for prioritization and alignment of strategic initiatives and to focus the organization on long-term goals and mutual understanding (Mooraj et al., 1999, p. 490; Kaplan & Norton, 1996b, p. 13). A strategy map is "a template not a strait jacket (Kaplan & Norton, 1996a, p.34), i.e. strategy maps vary by industry and strategic focus of each organization (Kennerley & Neely, 2003, p. 215). Therefore, much of the existing BSC research is focused on case studies (Marr & Schiuma, 2003, p. 684).

1.3.2 Social Capital – the Missing Intangible Asset in the Balanced Scorecard / Strategy Map Framework

Kaplan & Norton postulate that "intangible assets are the ultimate source of competitive advantage" (Kaplan & Norton, 2004a, p.10) and that measures of intangible assets are considered as lead indicators for internal process, customer and financial performance. Marr & Adams (2004) analyzed the increasing focus of Kaplan & Norton on intangible assets and the learning and growth perspective of the BSC for value creation (see *Table 2*, next page).

Table 2. Importance of intangible assets in Balanced Scorecard / strategy map framework of Kaplan and Norton

Year	Title of Book	Focus on intangible assets
1996	The Balanced Scorecard	The term intangible assets is referenced in the index twice (p. 3, 7)
2000	The Strategy-Focused Organization	The term intangible assets is not referenced at all in the index, but mentioned in one paragraph: "The learning and growth strategy defines the intangible assets needed to enable organizational activities and customer relationships to be performed at ever-higher levels of performance" (p. 93)
2004	Strategy Maps - Converting Intangible Assets into Tangible results	Intangible assets are the book's primary subject matter. Kaplan and Norton organize the intangible assets into three categories: human capital, information capital, organization capital.

Source: Table compiled by author based on Marr & Adams (2004, p. 18)

In their last iteration of the BSC concept, the growing importance of intangible assets is clearly emphasized in the book title "Strategy Maps - Converting Intangible Assets into Tangible Outcomes" (2004). In their first book "The Balanced Scorecard" (1996b), the term intangible assets is referenced only twice in the index. Their book publication "The Strategy-Focused Organization" (2000) does not reference the term intangible assets at all in the index. Marr & Adams (2004) conclude a "remarkable change of emphasis" (ibid, p. 18) on the learning and growth perspective, which for long has been "considered its weakest aspect" (ibid, p. 19).

Kaplan & Norton organize intangible assets into three categories under the learning and growth perspective of the BSC: human capital, information capital and organization capital. Marr & Adams (2004) criticize an incomplete classification of intangible assets with respect to the constituents of intellectual capital. While human capital, information capital and organization capital are important dimensions of intellectual capital, an important component of intellectual capital is missing: social (relational) capital in terms of relations maintained with the external environment (Bontis, 1999; Saint-Onge, 1996). Intellectual capital can be described as a system of intangible assets that utilize human intellect and innovation to create value (Johnson, 1999, p. 564).

Also other scholars postulate that the BSC concept is still is too internally focused (Akkermanns & Oorschot, 2005, p. 935), fails to acknowledge collaborative approaches and a human relations view (Dinesh & Palmer, 1998, pp. 367-368) and does not consider the extended value creation chain "an essential element of today`s networked organizations" (Mooraj et al., 1999, p. 482). Norreklit (2000) acknowledges the "need to (…) create a network through which information is mediated and to motivate employees to gather information outside of the usual routines" (ibid, p. 78). Table 3 summarizes the discussed criticism of the BSC / strategy map framework.

Table 3. Criticism of Balanced Scorecard / strategy map framework

Author / Year	Criticism of Balanced Scorecard / Strategy Map Framework
Akkermanns & Oorschot (2005)	• BSC too internally focused
Dinesh & Palmer (1998)	• Lack of collaborative approaches and human relations view
Marr & Adams (2004)	• Incomplete classification of intangible assets in the learning and growth perspective in the last iteration of BSC • Social (relational capital) is missing from the concept
Mooraj et al. (1999)	• BSC does not consider "the extended value chain, which is an essential element of today's networked organizations" (p. 18)
Norreklit (2000)	• "Need to (…) create a network through which information is mediated, and to motivate employees to gather information outside of the usual routines" (p. 78)

Source: Table compiled by author

The author of this promotional work argues that with the advent of SSP, such as Facebook, organizations have started to extend their learning and growth perspective beyond organizational boundaries. They are able to benefit from using SSP as part of their information capital to leverage network connections to customers, to enrich their human capital, i.e. the tacit knowledge of employees, to improve value creation in the process, customer and financial dimension of the BSC. "Intangible assets seldom have a value in themselves. (….) The value does not reside in any individual intangible asset. It arises from creating the entire set of assets along with a strategy that links them together" (Kaplan & Norton, 2001c, p. 66).

The author further argues that though `customer relationships` are included in the customer perspective of the BSC, the BSC is mainly concerned with delivering the value proposition to the customer, not on including the customer in the value creation process. Research on customer service expectations suggests that customers demand for a "more personalized and closer relationship with service providers" (Parasuraman et al., 1991, p. 43). It is therefore necessary to enhance the BSC / strategy map framework to also include the intangible asset 'social capital'. Based on an evolved and customized BSC / strategy map, each organization is able to develop measures with regard to their expected return of investment in the customer relationship on SSP. For example 'deeper insights into customer needs, requirements and attitudes', 'increased efficiency of operational processes due to real-time communication with the customer', a 'reduced time-to-market for product or service innovations' or an 'increase of positive-word-of mouth (referrals)'.

1.3.3 Research Streams: Social Capital and Organizational Performance

Existing research studies that explore the relationship between social capital and organizational performance focus either on intra-organizational network connections or network connections that cross organizational boundaries (see *Table 4* for a summary, next page).

Table 4. Overview of related research on social capital and economic need satisfaction

Author	Research Focus	Research Method	Research Findings Related to Economic Need Satisfaction
a) Intra-organizational network connection			
Constant & Kiesler (1996)	Explore knowledge transfer between knowledge workers of a large international computer manufacturer that do not know each other in person on the company's electronic bulletin boards.	Questionnaire distributed to the employee seeking advice and the employee providing advice on the electronic bulletin board of a large international computer manufacturer.	Computer networks are useful means for leveraging weak network ties for transfer of knowledge resources. Basic motivation for voluntary knowledge exchange is that employees can present themselves as experts.
Andrews (2010)	Explore influence of organizational social capital on service performance.	Electronic survey of managers in English local governments carried out each summer from 2001 to 2004. In each year, a representative sample of 72 local governments was surveyed.	Service performance is positively correlated with the cognitive and relational dimension of social capital, with the strongest correlation found for relational social capital. The structural dimension has been found to be unrelated to service outcomes.
Maurer et al. (2011)	Explore influence of organizational social capital on growth (new orders and change of market share) and innovation performance (new product development and improvement of products).	Questionnaire distributed to project managers from project-based organizations in the German mechanical engineering industry.	Transfer of knowledge resources (i.e. their mobilization, assimilation and use) mediates between organization members' intra-organizational social capital and organizational performance outcomes of growth and innovation performance.
b) Network connections crossing organizational boundaries			
Harrison-Walker (2001)	Explore customer commitment towards service organizations as potential antecedents of word-of-mouth communication (WOM).	417 consumers of two midsize college towns located in two southern states of the US. Study focus: two service industries (hair salon, veterinarian).	The quality of network connections between organizations and their customers influences the WOM activities of customers: affective commitment towards the company is positively related to WOM activity and WOM praise.

(continued on next page)

Table 4 (continued). Overview of related research on social capital and economic need satisfaction

Author	Research Focus	Research Method	Research Findings Related to Economic Need Satisfaction
Ruef (2002)	Explore influence of network structure on innovation	Questionnaire completed by 766 entrepreneurial teams in the US attempting to start new business organizations	Entrepreneurs, who are embedded in heterogeneous networks (strong ties, weak ties, advisors with no prior relationships) are significantly more likely to foster innovation.
Hoegl (2005)	Explore relationship between supplier involvement in product development projects on project performance.	Questionnaire distributed to members of 28 new development projects with supplier involvement in six industrial firms in Germany, Austria and Switzerland	Buyer-supplier collaboration as well as communication frequency and intensity, are positively related to the performance of interfirm product development projects.
Ofori, (2010)	Explore influence of social capital on organizational performance.	Questionnaire field survey supplemented by expert interviews of respondents being at least at supervisor level using a sample of 116 firms listed in the Ghana Club 100.	Institutional ties, i.e. ties with other organizations or institutions, have a significant positive relationship with organisational performance.
Hulme (2010) Whitepaper	Explore relationship building between organizations and customers in the era of SSP.	Online survey of 2.000 active internet users in the US and UK, 40 qualitative interviews with customer and 15 interviews with marketing professionals.	91 % of users engaged in regular use of SSP express a positive interest in getting involved in product and service development processes of organizations. 82 % stated that involvement would make them more likely to tell other about the organization.
Universal McCann (2010) Whitepaper	Explore impact of SSP on consumer brands	Self-completed internet survey answered by 37.600 active internet users in 54 countries.	Of all respondents, who joined an online brand community, 72 % thought more positively of the brand, 71 % were more likely to buy the brand, 66 % felt more loyal towards the brand, and 63 % recommended others to join the brand community.

Source: Table compiled by author

The research results summarized in Table 6 acknowledge that high levels of intra-organizational social capital are associated with better organizational outcomes, such as service performance, innovation performance or growth (Andrews, 2010; Maurer et al., 2011). Intranets have been found to be a suitable means for leveraging bridging social capital for transfer of knowledge resources. The study of Constant & Kiesler (1996, pp. 131-132) suggests that the basic motivation for voluntary knowledge exchange between employees on the companies' electronic bulletin board is positive competence feedback, as employees are publicly able to present themselves as experts. Research studies that focus on external network connections also highlight the positive relationship between social capital organizational performance. Hoegl (2005, p. 542) found that the quality of buyer-supplier collaboration as well as communication frequency and intensity in interfirm-development projects, is positively related to project performance. The research findings of Ruef (2002) and Ofori (2010) support Granovetters' 'strength-of-weak-ties' proposition. Entrepreneurs, who are embedded in heterogeneous networks (strong ties, weak ties, advisors with no prior relationships) have been found to be significantly more likely to foster innovation as compared to entrepreneurs with a predominantly strong tie network (Ruef, 2002, p. 443). Ofori (2010, p. 87) suggests that institutional ties, i.e. network ties with other organizations or institutions, have a significant positive relationship with organisational performance. Harrison-Walker (2001) reports that the quality of network connections between organizations and their customers influences the word-of-mouth (WOM) activities of customers. Affective commitment towards the company is positively related to WOM activity and WOM praise. The study concludes that organizations need to develop a clear understanding of the antecedents that foster commitment towards a company. A survey of Hulme (2010) conducted for the IT-organization Alterian sheds more light on the motivation of customers to engage with organizations. The study reports that users that engage in regular use of SSP express a positive interest in getting involved in product and service development processes of organizations. User involvement is also recognized as motivator of positive WOM (ibid, pp. 20-21). However, the study does not provide insights if organizations are able to leverage the advantages of customer engagement for their own benefit. An international online survey of Universal McCann (2010) explored the impact of customer interaction with regard to consumer brands. Respondents, who joined an online brand community, thought more positively of the brand, were more likely to buy the brand, felt more loyal towards the brand and recommended others to join the brand community (ibid, p. 58).

Existing research suggests a positive relationship between bridging social capital and beneficial economic outcomes. Notwithstanding, existing research studies focus on consumer brand companies, not on service organizations, such as airports. Existing research also does not address all four perspectives of the BSC / strategy map framework, as they focus either on the learning and growth perspective (for example knowledge exchange), process perspective (for example project performance), customer perspective (for example WOM generation) or financial perspective (overall performance, such as market share). Hence, additional research effort that aims at integrating the perspectives is needed.

1.4 Social Capital and Human Need Satisfaction

While it is evident that organizations engage with customers on SSP to increase their economic need satisfaction, a clear understanding is also needed, why customers join SSP. Rheingold (2000) postulated that: "people in virtual communities do just about everything people do in real life, but we leave our bodies behind" (ibid, p. 3). Consequently, it can be argued that individuals connect to other individuals, groups or organization on SSP to satisfy their fundamental human needs and by this increase the quality of their lives. "The central purpose of economic and social development is to meet human needs (…) the satisfaction of human needs is indeed the whole purpose of growth, trade, and investment (…)" (McHale & McHale, 1979, p. 14). Theorists of human needs propose that there are universal human needs and that need satisfaction is not only likely to enhance psychological well-being, but can also be considered as a source of human motivation (Alderfer, 1969; Dambmann, 2004; Maslow, 1943; Max-Neef, 1992; Maslow & Frager, 2003; Ryan & Deci, 2000). This sub-chapter discusses different approaches for classification of human needs and the relationship between need satisfaction and human motivation. It also discusses existing research streams on need satisfaction as antecedents of achieving engagement motivation in an online environment. *Table 5* (next page) provides an overview of need definitions by different scholars.

Table 5. Overview of 'need' definitions by different scholars

Author	Need Definition
Etzioni (1968)	"By 'need' we simply mean that the person can be denied as specific kind of experience only at the cost of an intra-personal tension" (p. 871)
Maslow & Frager (2003)	Satisfied needs ensure an "integrated wholeness of the organism" (p. 370).
Max-Neef et al. (1991)	"(…) fundamental human needs are not only universal, but are also entwined with the evolution of the species. (….) In summary, perhaps we may say that fundamental human needs are essential attributes related to human evolution" (p. 28).
Ryan & Deci (2000)	"(…) energizing state that, if satisfied, conduces towards health and well-being but, if not satisfied, contributes to pathology and ill-being."; "innate nutriment" (p. 74).

Source: Table compiled by author

A need can be described as an "(…) energizing state that, if satisfied, conduces towards health and well-being but, if not satisfied, contributes to pathology and ill-being" (Ryan & Deci, 2000, p. 74). Meaning, that, satisfied needs are "innate nutriments" (ibid, p. 74) that ensure an "integrated wholeness of the organism" (Maslow & Frager, 2003, p. 370). Hence, a "person can be denied a specific kind of experience only at the cost of an intra-personal tension" (Etzioni, 1968, p. 871). Needs are "finite, few and classifiable" (Max-Neef, 1992, p. 199) and must be distinguished from material wants that are "insatiable or unlimited" (McConnell et al., 2012, p. 23). Human nature remains relatively stable through time and place, meaning that all human beings have the same fundamental needs and strive to achieve the same universal goals irrespective of social structure or national culture (Etzioni, 1968, p. 871; Flap, 2001, p. 113; Max-Neef et al., 1991, p. 28; Ryan & Deci, 2000, p. 75; Tay & Diener, 2011, p. 364). What changes during evolution are the options for need satisfaction. The concept of universal human needs is different from need based personality theories (for example McClelland, 1985; Murray, 2008) that tend to consider needs as learned not as innate.

1.4.1 Theories of Human Needs as Motivator of Behavior

While scholars commonly agree that fundamental human needs can be divided into physiological and socio-psychological needs, there is considerable debate with regard to the structure of needs.

Structural assumptions include *need hierarchies* (Alderfer, 1969; Maslow, 1943; Maslow & Frager, 2003;) in contrast to *interrelated need systems* (Dambmann, 2004; Max-Neef, 1992; Ryan & Deci, 2000). Theoretical approaches also differ with regard to how detailed needs are classified. In this respect, the author supports the view of Maslow & Frager (2003), who argue that the level of detail "depends entirely on the degree of specificity with which one chooses to analyze them. The true picture is not one of a great many sticks lying side by side, but rather a nest of boxes in which one box contains three others, an in which each of these contains ten others (…), and so on" (ibid, 25). *Table 6* provides an overview of need classifications.

Table 6. Examples of 'need' classification

Author	**Structural Assumption of Socio-Psychological Needs**	**Socio-Psychological Needs**	**Physiological Needs**
Maslow (1943)	Hierarchical	• Social needs • Esteem needs • Self-actualization needs	• Physiological needs • Safety needs
Alderfer (1969)	Hierarchical	• Relatedness needs • Growth needs	• Existence needs
Max-Neef (1992)	Non hierarchical interrelated system	• Protection • Affection • Understanding • Participation • Recreation • Creation • Identity • Freedom	• Subsistence
Deci and Ryan (2000)	Non hierarchical interrelated system	• Self-Determination • Competence • Relatedness	
Dambmann (2004)	Non hierarchical interrelated system	• Communication (affection, attach-ment, well-being): o information o recognition • Self-determination • Competence • Meaning	• Subsistence

Source: Table compiled by author

The ‘Hierarchy of Needs Theory’ proposed by Maslow (1943) has influenced the thinking and work of many scholars in the field of organizational behavior. While traditionally organisations focused on extrinsic rewards and punishments to exert control over the behaviour of employees, responding to the human needs of employees has been acknowledged as a source of intrinsic achievement motivation (see for example Alderfer, 1969; Argyris, 1964; McGregor, 1960; Porter, 1963). According to Maslow, needs are arranged in a hierarchy from lower-order needs (physiological needs, safety needs) to higher-order needs (social needs, esteem needs, self-actualization needs), while assuming a successive prepotency from the low to higher order needs. Hence, an individual remains at a particular need level until the respective need is satisfied. Only afterwards the subsequent need emerges. Despite the popularity of the theory, little empirical evidence supports it (see Wahba & Bridwell, 1976, pp. 212-240, for a detailed review). Tay & Diener (2011, p. 363) found evidence that a person is able to meet psychological needs regardless of whether his or her basic needs for subsistence or safety are fully met. This disconfirms the assumption that needs are arranged in a rigid hierarchical structure. Other research findings contradict the notion of Maslow that a satisfied need can no longer be considered as a motivator of human behaviour, as need satisfaction has been found to be positively related to the intensity of the need itself (Alderfer, 1969; Hall & Nougaim, 1968). Due to conceptual overlap between the need levels postulated by Maslow, scholars also report some difficulty in developing measures for the needs (see for example Hall & Nougaim, 1968, p. 19).

To address some of the weaknesses of Maslow’s conception, Alderfer (1969) proposed the ERG-theory with focus on the organizational setting. The theory reduces the needs previously proposed by Maslow to a hierarchical three-fold need concept: *existence needs* (physiological and safety needs), which are superior to *relatedness needs* (social needs, self-esteem needs), which are superior to *growth needs* (self-actualization needs). The ERG-theory assumes that the order of needs can differ by person, while different levels of needs can be pursued simultaneously. If the fulfillment of a higher order need is subdued, there is an increase in desire for satisfying lower-order needs (ibid, p. 154). While Alderfer was able to solve the problem of need overlap, as existence, relatedness and growth needs have been found to be “sharply distinct from one another statistically” (Rauschenberger et al., 1980, p. 666), the general notion of a hierarchical need structure has also been disconfirmed for ERG-theory. Longitudinal studies provided evidence that all three needs may increase simultaneously (ibid, p. 668).

In contrast to need hierarchies, *need systems* consider human needs as interrelated and interactive. With the exception of the physiological need for survival, needs are not considered to be hierarchically structured, whereas the relevance of needs might vary depending on circumstances or situation (Dambmann 2004, p. 11; Max-Neef, 1992, p. 200). Dambmann (2004, p. 11) defines the following fundamental psychological human needs in addition to the physiological need for subsistence in the context of brain research:

1) Communication (affection, attachment, well-being)
    i) information
    ii) recognition
2) Self-determination
3) Competence
4) Meaning

Dambmann further argues that human beings only become *social* beings when communicating. Communication is a precondition for goal achievement, as often the support of others is needed to reach personal goals. Without communication individuals would not be able to exchange information (ibid, p. 13). The author therefore argues that communication and information must be treated as satisfiers to regulate needs and foster social support, not as a basic need itself.

The differentiation between *needs* and *satisfiers* draws on the work of economist Max-Neef (Max-Neef, 1992; Max-Neef et al., 1991). Max-Neef argues that for epistemological and methodological reasons, it is necessary to make a clear-cut distinction between human needs and satisfiers of needs (Max-Neef et al., 1991, p. 17). For example, food is not considered as a need itself, but as a satisfier for the fundamental need for subsistence (Max-Neef, 1992, p. 199). Satisfiers are not to be equated with economic goods or services. Satisfiers "are related to everything which, by virtue of representing forms of 'being,' 'having', 'doing' or 'interacting', contributes to need satisfaction" (Max-Neef et al., 1991, p. 24). In an ideal world, goods or services are the material manifestation of satisfiers (ibid., p. 27).

Table 7 summarizes satisfiers for the need of affection.

Table 7. Matrix of needs and satisfiers illustrated by the example of the fundamental need for affection

Needs	Being	Having	Doing	Interacting
Affection	• Self-esteem • Solidarity • Respect • Tolerance • Generositia • Receptiveness • Passion • Determination • Sensuality • Sense of humor	• Friendships • Family • Partnerships • Relationships with nature	• Make love • Caress • Express emotion • Share • Take care of • Cultivate • Appreciate	• Privacy • Intimacy • Home • Space of togetherness

Source: own construction of author based on Max-Neef et al. (1991, p. 32)

According to Max-Neef satisfiers can be organized within the grids of a matrix according to existential categories (being, having, doing, interacting) and the psychological needs for protection, affection, understanding, participation, recreation, creation, identity and freedom. Needs engage, motivate and mobilize individuals, so that needs in the end become resources: "the need to participate is a potential for participation, just as the need for affection is a potential for affection" (Max-Neef, 1992, p. 200). Max-Neef applies the needs-satisfiers-approach to relations between individuals and society in order to explain the difference between prosperous and poor countries. To the author, the framework also appears to be a fruitful theoretical foundation for explaining the difference between successful and failing organizations. Organizations with efficient processes, talented people and state-of-the-art technology may still fail due to eroded social relations among employees or between employees and customers (Cohen & Prusak, 2001, p. 8). Drawing on the distinction between needs and satisfiers of Max-Neef, the needs classification of Dambmann was slightly modified because *communication* and *information* are considered by the author to be satisfiers.

1. Need for affection, attachment
2. Need for self-determination
3. Need for competence
4. Need for meaning

When summarizing the need for 'affection, attachment' under the umbrella of the need for 'relatedness', the need classification of Dambmann corresponds to the classification of self-determination theory (Ryan & Deci, 2000). Self-determination theory (SDT) addresses factors that either foster or undermine the motivation of individuals to engage in activities. According to SDT, individuals engage in activities to experience themselves as competent (need for competence) and initiators of their own behavior (need for self-determination). Their motivation to engage in an activity will increase or decrease depending on the degree of need satisfaction (Deci & Ryan, 2000, p. 233). A feeling of relatedness is also vital for fostering intrinsic motivation and well-being. While extrinsic motivation is associated with a focus on extrinsic rewards and benefits, such as reputation gains (Wasko & Faraj, 2005, p. 35), intrinsic motivation can be defined as an inherent satisfaction that individuals derive from engagement in activities they perceive to be interesting and that promote personal growth. While SDT assumes that psychological well-being requires the satisfaction of all three needs for relatedness, competence and self-determination, the theory does not propose any structural relationship between the three needs.

Self-determination refers to a feeling of autonomy and choicefulness. Individuals experience themselves as initiators of their behavior when being allowed to choose both their goals and the way how to attain them. In an autonomy-supportive social context, the self-determined activity is characterized by integration and the absence of conflict or pressure to cooperate or achieve expected outcomes. Events that control the behavior of individuals have been found to negatively influence self-esteem and well-being (Deci & Ryan, 1987, p. 1025). Autonomy-supportive environments are associated with higher task commitment and performance of the social actors (Deci & Ryan, 2000, p. 236).

Competence can be described as the motivation to succeed at optimally challenging tasks and being able to achieve expected outcomes. The need to feel competent and challenged is often linked to human actions that are targeted at fostering progress and is associated with feelings of curiosity and interest (Dambmann, 2004, p. 15). Rewards for motivating participation and engagement tend to be perceived as being controlling while undermining intrinsic behavior (Deci and Ryan, 1987, p. 1026). Constructs similar to competence have been proposed in cognitive oriented models, such as Vroom's (1964) expectancy theory to achieve valued outcomes, the concept of the level of aspiration (see Lachhammer, 1977 for a detailed discussion, pp. 99-109) and Bandura's (1993) self-efficacy model.

Relatedness refers to the need of being connected to others human beings need affectionate care and a sense of belonging from infancy on. Research studies on attachment-theory confirm that the physical and mental development of an infant suffering maternal deprivation is likely to be impeded. Deprivation might even result in the death of the infant (see for example Bolwby, 1961; Spitz, 1945). Relatedness is not concerned with outcomes, but rather with a need to belong and to feel cared for (Deci & Ryan, 2000, p. 231). A considerable amount of research has already provided empirical support for SDT. SDT is widely used in studies related to explore motivation and future behavior of individuals to engage in activities. The author therefore considers SDT as a useful framework for exploring the motivation of customers to interact with organizations in an online environment. In addition to the needs proposed by SDT, Dambmann (2004, p. 11) argues that human beings need values and norms to guide their behavior and to provide orientation (need for meaning).

1.4.2 Research Streams: Human Need Satisfaction and the Internet

Existing research studies show that the satisfaction of the needs for self-determination, competence and relatedness enhances engagement motivation and actual engagement of students in an online environment (see *Table 8*, next page).

Table 8. Overview of related research on human need satisfaction and engagement motivation in an online environment

Author	Research Focus	Research Method	Research Findings
Chiu et al. (2007)	Explore Taiwanese Bachelor and Master students' intention to continue using Web-based learning in a voluntary setting.	Surveys distributed to individuals who at least took one course offered by the National Kaohsiung Normal University (NKNU), Taiwan, Web-based learning service.	Perceived competence (attainment value) has positive effects on e-learning continuance intention (needs for relatedness, autonomy were not tested in the study).
Wiertz & Ruyter (2007)	Explore motivation of international customers to voluntarily contribute to firm-hosted commercial online communities.	Web-based survey distributed to users of a technical support community hosted and moderated by a large hard- and software supplier.	'Commitment to the community' (relatedness) and 'online interaction propensity" are positively associated with knowledge contribution (quality, quantity).
Roca & Gagné (2008)	Explore international workers' intention to continue using Web-based learning in a voluntary setting.	Web-based survey distributed to workers of four international agencies of the United Nations, who at least took one e-learning course offered by United Nations System Staff College (UNSSC).	Users' perception of autonomy, competence and relatedness determine the acceptance and use of IT.
Benjamin et al. (2008)	Definition of required services for user participation on the Internet.	Conceptual framework based on Maslow's Hierarchy of Needs (1943).	Online social networks contribute to the satisfaction of the need to belong (relatedness), the need to acquire social status (competence/recognition) and the need for autonomy and independence (self-determination).
Minbaeva et al. (2009)	Development of theoretical model for knowledge sharing motivation in an organizational setting.	Conceptual framework.	Perceived autonomy, competence and relatedness positively relates to knowledge sharing motivation.
Zhao et al. (2011)	Explore motivation of Chinese high-school students to use the Internet.	Surveys distributed to seven junior and ten senior high schools in a prefectural-level city in central China.	Perceived autonomy, competence and relatedness positively relates to intrinsic motivation (enjoyment and curiosity) to use the Internet.

Source: Table compiled by author

Chiu et al. (2007) found that perceived competence has positive effects on e-learning continuance intention of students. Zhao et al. (2011) explored the motivation of Chinese high-school students to use the Internet. The results confirmed that perceived autonomy, competence and relatedness positively relates to intrinsic motivation, i.e. enjoyment and curiosity, to use the Internet. With regard to the organizational setting, Roca & Gagné (2008) concluded from their empirical study that organizations should promote autonomy-supportive conditions, perception of competence and relatedness among employees to increase the acceptance of IT. They argue that if these needs are met, knowledge workers are more likely to display greater interest, greater effort and better performance with regard to learning and using the system (ibid, p. 1599). Wiertz & Ruyter (2007) reported on a research study that focused on the motivation of international customers to voluntarily contribute to firm-hosted technical support online communities. The quality and quantity of knowledge contributions have been found to be positively related to 'community commitment' (relatedness) and 'online interaction propensity'. A conceptual framework regarding knowledge sharing motivation in organizations developed by Minbaeva et al. (2009) emphasized the positive relationship between knowledge sharing and need satisfaction for autonomy, competence and relatedness. A general theoretical concept developed by Benjamin et al. (2008) based on Maslow's 'Hierarchy of Needs' (1943) posits that SSP, such as online social networks, contribute to the satisfaction of the need to belong (relatedness), the need to acquire social status (competence/recognition) and the need for autonomy and independence (self-determination). However, the concept has not yet been submitted to empirical scrutiny.

It must be noted that existing research studies on socio-psychological need satisfaction as source of human motivation focus on students, report on business-to-business relationships or do not cross organizational boundaries. As SSP is a relatively recent phenomenon, empirical research studies have not yet explored the interaction between customers and organizations on SSP. This impacts the field's ability to influence management practice. Obviously more research effort is needed to shed more light on the engagement motivation of customers. The discussed research studies have shown that it is no longer sufficient for organizations to concentrate on meeting only the customer needs to foster engagement motivation in an online environment. In this context, it is vital to understand to what extent organizations can generate satisfiers to support fundamental human need fulfillment of customers and avoid the impairment of needs when communicating on SSP. Otherwise, the expected future value of the relationship will decrease from the perspective of customers and so will the investment of effort in maintaining the relationship (Lindenberg, 1990, p. 743).

The author argues that organizations need to take a social 'detour' to achieve customer engagement as a precondition for co-creation of business value. Lindenberg puts it even more simply by stating that many goals have the effect that "you only get what you really want by pursuing something else instead" (ibid, p. 743).

1.5 Intermediate Discussion and Starting Points for Development of Causal Model

The chapter has contributed to an understanding that the advent of SSP causes implications for social capital theory that are not yet considered in the existing body of literature:

1) SSP enable the formation of network ties between 'customers' and 'organizations' – two focal actors novel to social capital theory

2) SSP facilitate the creation and maintenance of network ties, so that the size of an actors' network may grow substantially leading to a decrease of structural holes in a network configuration.

3) SSP make the dialogue between organizations and their customers visible and offer researchers unobtrusive ways for analyzing cause-effect-relationships.

In addition to discussing the implications of SSP for social capital theory, the theoretical review has shown that existing measures of social capital need to be rethought:

4) The development of a commonly agreed upon measure of social capital is a noble goal. Due to the heterogeneous purposes of research and different levels of investigation, it cannot be accomplished.

5) Network location must not be treated as a measure of social capital when analyzing the relationship between customers and organizations on SSP, as structural holes between the actors can easily be spanned with a mouse-click.

6) Embedded resources in social networks must not be treated as a measure of social capital when analyzing the relationship between customers and organizations on SSP, as the existence of valued network resources per se does not predict that the actor is able to mobilize the resource for his own benefit.

7) As already postulated by other scholars, trust must not be equated with an indicator of social capital in order to avoid tautological reasoning.

The following starting points for the development of a conceptual and measurement framework of social capital with regard to the focal actors ‘customer’ and ‘organization’ are suggested by the author:

8) Adopting the general definition of social capital as “investment in social relations with expected return” (Lin, 1999, p. 30) each research study carefully needs to specify the ‘investment’ and the ‘expected return’ in order to be able to subject hypothesized cause-effect relationships to empirical scrutiny.

9) ‘Investment’ and ‘return’ must be measured at the level of the individual actor, as the benefits of social interaction accrue for the actor.

10) The ‘investment’ in social relations is reflected by the number of initiated interactions by an actor on SSP and the effort invested in maintaining the relationship. An example is the assigned human resources of an organization.

11) The expected return on investment of organizations can be operationalized as economic need satisfaction. Adopting a BSC / strategy map will be beneficial to deduce the underlying economic needs and to determine appropriate measures (for example increase of customer insights volunteered on SSP, positive word-of-mouth generated on SSP or improved process efficiency achieved by real-time communication with the customer).

12) The expected return on investment of customers can be operationalized as socio-psychological need satisfaction (well-being), as individuals maintain network ties on SSP to leverage the social support of others to satisfy their fundamental human needs for self-determination, competence, relatedness and meaning. When developing measures for the degree of the socio-psychological need satisfaction of customers when interacting with organizations on SSP, the *Basic Psychological Need Scales* developed by Deci and Ryan (1987) might act as a useful first point-of-reference. However, so far these scales have been developed to measure ’basic need satisfaction at work”, ‘basic need satisfaction in human relationships” and “basic need satisfaction in life’. Thus, it is necessary to adapt existing scales.

13) The content exchanged in each interaction, i.e. the dialogue between customers and organizations on SSP, contributes to the human need satisfaction of customers and economic need satisfaction of organizations.

2 MODELING THE RELATIONSHIP BETWEEN SOCIO-PSYCHOLOGICAL NEED SATISFACTION AND ECONOMIC NEED SATISFACTION ON THE SSP FACEBOOK

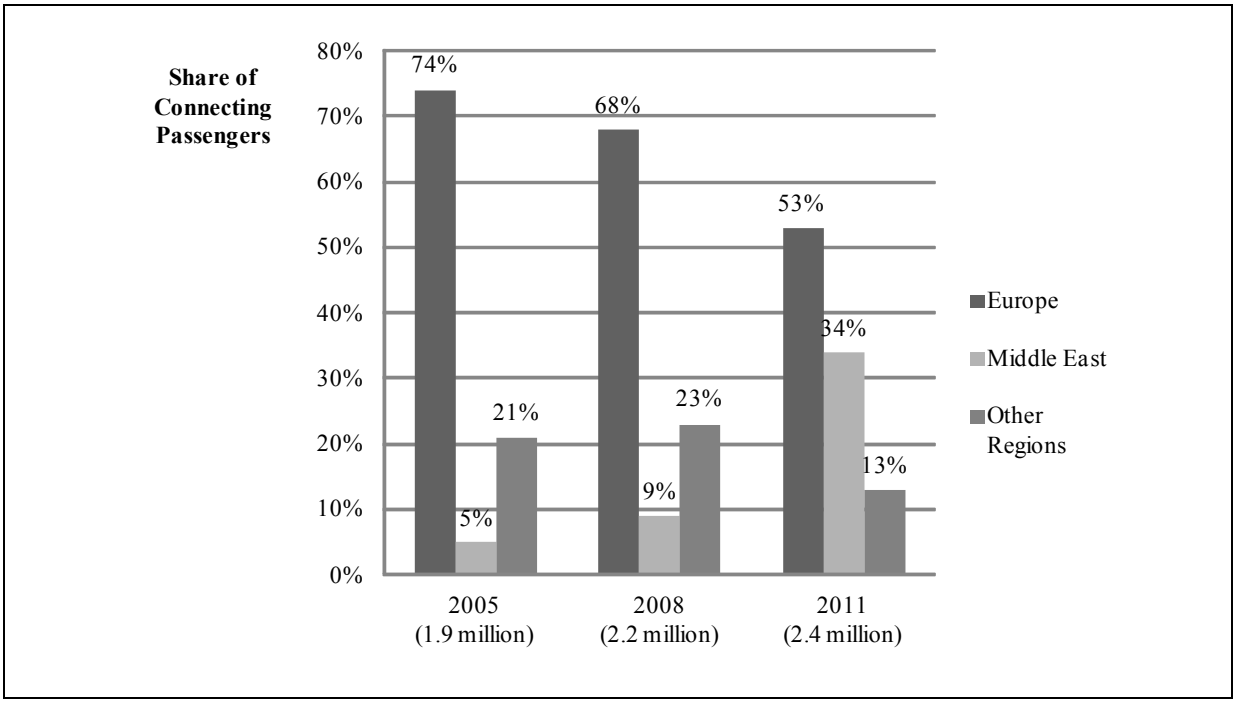
The chapter analyzes the competitive market environment of European airports and emphasizes the importance of airport service quality in the context of current industry challenges. Secondly, the chapter describes the evolution of SSP and their important role in improving the relational dimension of airport service quality. As a third step, the chapter discusses the notion of passenger relationships on SSP as a competitively unique resource of airport organizations. Finally, the chapter proposes a causal model and its underlying assumptions based on the theoretical foundations discussed in Chapter 1. The causal model links human need satisfaction, in terms of socio-psychological need satisfaction, to economic need satisfaction of airport organizations on SSP. Socio-psychological human satisfaction can be equated with the relational dimension of service quality (Grönroos, 1984, pp. 37-39; Parasuraman, Berry Leonard L., & Zeithaml, 1991, p. 41). It has also been found to be a source of engagement motivation in an online environment (see for example Chiu et al., 2007; Roca & Gagné, 2008; Wiertz & Ruyter, 2007; Zhao et al., 2011).

2.1 Importance of the Relational Dimension of Airport Service Quality in the Context of Airport Competition

An airport is a "defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft" (ICAO, 1999, p. 10). The term *airport organization* is used by the author of this promotional work whenever referring to the airport operating organization, i.e. the legal entity. The traditional view of airports as infrastructure providers serving macro-economic purposes has been changing over the last two decades due to air traffic liberalization, airport commercialization and privatization. Within this context, Graham (2008, pp. 8-9) defines airport commercialization as the "transformation of an airport from a public utility enterprise to a commercial enterprise along with the adoption of more businesslike management philosophy" and airport privatization as the "transfer of the management of an airport, and in many cases the ownership as well, to the private sector".

European airports operate within a competitive market environment. Almost two out of three Europeans live within a two hour travel distance of at least two regional airports serving the same flight destinations (Copenhagen Economics, 2012, p. 9). Therefore, regional airports

sharing the same catchment area are likely to suffer from a cannibalisation effect. With regard to hub airports, 62.0 % of passengers transferring through Europe have a realistic alternate hub airport to choose from (ibid, p. 61). Airport hubs connect origins and destinations between which low demand does not allow for profitable direct airline services (OECD, 2009, p. 17). Figure 2 illustrates that European hub airports are also facing a growing competition from the Middle East with regard to connecting passengers travelling from Europe to Asia.



Source: Prologis (2013, p. 9)

Figure 2. Development of traffic flows regarding connecting passengers transferring outside of the U.S. and India 2005 - 2011

As demonstrated in Figure 2, the share of connecting passengers transferring through European hub airports decreased by 21.0 % percentage points from 2005 to 2011. In the same time period, Middle East hubs experienced a transfer traffic growth of 29.0 % percentage points. Focusing on Germany, compared with the base year 2009, the main German hub airports Frankfurt and Munich experienced growth rates of 13.0 % and 17.0 % in 2012, whereas the Middle East hub airports Dubai and Istanbul reported significantly higher growth rates of 41.0 % and 51.0 % respectively (ADV, 2013, n.p.; Dubai International Airport, 2014, n.p.; Istanbul Ataturk Airport, 2014, n.p.).

Stable passenger traffic is vital for airports as they maintain a high fixed-cost model. Aeronautical revenues, i.e. charges paid by airlines for the use of airport infrastructure and services, are not sufficient to cover the entire costs of required infrastructure investments (ACI Europe, 2012, p. 13). Therefore, non-aeronautical revenue streams, such as those

generated from retail concessions, food and beverage concessions or car parking, play an important role for the economic viability of airports (Graham, 2009, p. 106). As passenger volumes are the source of non-aeronautical income airports increasingly pursue a "pull strategy" by focusing their marketing efforts on the passenger (Fodness & Murray, 2007, p. 493). The passenger volume of an airport is also an important criterion for airlines regarding airport choice, as airlines select routes based on their potential profitability (Berechman & Wit, 1996, p. 259). With an increasing passenger volume, the profitability of an airport also increases. *Table 9* indicates the average profit / loss per passenger of German airports in the time period 2009 - 2012 classified by annual passenger volume.

Table 9. Average profit / loss per passenger of German airports 2009 - 2012 classified by annual passenger volumes in €

Annual passenger volume of airport	Average profit / loss per passenger 2009 - 2012 in €
less than 3 million	- 9.45
3 to 5 million	- 1.93
more than 5 million	+ 1.61

Source: author's own calculation based on ADV (2013, n.p.); Bundesministerium der Justiz und für Verbraucherschutz (2014, n.p.)

In the time period 2009 - 2012 German airports with an annual traffic volume of less than 3 million passengers suffered from an average loss of 9.45 € per passenger, while airports with traffic volumes between 3 to 5 million passengers experienced a significantly lower loss per passenger (- 1.93 €). Currently, only German airports with an annual traffic volume exceeding 5 million passengers are able to generate a profit per passenger (1.61 €). It must be noted that small airports display the greatest proportion of public ownership and generally depend on public support, as they do not generate sufficient revenue to fully finance their operations or investments (European Commission, 2014b, p. 2). Due to state aid there has also been little incentive for subsidized airports in the past to constantly improve their efficiency. However, the new guidelines on 'State Aid to Airports and Airlines' issued by the European Commission in February 2014 will require all European airports with an annual traffic volume exceeding 200.000 passengers to cover all of their operating costs by themselves. After a transition period of ten years "airports should no longer be granted operating aid and they should finance their operations from their own sources" (ibid, p. 7). Exceptions will only apply for airports with an important role in sustaining the connectivity of isolated or peripheral regions. Besides the regulations on operating aid, the EU guidelines tailor the

future amount of permissible investment aid to airport size. For smaller airports the percentage of maximum permissible investment aid will be higher as compared to larger airports. Airports exceeding 5 million passengers per year are no longer eligible for receiving investment aid. Deviations from this rule will only be justified in case of airport relocation or other very exceptional circumstances (ibid, p.4).

In response to governmental and competitive pressure to attract passenger traffic, airports are increasingly focusing on improving their service quality (Lee-Mortimer, 1993, p. 41). In Europe, airport service quality scores increased by 8.0 % from 2006 to 2011 (ACI Europe, 2013, p. 16). Against this background, Salah (2011, n.p.) observed that "for years airports never thought of passengers as their customers, the airlines were. Airports have to (…) reach a level of engagement that passengers start, whenever possible and practical, to think in terms of selecting flights on the basis of which is a better airport to fly from or connect through." For passengers, airport service quality is one of several variables that contribute to overall airport attractiveness in addition to available routes, flight scheduling, ticket prices and airport accessibility (Fodness & Murray, 2007, p. 492):

> Passengers have a choice (…), they will opt to travel from a different route, and the airport will lose these passengers, so therefore it is really important for the airport to keep up with the latest in technology, the best retail concepts, to really offer the passenger an experience that is worthwhile with obvious efficiency (…), so that the airport is keeping or possibly increasing its attractiveness and thus enhancing future growth. (Airport Infra Expo, 2009, n.p.)

The quality of a service depends on the attitude of a customer with regard to his perception of the way the service is performed in contrast to his service expectations (Grönroos, 1984, pp. 36-37; Bolton & Drew, 1991, p. 375; Parasuraman et al., 1991, p. 36). By introducing the concept of *perceived service quality,* Grönroos (1984, p. 7) integrated quality into a marketing-related context. Parasuraman et al. (1991) suggest a differentiation between the *service dimension* and *process dimension* of service quality. The service dimension is concerned with the reliability of the delivered service. The service dimension is concerned with the question, if the promised service is actually provided to the customer. The process dimension is concerned with the tangible elements of the service process, such as the appearance of physical facilities or personnel, and the intangible elements consisting of responsiveness to customer needs, assurance and empathy towards the customer. While the service dimension is important for meeting customer expectations, the process dimension is vital for exceeding customer expectations (Parasuraman et al., 1991, p. 41). The author of this promotional work argues that responsiveness, assurance and empathy can be classified as

satisfiers for fundamental human needs related to socio-psychological well-being. Against this background, the intangible process dimension could be equated with a relational dimension of service quality. Within the Nordic School of Thought, perceived service quality is divided into a *technical dimension*, defined as the service result, and a *psychological dimension* related to the contacts that a customer has with different representatives of an organization (Grönroos, 1984, pp. 37-39). Moreover, this stance refers to a relational dimension of service quality and relates to the importance of socio-psychological human need satisfaction in the service process. It can be concluded that building a relationship with the customer is salient for exceeding customer service expectations and thus achieving competitive advantage. The author argues that if competing airports provide a similar technical service quality, managing the relational dimension needs to become dominating.

2.2 SSP as Platform for Maintaining Passenger Relationships

With a growing adoption of SSP by passengers, airport organizations are provided with the opportunity to "forge a relationship with their passengers hitherto unavailable" (ACI Europe, 2013, p. 17) and differentiate themselves from their competitor airports. SSP embrace customer participation, while drawing on the ideological and technological advances of *Web 2.0*. One of the main principles of Web 2.0 is the definition of the Internet 'as a platform' for facilitated idea sharing and joint value creation in a democratic manner (O'Reilly, 2007, p. 17). The discussion platform 'Usenet' created in 1979 was probably the first platform for worldwide information sharing. However, Kaplan & Haeinlein (2010, p. 60) set the genesis of SSP as understood today to the year 1998 with the foundation of the social network site 'Open Diary', an online community for online diary writers. Boyd & Ellison (2007, p. 214) put forward the example of SixDegrees.com, an early social network site launched in 1997, where users were able to create profiles, connect with each other and send messages. Since then, the rapid growth of high-speed Internet has facilitated the development of SSP, starting in 2003 with the popular social network platform MySpace (Kaplan & Haeinlein, 2010, p. 60). However, while MySpace experienced an exponential growth in its user numbers for a four-year period, the growth slowed down due to an increasing popularity of the online social network Facebook, which was launched in 2004 (Torkjazi, Rejaie, & Willinger, 2009, p. 43). Facebook was first created as an on-campus network. In September 2006, Facebook allowed registration also for other user groups outside of academia. This resulted not only in a rapid increase of user numbers, but also in an almost viral Facebook adoption by business organizations (Joinson, 2008, p. 1027).

In their article *"Hot Today, Gone Tomorrow: On the Migration of MySpace Users"* Torkjazi et al. (2009, p. 48) concluded that the negative evolution pattern of MySpace suggests that many of today's existing SSP can be expected to go through a similar life-cycle depending on their ability to compete against new market entrants. SSP is an umbrella term, while platforms focus on different purposes. *Table 10* summarizes types and examples of SSP.

Table 10. Types and examples of public Social Software Platforms

Type	Definition	Examples
Content Sharing Communities	Platforms for sharing and commenting on photos, videos, music etc.	– Flickr.com – Instagram.com – Youtube.com, – Soundcloud.com – Vimeo.com
Micro-Blogging Services	Platforms for broadcasting of very short status updates. Messages are limited to a maximum number of characters.	– Twitter.com – Tumblr.com
Online Social Networks	Platforms for establishing and maintaining network ties to other individuals, groups, brands or organizations with the purpose of sharing content with or receiving status updates of one's social graph.	– Facebook.com [1)] – Plus.google.com – StayFriends.com – LinkedIn.com (business network) – Academia.eu (scientific network)
Review Communities	Platforms for sharing experiences, knowledge and opinions on organizations, places, products and services.	– Yelp.com – Tripadvisor

Note. [1)] 2004-2006: use restricted exclusively to academia.

Source: Table based on Tenge (2012, p. 283)

Content sharing communities, for example Youtube or Instagram, link individuals through media exchange (e.g. videos, photos), while *micro-blogging services*, such as Twitter, or Tumblr, account for efficient information dissemination. On *online social networks*, such as Facebook or Google+, individuals maintain network ties to other individuals, groups or organizations or convert latent ties into weak ties. Some online social networks specifically

serve distinctive target groups, such as business professionals (LinkedIn) or scholars (Academia). Tripadvisor and Yelp are examples of user generated *review communities,* which support customers to make better buying decisions and help organizations to improve their market offerings based on customer feedback. Table 11 provides an overview of the types of SSP used by German airport organizations and the number of connections to passengers and other stakeholders maintained on each SSP.

Table 11. SSP adoption by German airports as of 02/2014

Airport	Content Sharing Communities (connected users 02/2014)				Micro-Blogging Services (connected users 02/2014)	Online Social Networks (connected users 02/2014)	
	Instagram	Flickr	Pinterest	Youtube	Twitter	Facebook	Google Plus
> 5 mio. passengers							
Frankfurt	-	-	248	1.502	18.136	195.911	-
Munich	-	-	-	562	6.295	63.974	-
Berlin	-	-	-	434	934	50.221	-
Dusseldorf	-	-	-	134	138	52.323	-
Hamburg	1.267	-	-	345	7.756	39.090	42
Stuttgart	-	-	-	226	3.243	39.632	2
Cologne-Bonn	-	-	-	-	-	24.463	159
Hannover	-	-	-	240	190	12.926	-
< 5 mio. passengers							
Nuremberg	-	59	-	353	2857	23.011	237
Hahn	-	-	-	140	1.245	5.122	-
Bremen	-	-	-	145	1.220	7.076	-
Weeze	-	-	-	-	-	4.083	-
Leizpzig	-	-	-	-	-	-	-
Dortmund	-	-	-	86	2.158	17.949	164
Dresden	-	-	-	-	2.016	-	-
Karlsruhe	-	-	-	-	-	1.218	-
Munster-Osnabruck	-	-	-	-	1.078	5.133	-
Paderborn	-	-	-	29	440	5.094	-
Friedrichshafen	-	-	-	-	-	-	-
Saarbrucken	-	-	-	-	-	-	-
Erfurt	-	-	-	-	-	1731	
Total users	**1.267**	**59**	**248**	**4.196**	**47.706**	**548.957**	**604**

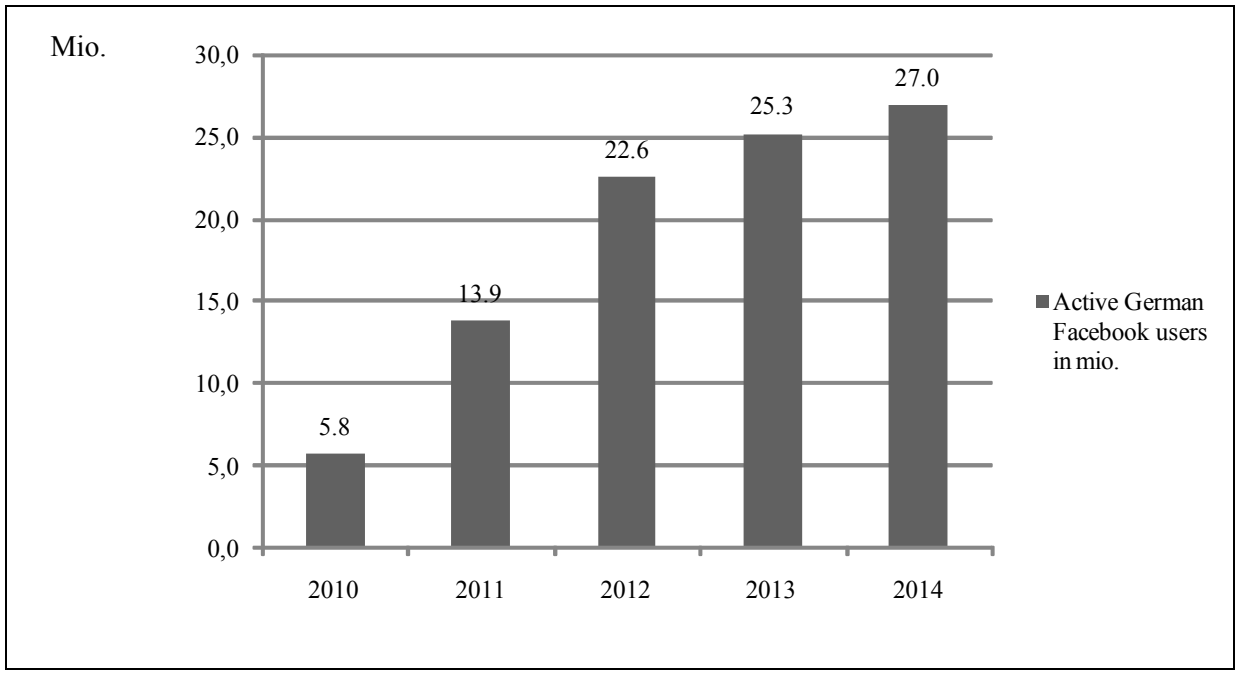
Source: authors' own construction based on an analysis of the corporate websites of German airports and the SSP Twitter, Facebook, Flickr, Google+, Instagram and Youtube

Currently 85.7% of German airports are using at least one SSP for communication with their passengers as per February 2014. Compared to SSP penetration across German industries the German Marketing Institute found that in 2012, 68.9 % of German organizations used SSP for marketing purposes (Deutsches Institut für Marketing, 2012, p. 7). However, this benchmark must be interpreted with caution, as the invitation for study participation was distributed via SSP, for example Facebook or Twitter. Therefore, it is likely

that organizations with a higher concern for SSP are overrepresented in the study. According to the German Federal Statistical Office, only 56.0% of German organizations with more than 250 employees engaged in SSP in 2013, while considerable variations exist across industries (Statistisches Bundesamt, 2013, p. 12). It must be noted that there is still a lack of longitudinal studies regarding the adoption of SSP by German organizations. Different methodologies applied for the collection of existing cross-sectional survey data do not allow a comparison of current findings with historical data.

The adoption of SSP varies by airport size. The *online social network* Facebook is used by 100.0 % of major German airports, i.e. airports with an annual traffic volume of more than 5 million passengers, while only 61.5 % of smaller airports maintain a corporate Facebook profile. When Gummesson (2006, p. 11) postulated that "to be liked sorts out the winners from the loser" he referred to the importance of relationship quality as part of the customers' perceived service quality. In Facebook, users can choose to *like* organizations. By clicking the Facebook like-button, individuals connect with organizations on Facebook and choose to receive updates of the organization in their profile. With 548.957 connected users, Facebook dominates the airports' SSP landscape. The online social network Google+ is only used to a small extent by both major airports (37.5 %) and smaller airports (23.1 %). The Google+ profiles of airports also display a very limited number of connections to the profile, ranging from 2 (Stuttgart Airport) to 237 (Nuremberg Airport). The focus on Facebook is likely to stem from the fact that Facebook captures the majority of German Internet users with an audience of 38.6 million unique visitors per month including non-registered users and 25.3 million active registered users (ComScore, 2013, n.p.). Registered active users are users who log into their account at least once a month. The online social network Google+ accounts for 5.6 million unique monthly visitors and 2.4 million active users (ibid). As Google does not officially publish user numbers by country, these figures can only be interpreted as an estimate and must be interpreted with caution, as each individual registering with a Google service, such as the e-mailing service Gmail, automatically becomes part of the Google+ network. Gigya, a social analytics provider, conducted an analysis of its customer data base and found that in the travel industry; only 1.0 % of created content was shared via Google+ in 2013, while 58.0 % was shared via Facebook (Gigya, 2013, n.p).

Figure 3 shows the development of active Facebook users in Germany.



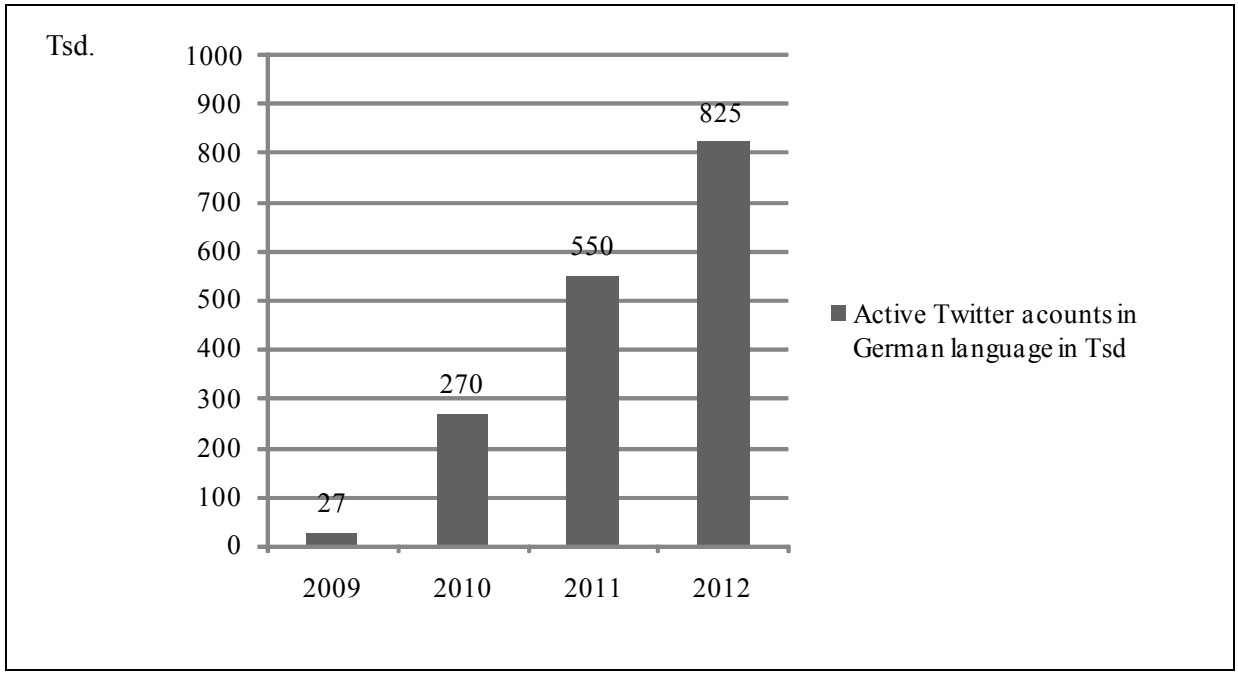
Source: Statista (2014, n.p.)

Figure 3. Development of active German Facebook users 2010 - 2014 (in million users)

The number of active Facebook users increased from 5.8 million in 2010 to 27.0 million in 2014. This corresponds to a growth rate of 365.5 %.

The micro-blogging service *Twitter* is used by 87.5 % of major airports. However, it must be noted that while individuals already have connected to the Twitter accounts of Dusseldorf Airport and Hannover Airport, those accounts are inactive. Hence, to date no information has been shared by the airports on Twitter. Regarding the smaller German airports, 53.8 % have set up a corporate Twitter profile. In total, 47.706 individuals are connected to German airports on Twitter. In an analysis of the Twitter adoption of their member airports, the Airport Council International concluded that "Twitter seems to be, to date, quite an Anglo-Saxon preserve" (ACI Europe, 2011, p. 8). However, the analysis also revealed that the eruption of the Icelandic volcano Eyjafjallajökull in 2010 resulted in a considerable uptake in Twitter usage by passengers (ibid, p. 14). Twitter has been proven useful to supplement traditional communication channels and to provide passengers with real-time and critically important information. While airport call-centers or corporate websites were overloaded, passengers turned to Twitter to receive the latest updates on the status of air traffic disruptions. Moreover, the severe weather conditions in the winter season of 2010

resulted not only in airport closures and flight cancellations across Europe, but also in an increase of Twitter adoption by passengers (ibid, p. 14). By receiving the latest information on current weather conditions at their departure and arrival airport, passengers were able to make well-informed choices of changing their travel itineraries accordingly. While Twitter does not publish user numbers, Figure 4 shows an analysis of the development of Twitter accounts in German language from 2009 to 2012.



Source: Web Evangelisten (2012, n.p.)

Figure 4. Development of active Twitter accounts in German language 2009 – 2012 in Tsd.

Although the analysis of Twitter accounts in German language is likely to include also accounts in Austria or Switzerland, the table demonstrates that Twitter adoption has been constantly increasing since 2009. However, with 825.000 active accounts in 2012, the number of accounts in German language is still on a low level as compared to the number of active German Facebook users.

Regarding the *video-sharing platform* Youtube, the adoption by major German airports is equally high as Twitter adoption (87.5 %), while only 38.5 % of smaller airports are using youtube to broadcast videos about the airport. *Photo sharing communities*, i.e. Flickr and Instagram, are used only to a small extent by major airports (25.0 %) and smaller airports (7.7 %). In total 5.770 users are connected to German airports on content sharing communities. Currently, German airports do not encourage passengers to utilize *review communities*, such as Yelp or TripAdvisor, to rate the airport and its concessionaires

(restaurants, shops, hotels etc.). In addition, not all German airports currently use the opportunity to integrate information about the SSP used by the airport on the first page of their corporate website. Since the online social network Facebook is dominating the airports' SSP landscape in Germany, a further analysis of the evolution of Facebook page likes has been conducted for the time period 02/2012 to 02/2014 (see *Table 12*).

Table 12. Development of Facebook page likes of German airports 02/2012 – 02/2014

Rank	Airport	Passenger Volumes 2013 [a)]	Facebook 'Page Likes' 02/2012 [b)]	Facebook 'Page Likes' 02/2013 [b)]	Facebook 'Page Likes' 02/2014 [b)]	'Page Like' Growth 2012/2014
1.	Frankfurt	58.036.948	32.474	114.622	195.911	503.3%
2.	Munich	38.672.644	20.994	43.186	63.974	204.7%
3.	Berlin	26.319.144	12.262	33.502	50.221	309.6%
4.	Dusseldorf	21.228.226	14.628	34.944	52.323	257.7%
5.	Hamburg	13.502.553	4.472	21.109	39.090	774.1%
6.	Stuttgart	9.577.551	10.482	31.292	39.632	278.1%
7.	Cologne-Bonn	9.077.336	5.685	18.088	24.463	330.3%
8.	Hannover	5.234.909	2.389	7.155	12.926	441.1%
9.	Nuremberg	3.309.629	8.567	14.638	23.011	168.6%
10.	Hahn	2.667.402	2.201	3.623	5.122	132.7%
11.	Bremen	2.612.627	1.898	2.350	7.076	272.8%
12.	Weeze	2.487.843	-	265	4.038	n/a
13.	Leipzig	2.234.231	-	-	-	-
14.	Dortmund	1.924.386	4.823	10.843	17.949	272.2%
15.	Dresden	1.754.139	-	-	-	-
16.	Karlsruhe	1.059.227	367	698	1.218	231.9%
17.	Munster-Osnabruck	853.904	2.479	4.153	5.133	107.1%
18.	Paderborn	794.889	1.884	3.146	5.094	170.4%
19.	Friedrichshafen	536.029	-	-	-	-
20.	Saarbrucken	405.265	-	-	-	-
21.	Erfurt	214.948	-	453	1.731	n/a

Source: [a)] ADV (2013, n.p.), [b)] Analysis of airports' Facebook pages

As shown in Table 12, German airports experienced a notable growth of Facebook connections, i.e. page likes. Growth rates ranged from 107.1 % (Munster-Osnabruck Airport) to 774.1 % (Hamburg Airport). From the figures, it can be concluded that there is an increasing demand of passengers and other stakeholder for a communication with airports via Facebook. Notwithstanding, considerable differences exist regarding the total number of page likes by airport. With 195.911 page likes in February 2014, Frankfurt airport, the largest

German airport, also accounts for the most Facebook page likes. Munich, the second largest German airport, ranks second with 63.974 page likes. Berlin and Dusseldorf airport, which are the third and fourth largest airports in Germany, account for 50.221 and 52.323 page likes. All other 18 German airports count less than 50.000 page likes each. With the exception of Dortmund (17.949 page likes), airports with an annual traffic volume of less than 3 million passengers count less than 8.000 page likes. It can be concluded that predominantly, larger German airports have invested effort in motivating passengers and other stakeholders to connect to their corporate Facebook pages.

2.3 Passenger Relationships on SSP as Competitively Unique Resource

Against the background of changing market environments in the airport industry, resource advantage gains momentum when determining the future performance and competitive advantage of individual airports. The Austrian School of Thought (for example Hayek, 1948; Lachmann, 1947; Menger, 2007; Mises, 1996) provides valuable insights for understanding the source of competitive advantage in the context of strategic management. The Austrian approach perceives economic phenomena as being subjectively understood by the entrepreneur, not as objectively given (Menger, 2007, p. 160; Foss, Klein, Kor, & Mahoney, 2008, p. 73). While traditional models based on industrial organizational economics take a product-market-based approach to explain the conditions that determine the performance of an organization in a certain industry (see for example Porter's Five Forces framework), they do not attempt to explain differences in performance within the industry. By contrast, the resource-based view (RBV) assumes that the performance of organizations differs with regard to the strategic resources at their disposition (Barney, 1991, p.101; Penrose, 2009, pp. 78-79). The source of competitive advantage is rooted in the subjective judgment of an entrepreneur regarding the value of available resources. It emerges from "the products of the human mind, artifacts, produced in accordance with a plan" (Lachmann, 1947, p. 112).

Penrose (2009, p. 77) refers to the subjective recognition of the potential "services" inherent in a given resource by the entrepreneur. Services can be described as the contributions of the resource to the operations of an organization (ibid, p. 67). The importance of a resource can only be assessed in comparison to those held by competitors. Only a *competitively unique resource* can be considered as a source of economic value (Collis, 1991, p. 51). Resources include all assets of tangible and intangible nature that enable an organization to produce its market offering efficiently or effectively, whereas intangible assets

are understood to be the source of above-average organizational performance (Makhija, 2003, p. 439). Intangible assets include for example, human capital, organizational capital, informational capital and relational capital (Hunt, 1997, p. 438).

Competitively unique resources must be (a) valuable, (b) rare, (c) imperfectly imitable, and, (d) not perfectly substitutable (Barney, 1991, pp. 105-112). The author of this dissertation argues that relationships with passengers on SSP can be considered as a competitively unique resource. Passenger relationships on SSP are (a) valuable: Gummesson (1995, p. 17) even refers to customer relationships as the "most important assets" of organizations. Until the advent of SSP, the passenger relationship and data were owned by airlines and tour operators. As a consequence, airport organizations suffered from a lack of rich passenger knowledge regarding passenger needs and requirements. SSP provide the technical infrastructure for airports to connect to passengers and leverage rich passenger knowledge. SSP also offer the opportunity for airports to involve the passenger in the development of new airport services to co-create value. Relationships with passengers on SSP can also be considered as (b) rare, as there are major differences regarding the adoption of SSP by airport organizations. Therefore, perfect competition for resources is non-existing. Relationships with passengers on SSP are (c) imperfectly imitable. By itself, a corporate profile on SSP would be perfectly imitable. However, the relationships maintained with passengers on SSP have "unique characteristics" (Hunt, 1997, p. 437) and can therefore be considered as a complex social phenomena. It is unlikely that a competitor airport will be able to replicate the entire passenger relationships of a rival airport. Passenger relationships on SSP are (d) not perfectly substitutable. Relational resources are intangible assets, which need to be developed over time. The author of this dissertation argues that traditional communication channels of airports cannot be considered as a suitable substitute, as they do not extend the relationship to passengers beyond a single service episode.

The importance of customer relationships for organizational performance has been supported by Hunt (1997, pp. 437-439) who grounded Relationship Marketing in the RBV. Hunt (ibid, p. 431) defines Relationship Marketing as "all marketing activities directed towards establishing, developing, and maintaining successful relational exchanges". The definition strongly draws on Grönroos (1996, p. 11), who described Relationship Marketing as "to identify and establish, maintain, and enhance relationships with customers and other stakeholders at a profit, so that the objectives of all parties are met; and this is done by a mutual exchange and fulfillment of promises". The author of this dissertation argues that both definitions of Relationship Marketing incorporate the philosophy of social capital as

"investment in social relations with expected return" (Lin, 1999, p. 30) and refer to the norms of reciprocity that govern social relationships. The author further argues that the effort of maintaining passenger relationships on SSP depends on the subjective entrepreneurial perception of each airport organization regarding "the difference between ex post value and ex ante cost of resource combination (Hunt, 1997, pp.143-144). In this context, Mises (1996, p. 534) emphasized that "only those entrepreneurs, who, in their planning have correctly anticipated the future state of the market are in the position to reap, in selling products, an excess over the costs of production expended". Therefore, an entrepreneur can be viewed as an innovator, who constantly seeks new resource combinations (Schumpeter, 2008, p. 72) and is alert to discovery (Kirzner, 1993, p. 41). Alertness to discovery can be described as knowing where to discover market data and recognizing the opportunities for profit generation incorporated in this data (ibid, p.67). Discovery of opportunity must be followed by the "act of will", i.e. the allocation of resources, to exploit the opportunity, and finally the "supervision" of all respective activities (Menger, 2007, p. 160). Teece & Pisona (1994) refer to the process of alertness, discovery and resource orchestration as dynamic capabilities. Dynamic capabilities are defined as "the subset of competencies/capabilities which allow the firm to create new products and processes, and respond to changing market circumstances" (ibid, p. 541).

The analysis of SSP adoption by airports conducted in sub-chapter 2.2 has shown that the allocation of effort regarding SSP management differs across German airports. It can be concluded that entrepreneurial perception of the value of passenger relationships on SSP is not consistent in the German airport industry. In this context, it must be noted that entrepreneurial judgment is dependent on the former experiences of the entrepreneur (Foss et al., 2008, p. 80). By applying the RBV in the analysis of Czech privatization, Makhija (2003, p. 440) emphasized that "firms which have historically faced more uncertain industry environments relative to others are likely to (…) show relatively more initiative". Against the background of the new restrictive guidelines on 'State Aid to Airports and Airlines' (European Commission, 2014a) German airports are confronted with increasingly uncertain market conditions. As a consequence, not only privatized airports or private-public ventures, but all German airports will be required to demonstrate their entrepreneurial capabilities. This might lead to a changing view regarding the value of maintaining passenger relationships on SSP.

2.4 Modeling the Relationship between Socio-Psychological Need Satisfaction of Passengers and Economic Need Satisfaction of Airport Organizations on SSP

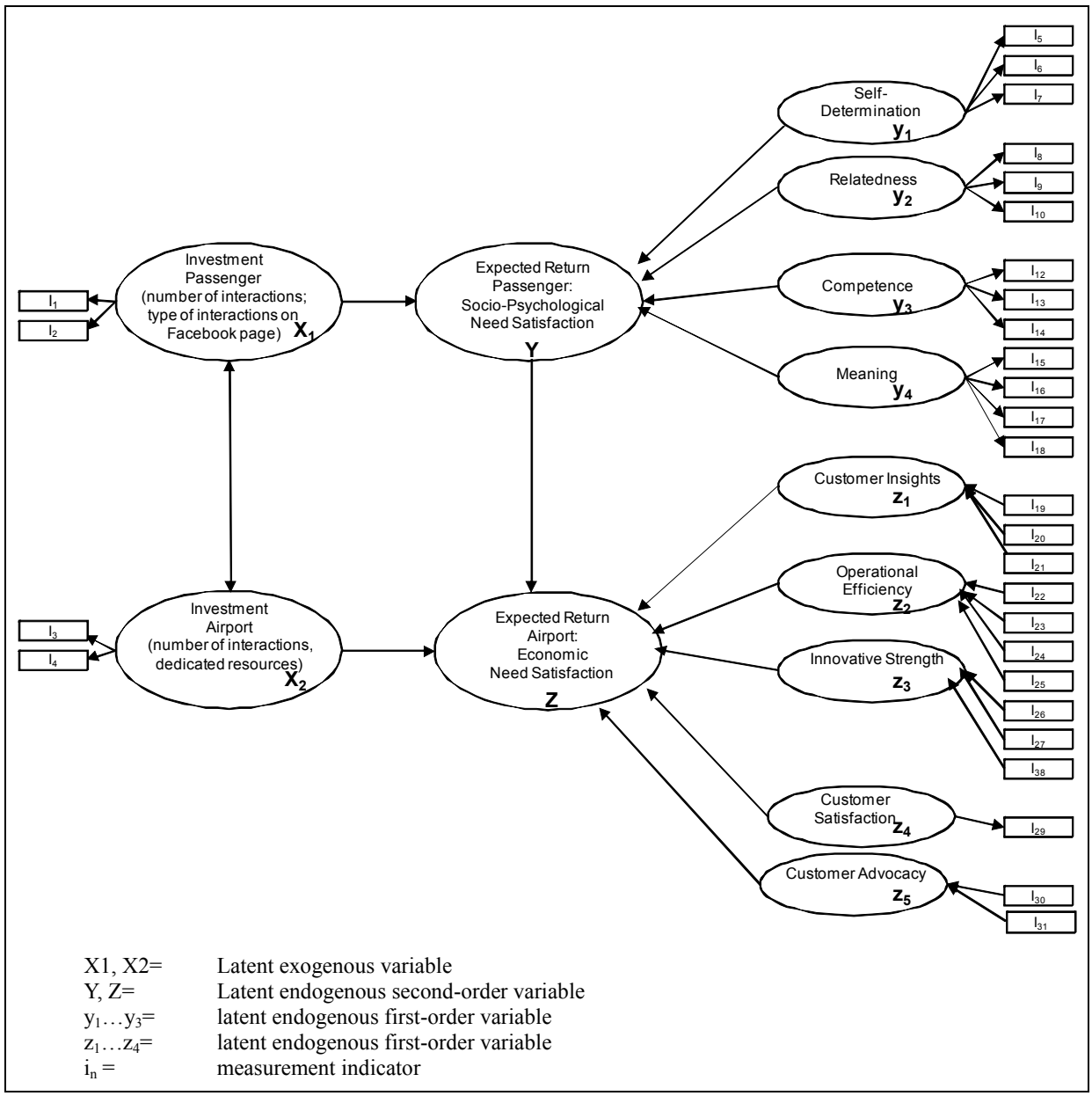
As argued in sub-chapter 2.1, socio-psychological human need satisfaction can be considered as the relational dimension of service quality and as salient for exceeding the service quality expectations of customers. In an online environment, socio-psychological need satisfaction can also be considered as a vital source of engagement motivation regarding information exchange. Against this background, generating satisfiers for socio-psychological needs of customers is highly relevant for managerial contest.

For the development of a causal model regarding the relationship between socio-psychological need satisfaction of passengers and economic need satisfaction of airport organizations on SSP, the author of this dissertation draws on social capital theory. Specifically, on the definition of social capital proposed by Lin (1999), who defined social capital as "investment in social relation with expected return" (ibid, p. 30). The author argues that the Relationship Marketing concept is grounded on social capital theory. Relationship Marketing emphasizes the importance of a mutually beneficial relationship between organizations and their customers. This view is supported by Gummesson (2002, p. 39), who has argued that "marketing must be broadened to general management and social life, even to life itself".

As previously noted, social capital is a latent construct, that requires "subjective interpretation with regard to its translation into operational measures" (Narayan & Cassidy, 2001, p. 61). As the benefits of social interaction between passengers and airport organizations on SSP accrue for each actor, 'investment' and 'return' must be measured at the level of the individual actor. A clear conception and operationalization of 'investment' and 'return' is needed to be able to subject hypothesized cause-effect relationships to empirical scrutiny. Operationalization can be described as "a process whereby researchers specify empirical observations that can be taken as indicators of the attributes contained in concept" (Babbie, 1990, p. 121). Regarding the beneficial relationship between social capital and economic need satisfaction (see sub-chapter 1.3) the author of this dissertation defines economic need satisfaction as the expected return on investment of airport organizations in a relationship with their passengers on SSP. In the light of human needs theories, socio-psychological need satisfaction can be considered as the expected return on investment of passenger in a social relations with airport organizations on SSP.

The satisfaction of human needs can be viewed as the motivational foundation of individuals to join SSP (Rheingold, 2000, p. 3; Benjamin et al., 2008, pp. 265-267) and as the "whole purpose" of business organizations (McHale & McHale, 1979, p. 14). The investment of airport organizations in a relationship with their passengers relates to the number of interactions with passenger on SSP initiated by the airport and the number and type of assigned human resources for the maintenance of SSP. Interactions relate to the exchange of information on SSP. The investment of passengers in a relationship with airport organizations on SSP relates to the number and type of interactions with airport organizations initiated by passengers. Mutual interactions during a relationship are "an important index of effort that the partners have invested in one another" (Boissevain, 1974, pp. 47-48).

The measurement items in the causal model were developed by the author of this dissertation with an exclusive focus on the SSP Facebook. While this decision affects external validity, as the results of this promotional work will not be generalizable to other SSP, it has been necessary to narrow the focus to Facebook, as it is the only SSP adopted by all major German airports. The postulated causal model is illustrated in Figure 5 (next page).



Source: own construction of author

Figure 5. Postulated causal model

The model depicts a formative relationship between the second order-order endogenous variables *Socio-Psychological Need Satisfaction* (Y) and *Economic Need Satisfaction* (Z) and their underlying latent first-order variables (y_i; z_i) - for a detailed discussion of higher-order constructs see for example Bollen (1989, pp. 377-378) or Jarvis et al. (2003, p. 204-205). The endogenous latent first-order variables are either measured reflective or formative depending on the flow of causality. The relationship between the latent exogenous variables *Investment Passenger* and *Investment Airport* and their respective measurement indicators is reflective. In the following, the conception of the latent variables and their respective indicators are explained in detail.

a) Determination of Latent Exogenous Variable: Investment Passenger (X1)

Investments in actively approaching and mobilizing resources in ones' social network is a precondition for gaining access to resources embedded in the network that can be utilized for one's own need fulfilment (Maurer et al., 2011, p. 160). Communication is a vehicle for mobilizing and accessing resources, as without communication individuals are not able to exchange information (Dambmann, 2004, p. 13). "No matter what resources are available within a structure, without communication activity those resources will remain dormant, and no benefits will be provided for individuals" (Butler, 2001, p. 350). On SSP, communication can be compared to interactions related to information exchange. The provided information is publicly visible and persistent (McAfee, 2006, n.p.). For bridging network ties that govern the relationship between airport organizations and their passengers, tie maintenance, i.e. information exchange, is more frequently needed as compared to bonding network ties since there is less mutual trust (van der Gag, 2005, p. 32). Therefore, one indicator for the investment of passengers in the relationship with airports organizations on SSP is the number of interactions initiated by passengers. A second indicator for the investment of the passenger in the relationship with airport organizations on SSP is the type of interactions on SSP. A recent research study conducted by the consulting company PriceWaterhouseCoopers (2012, p. 28) found that the majority of individuals that maintain a profile on SSP are inactive spectators, who only read the information provided by other actors of their social graph. There are 37 % of SSP users who are actively posting own information, such as indicating information as interesting (for example by clicking the Facebook 'like' button), commenting on information provided by other actors, and sharing information provided by other actors with their social graph or writing own posts (ibid). The indicators for the reflective measurement of the latent exogenous variable *Investment Passenger* are summarized as follows:

- Number of interactions with airport organizations on Facebook initiated by passengers on the corporate Facebook pages of airport organizations
- Type of interactions with airport organizations on Facebook initiated by passengers on the corporate Facebook pages of airport organizations (read, 'like', share, comment on existing posts, write own posts)

b) Determination of Latent Exogenous Variable: Investment Airport (X2)

SSP provide airport organizations with a virtual location for establishing network connections with their passengers. However, as Porter (2006) noted, it is not sufficient for organizations to only be present in a location, but they must "participate actively" (ibid, p. 88) to leverage a competitive advantage from their positioning. Therefore, the number of interactions on SSP that are initiated by airport organizations can be considered as an indicator for the investment of airport organizations in a social relationship with their passengers. While organizations by design cannot communicate and build social relations, the interacting individuals account for the production and maintenance of social capital. It is therefore the human capital of airport organizations, physically represented by the knowledge-workers (Johnson, 1999, p. 576), which can be regarded as the lifeblood of social capital. Accordingly, the number and type of human resources assigned by the airport for the management of the passenger dialogue on SSP can be regarded as a second investment indicator. The number of human resources refers to the existence or non-existence of a dedicated Social Media Manager job role. The type of human resources refers to the organizational setting and distinguishes between a departmental and an interdisciplinary approach to SSP management. The indicators for the reflective measurement of the latent exogenous variable *Investment Airport* organizations are summarized as follows:

- Number of interactions with passengers on Facebook initiated by airport organizations
- Number and type of human resources assigned by airport organization for the management of the passenger dialogue on Facebook

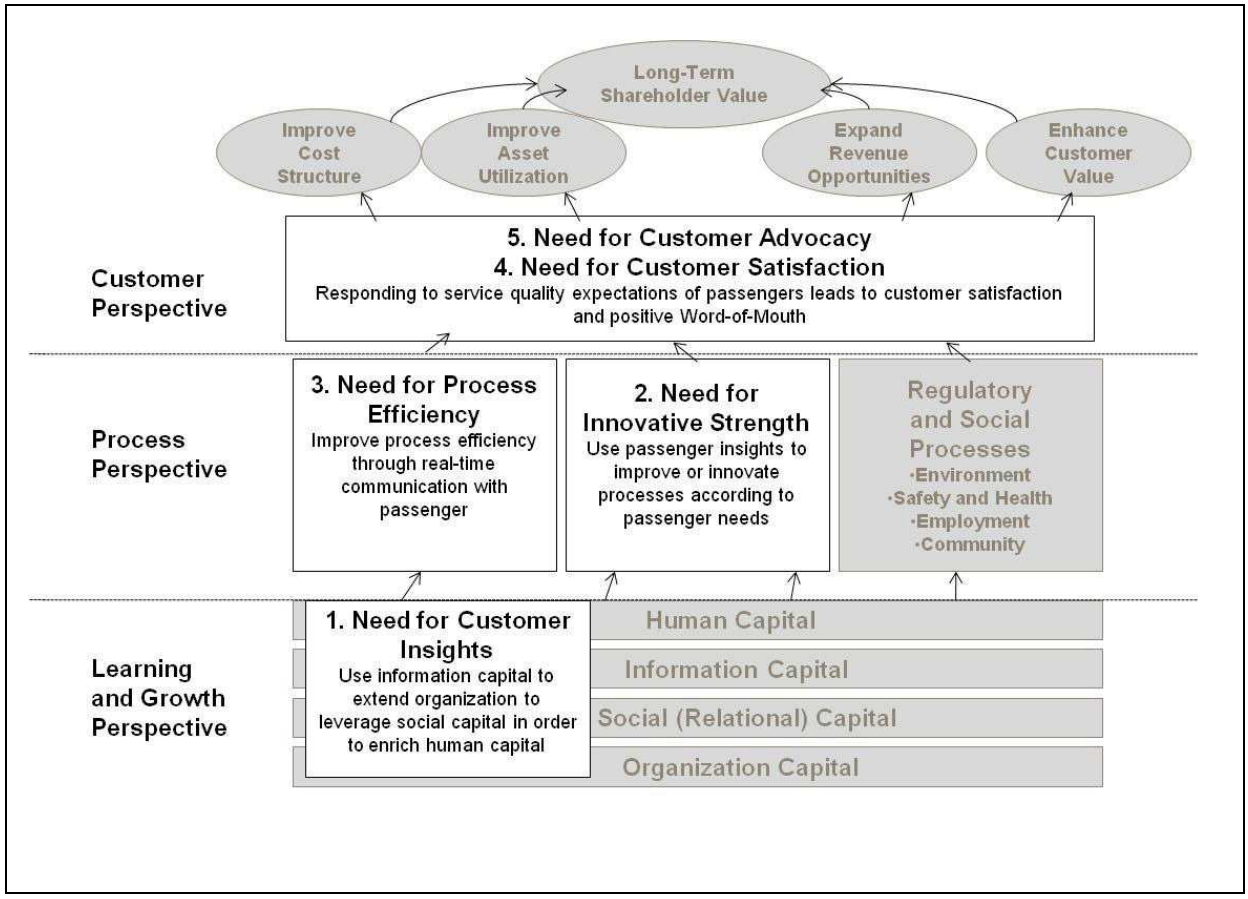
c) Determination of Latent Endogenous Variable: Economic Need Satisfaction (Z)

Economic Need Satisfaction is a second-order variable. For deduction of the underlying first-order variables, the author of this dissertation adopts a Balanced Scorecard / strategy map approach (Kaplan & Norton, 1992; Kaplan & Norton, 2001a; Kaplan & Norton, 2001b; Kaplan & Norton, 2004a). For each perspective of the strategy map (financial, customer, process, learning and growth) the author discusses how bridging social capital, i.e. network connections with customers, contributes to overall economic need satisfaction of airport organizations.

Figure 6 illustrates a generic airport strategy map that was developed by the author of this promotional work. Five economic needs of airport organizations are deduced that can be satisfied when entering into a dialogue with passengers on SSP:

1) need for customer insights
2) need for operational efficiency
3) need for innovative strength
4) need for customer satisfaction
5) need for customer advocacy

The total degree of economic need satisfaction of airports on SSP is dependent on the satisfaction of this five underlying economic needs.



Source: Tenge (2013, p. 604) based on Kaplan & Norton (2004a)

Figure 6. Generic airport strategy map with extended social capital dimension

For each perspective of the airport strategy map (learning and growth, process, customer) the identified economic needs are briefly discussed and respective measurement items are deduced.

1. Need for customer insights – Learning and Growth Perspective

To excel at the operational process perspective of the strategy map and achieve customer satisfaction and advocacy in the customer perspective, rich customer knowledge is required in the learning and growth perspective to be able to tailor the airport experience to customer needs. In the context of air traffic liberalization and airport commercialization, airport hubs and regional airports with overlapping catchment must meet the needs of their passengers better than their rival airports to sustain stable revenues for themselves and their aviation and non-aviation business partners. Accordingly, a good understanding of the service quality expectations of passengers is needed.

Customer insights, i.e. knowledge about passenger needs, requirements and attitudes, are a precondition for airport organizations to support decision-making processes and by this contribute to overall airport performance (Javalgi et al., 2006, p. 15). Until the advent of SSP, airports suffered from a lack of genuine passenger insights since airlines and tour operators had ownership of the passenger relationship and data. On SSP, rich customer insights reside in the relationship between organizations and their customers and are obtained by mutual dialogue (Di Pietro & Pantano, 2012, p. 298). Dialogue can be defined as "availing oneself of existing knowledge, but also creating new knowledge" (Gummesson, 2006, p. 166). Learning about gaps between the service quality expectations of passengers in contrast to their perception of the way the service is performed is a precondition for airport managers to carefully determine areas that require managerial attention (Fodness & Murray, 2007, p. 494). All service quality investment spending needs to be financially accountable. Based on customer feedback some potential improvements might be evaluated as being ineffective, as they have no impact on overall customer satisfaction. Therefore, SSP represent a valuable resource for airport organizations for gathering rich data on passenger opinions, needs and requirements, while exploiting the obtained information to make profitable decisions about quality expenditures. The key managerial problem is "knowing where to spend and not to spend on quality improvement, and knowing when to reduce spending" (Rust et al., 1995, p. 59).

Based on the conceptual discussion, the latent endogenous variable *Customer Insights* consists of three formative dimensions when contrasting Facebook to traditional airport communication channels:

- Deeper insights into customer needs, requirements and attitudes
- Better insights where the customers' perceived service quality differs from the expected service quality
- Better detection of priority areas for service quality investment spendings with influence on customer satisfaction (root-cause detection)

2. Need for Operational Efficiency -Process Perspective

The concept of efficiency is concerned with the relationship between input and output (Mann & Wüstemann, 2010, p. 677). Efficiency can be defined as "an effective operation as measured by a comparison of production with cost (as in energy, time, and money)" (Merriam-Webster, 2013, n.p.). Hence, an efficient operation considers time as a valuable asset, as saving time creates further opportunities to assign resources to other activities (Davies, 1994, pp. 100-101). SSP contribute to the operational efficiency of airport organizations, as real-time communication with passengers compresses the time associated with the handling of passenger communication processes.

Since mobile devices such as smartphones or tablets provide customers with ubiquitous access to SSP and the opportunity to access their social network `on-the-go`, customers expect a faster reaction of organizations to their inquiries or complaints issued on SSP. For business and leisure travelers, smartphones have become a crucial element of their everyday lives. More than half of all leisure travellers and nearly three in four business travellers possess an own smartphone (PhocusWright, 2012, n.p.). Kaplan & Haeinlein (2010) postulate that mobile access to SSP is "the locomotive via which the World Wide Web evolves" and urge business organizations not to "miss the train" (ibid, p. 68).

While traditional communication channels, such as e-mail, call-center or mailings are "too slow and time-consuming" and "available information tends to be outdated" (Verkasolo & Lappalainen, 1998, p. 414), SSP hold the potential to increase the operational efficiency of airport organizations with regard to ease and speed of passenger communication processes. As an example, fast information dissemination in times of crisis or air traffic disruptions, a reduced response time to passenger questions and inquiries or a facilitated management of

passenger expectations related to airport service quality. SSP also offer the opportunity to facilitate complaint management processes. From a process perspective, Tax et al. (1998) describe complaint management as "a sequence of events in which a procedure, beginning with communicating the complaint, generates a process of interaction through which a decision and outcome occurs" (ibid, p. 61). While customers appreciate obtaining a quick solution to their complaint (ibid, pp. 72-73), SSP allow airport organizations to ease customer pain-points already during the time period the passenger spends at the airport. Based on the conceptual discussion, the latent endogenous variable *Operational Efficiency* consists of four formative dimensions when contrasting Facebook to traditional airport communication channels:

- Faster information dissemination
- Reduced response time to passenger inquiries/questions
- Facilitated management of passengers service quality expectations
- Facilitated complaint handling

3. Need for Innovative Strength – Process Perspective

The ability to constantly innovate is an important variable that contributes to overall airport attractiveness in addition to location, price, destination portfolio and flight scheduling (Fodness & Murray, 2007, p. 494). The basic rationale behind innovation is staying adaptive and competitive in a fast changing environment. As innovative airport services of today may quickly become the minimum expectations of tomorrow, a dialogue with passengers on SSP is therefore beneficial for airports to timely notice shifting customer expectations or for evaluation of new service ideas to keep passengers satisfied and to keep up with competing airports. A study by Bruce & Rodgus (1991) found that a dialogue between organizations and their customer allows organizations to discover shifting customer needs ahead of competition. The findings of Bruce & Rodgus support the strength-of-weak-ties proposition of Granovetter (1973), who emphasized that organizations that maintain network connections that cross organizational boundaries (weak ties that span a structural hole) are more innovative as compared to their competitors. Furthermore, external network connections provide information that are sometimes not available within the organization itself.

In this respect, Schumpeter (2008, p. 66) noted that the creation of new formal organizations can be regarded as a source of innovation. In the view of the author of this dissertation, network ties with customers on SSP can be considered to create a new type of organization: a virtual network organization. In a network organization, a clear cut distinction between employees and otherwise involved stakeholders, such as customers, cannot be drawn (Gummesson, 2006): "The network organization can be described with the human resource ratio, the *I/E* ratio. It stresses the fact that more human resources (people involved, *I*) are available for the company than the people employed (*E*)" (ibid, p. 267).

Innovative strength does not only relate to the ability of organizations to generate new ideas for products or services that add value or improve quality, but also comprises the ability of bringing an idea to market (Cohen & Levinthal, 1990, p. 128). In this respect, SSP not only allow for an involvement of passengers in the evaluation process of new airport services, but also account for a convenient communication channel for introducing new airport services to passengers. Gummesson (2006) suggests that customers can be considered as "part-time employees during service production, delivery and marketing process" (ibid, p. 267). Based on the conceptual discussion, the latent endogenous variable *Innovative Strength* consists of three formative dimensions when contrasting Facebook to traditional airport communication channels:

- Timely noticing of shifts in customer expectations
- Faster customer feedback on new service ideas
- Facilitated introduction of new services to the passengers

4. Need for Customer Satisfaction – Customer Perspective

Customer satisfaction is a concept for the evaluation of how successfully products and services are fulfilling the needs and requirements of the market (Grönroos, 1998, p. 330). Hence, tailoring the airport service experience to passenger needs in the process perspective of the strategy map (service quality, service innovation) based on rich customer insights gained in the learning and growth perspective is a precondition to achieve customer satisfaction in the customer perspective of the strategy map. The quality of a service depends on the attitude of a customer with regard to his perceived service quality in contrast to the expected service quality (Grönroos, 1984, pp. 36-37; Parasuraman et al., 1991, p. 36; Bolton & Drew, 1991, p. 375).

A good perceived airport service quality can be viewed as antecedents of customer satisfaction; customer satisfaction in turn can be seen as a driver of profitability, as it is an antecedent of customer loyalty (Olsen, 2002, p. 23; Storbacka et al., 1994, p. 245). The Airport Service Quality Survey (ASQ), which is an initiative of the Airports Council International (ACI), is a well accepted instrument for measuring passenger satisfaction in the airport industry. All participating airports use the same questionnaire and follow the same methodology covering for instance the topics airport orientation, security and immigration, services and facilities (see Airport Council International, 2011). The survey is undertaken monthly, which implies that it is widely accepted within the airport industry (Graham, 2008, p. 109). The survey results are summarized and published quarterly. Due to cost issues, smaller airports do not participate in the official survey conducted by the ACI. Hence, they tend to tailor their own customer satisfaction questionnaires closely to the ASQ questionnaire to be able to benchmark their performance with other airports. The indicator for reflective measurement of the latent endogenous variable *Customer Satisfaction* is summarized as follows:

- Scores of airport's customer satisfaction survey (ASQ or own survey)

5. Need for Customer Advocacy – Customer Perspective

Customer satisfaction is a necessary condition for customer advocacy in terms of positive word-of-mouth (WOM) to occur (Harrison-Walker, 2001, p. 71-72; Jeong & Jang, 2011, p. 359). Put simply, the airport service experience must be "good enough to recommend" (Urban, 2005, p. 157). Services have been found to be natural candidates for WOM communication among customers, as they tend to be difficult to evaluate prior to purchase (Fang et al., 2011, p. 189). "WOM (…) is not rooted in the marketing of a particular brand, product, or service, but rather is based in the everyday relationships and conversations of people discussing other matters" (Carl, 2006, p. 601). SSP are based on informal communication between users (Di Pietro & Pantano, 2012, p. 298). Hence, Hsu (2008, p. 3040) suggests a growing importance of WOM communication in an online context, as SSP provide consumers with a new stage for posting their reviews and evaluations of service providers. Those reviews are publicly visible and persistent (McAfee, 2006, n.p.). WOM communication on SSP broadens the traditional WOM communication from personal one-to-one to virtual many-to-many communications (Jeong & Jang, 2011, p. 357). As WOM is

amplified through the social graph of the customers, the reach of WOM significantly increases in an online-environment (Urban, 2005, p. 156).

Scholars have also reported on conscious organizational efforts to purposefully stimulate positive WOM on SSP (see for example Dye, 2000; Balter & Butman, 2005; Li & Bernoff, 2009). However, it must be noted that in times of SSP, it becomes even more important for airport organizations to make *realistic* service promises promoted through external marketing and to *keep* those promises during service delivery. As in social life, the relationship between customers and organizations is about keeping promises and adding value. As WOM on SSP cannot be controlled by organizations, it needs to be consistent with the postulated marketing messages on traditional communication channels (advertisements, press releases etc.). Otherwise, lip service is detected easily. Notwithstanding, if airport organizations use SSP to tailor the airport service experience to passenger needs, they will benefit from both an increase in the amount and in the reach of positive WOM. Based on the conceptual discussion, the latent endogenous variable *Customer Advocacy* consists of two formative dimensions when contrasting Facebook to traditional airport communication channels:

- Amount of positive WOM
- Reach of positive WOM

d) Determination of Latent Endogenous Variable: Socio-Psychological Need Satisfaction (Y)

The latent composite variable *Socio-Psychological Need Satisfaction* is a second-order construct that is caused by its underlying first-order variables and derived by their indicators. To deduce and conceptionalize the first-order variables, the author of this dissertation draws on theories of human needs. More specifically, the socio-psychological needs classification of self-determination theory (Deci & Ryan, 2000) and Dambmann (2004). Central to self-determination theory is the assumption that the satisfaction of the human needs for self-determination, competence and relatedness increases intrinsic human motivation and well-being (Deci et al., 2001, p. 930). Conversely, the frustration of the needs in a social context results in low self-motivation and ill-being. In the context of brain research, Dambmann (2004, p. 11) adds the 'need for meaning' as a fourth vital human need required for human well-being and motivation. The total degree of socio-psychological need satisfaction of passengers on SSP is dependent on the satisfaction of these four underlying needs.

Indicators for assessing socio-psychological need satisfaction have been suggested by (Deci et al., 2001) in the form of the *Basic Psychological Needs Scale*. The Basic Psychological Needs Scale is a family of scales that has been applied to a variety of research studies (for example Gagné, 2003; Deci et al., 2001; Ilardi et al., 1993; Moreno-Murcia et al. , 2012; Vlachopoulos & Michailidou, 2006). Domains of research included need satisfaction in life, need satisfaction in the work environment, and need satisfaction in interpersonal relations. In order to be able to assess the human need satisfaction of customers when interacting with organizations on SSP, the attitudinal questions of the Basic Psychological Need Scale needed to be adapted and sometimes amended by the author of this dissertation. To amend the scales, the author of this promotional work relied on the contributions of Dambmann (2004), Scharmer (2009) and Williams (2006). A previous study that adapted the Basic Psychological Need Scale to assess *need satisfaction in sports exercise* reported alpha coefficients of 0.73 for the autonomy factor, 0.73 for the competence factor and 0.87 for the relatedness factor. In accordance with empirical convention, alpha should be 0.70 or higher for a set of items to be considered as a scale. The scales for the factor meaning have been developed by the author of this dissertation based on the theoretical considerations of Dambmann (2004); therefore no comparison with previous studies regarding scale reliability was possible.

1. Need for Self-Determination

The satisfaction of the human need for self-determination is associated with experiencing choice and a feeling of autonomy. Conversely, events that control the behavior of individuals and pressure to achieve expected outcomes negatively influence motivation and well-being (Deci & Ryan, 1987, p. 1025). SSP are autonomy-supportive environments. Customers are able to purposefully select the organizations they wish to connect to and interact with. They are also free to decide on the content and frequency of their contributions. Notwithstanding, customers are likely to terminate the connection to an organization on SSP when privacy issues arise during mutual interactions or the organization tries to control the conversation by deleting critical user posts (Bulgurucu et al., 2010, p. 530). Satisfaction of the need for self-determination on SSP requires that passengers feel free to express their ideas and opinions with regard to the airport and their services (indicator was adapted from the Basic Psychological Needs Scale: *"I am free to express my ideas and opinions on the job"*), that the feelings of passengers are taken into consideration by airports on SSP (indicator was adapted from the Basic Psychological Needs Scale: *"My feelings are taken into consideration at work"*) and that airport organizations attentively listen to the opinion of their passengers

(indicator was adapted from (Scharmer, 2009, p. 19): *"Listen to others and to what life calls you to do"*). According to Scharmer, effective listening requires the creation of an open space for contributions to the whole (ibid). The indicators for the measurement of the latent endogenous variable *Self-Determination* are summarized as follows:

- Passengers feel free to express their ideas and opinions with regard to the airport and their services on Facebook
- Feelings of passengers are taken into consideration by airport organizations on Facebook
- Airport organizations attentively listen to the opinion of their passengers on Facebook

2. Need for Competence

Competence can be described as the motivation to succeed at optimally challenging tasks and being able to achieve expected outcomes. The need to feel competent and challenged is often linked to human actions that are targeted at fostering progress and is associated with feelings of curiosity and interest (Dambmann, 2004, p. 15). Prior research in electronic networks suggests that individuals help others to solve problems because they find it intellectually challenging, interesting and enjoyable (Wasko & Faraj, 2005). Rewards for motivating online participation and engagement tend to be perceived as being controlling while undermining intrinsic behavior (Deci & Ryan, 1987, p. 1026). Cohen & Prusak (2001, p. 10) put forward the example of XEROX technicians, who rejected the offer of financial rewards for contributing problem solving tips to the XEROX online community. They feared that money would trivialize their reputation gains. In this respect, Taylor (1997) argued that "due recognition is not just a courtesy we owe to people. It is a vital human need" (ibid, p. 99). A persons' identity is partly shaped by the recognition of other individuals or groups. Identity can be described as an understanding of who we are and what characteristics define us as a human being (Taylor 1997, p. 98). The picture that an individual has of himself or herself is mirrored back by others while communicating. Thus, identities are formed during communication with others. Individuals can suffer distortion if a picture of themselves is mirrored back to them that is too restricted or even demeaning and degrading (Dambmann, 2004, p. 14).

SSP are environments that facilitate customer contributions and recognition. Due recognition of the customer requires organizations to be willing to see the world through the eyes of the customer and be responsive to customer needs. Customers believe that "there

would be a positive impact from companies taking more time to find out about their needs and interests" (Hulme, 2010, p.3). Regarding the relationship between airport organizations and their passengers on SSP, the satisfaction of the need for competence is related to the ability of the passenger to learn new and interesting things about the airport (item was adapted from the Basic Psychological Needs Scale: *"I have been able to learn interesting new skills on my job"*) and to the extent to which they are able to easily receive most of the important information about the airport they were looking for *(*item was adapted from the Basic Psychological Needs Scale: *"Most days I feel a sense of accomplishment from working"*). Equally important is due recognition of passengers by valuing their ideas and suggestions shared on SSP *(*item was adapted from the Basic Psychological Needs Scale: *"People I know tell me I am good at what I do")*. The indicators for reflective measurement of the latent endogenous variable *Competence* are summarized as follows:

- Passengers learn new and interesting things about the airport on Facebook
- Most times passengers are able to easily receive all the important information about the airport they were looking for on Facebook
- Ideas and suggestions shared by passengers on Facebook are valued by airport organizations

3. Need for Relatedness

Relatedness is concerned with the need to belong and to feel cared for (Deci & Ryan, 2000, p. 231). SSP offer a space in which people can address this innate need to belong by connecting to other individuals or organizations. Research on customer service expectations suggests that there is a growing demand for a "more personalized and closer relationship" with service providers (Parasuraman et al., 1991, p. 43). By connecting to organizations on SSP, customers extend the relationship beyond the process of actual service consumption. Organizations that invest effort in creating a sense of belongingness and acknowledge the unique distinctness of each passenger by providing personalized advice on SSP "earn goodwill chips to spend when problems occur" (ibid, p. 46).

Goodwill chips at a relational level might prove to be useful when the expected service quality at an episode level negatively differs from the actual airport experience. Customers tend to be more forgiving when communicating with human beings as opposed to communication with an impersonal and abstract company logo. In this context, Munich Airport humanizes the communication with passengers on SSP by endorsing each Facebook post with the name of the customer service employee authoring the message. Therefore, the need for relatedness can be described as the longing to feel cared about by the airport on SSP *(*item adapted from the Basic Psychological Needs Scale: "*People in my life care about me*"*),* to feel closer to the airport *(*item adapted from the Basic Psychological Needs Scale: *"When I am with xxx, I feel a lot of closeness and intimacy"*) and to feel like a part of the airport community (item adapted from the bridging social capital scale of Williams 2006, p. 602: *"Interacting with people online/offline makes me feel like part of a larger community"*). If the need for relatedness is satisfied, there will be a positive intention of passengers to remain connected to airport organizations on SSP. The indicators for reflective measurement of the latent endogenous variable *Relatedness* are summarized as follows:

- Passengers feel cared about by the airport on Facebook
- Passengers feel closer to the airport on Facebook
- Passengers feel like part of the airport community on Facebook

4. Need for Meaning

In addition to the innate human needs proposed by self-determination theory, Dambmann (2004, p. 15) argues that individuals also need values and norms that guide their activities and provide for orientation and meaning). Values and norms can be regarded as "a foundation for stable expectations that are efficient because individuals act with greater assurance of the outcome" (Hetcher, 2004, p. 82). In the view of the author of this dissertation, the same reasoning can be applied to value propositions of organization, as they constitute a promise regarding the quality and certain characteristics of a product or service. SSP facilitate access to peer reviews and recommendations. Both convey a public understanding of the superiority of a product or service relative to its asserted value propositions. Therefore, SSP support orientation for passengers regarding which services, shops etc. they can expect at an airport and why they should chose the airport as their departure airport. SSP also provide authentic information about how other passengers think about the airport and their services.

SSP also reveal, if there are inconsistencies between advertising promises and the real airport experience. The indicators for measurement of the latent endogenous variable *Meaning* are summarized as follows:

- Passengers are provided with orientation on Facebook which services, shops, restaurants etc. passengers can expect at the airport
- Passengers receive authentic information about the service portfolio and service quality of the airport on Facebook
- Passengers are provided with orientation on Facebook why they should chose an airport as their departure airport
- Facebook reveals if there are inconsistencies between the advertising promises of the airport and the real customer experience

2.5 Postulation of Cause-Effect Relationships

After the deduction and conception of the latent variables and their respective indicators based on existing theory, the underlying assumptions of the causal model are explained. The theses postulated by the author of this dissertation are decelerate statements about the relationships between the latent exogenous (independent) and latent endogenous (dependent) variables in the causal model.

The main hypothesis to defend is concerned with the norms of reciprocity that govern the relationship between airport organizations and their customers on SSP. **H: The interaction with passengers on SSP increases the economic need satisfaction of airport organizations, if also the socio-psychological need satisfaction of passengers increases.**

The notion of social capital as a return on investment holds that relationships need to be created through reciprocal exchange, i.e. mutual need satisfaction. In the absence of reciprocity, the relationship has a discount rate (Flap, 2001, p. 37). The future value of the relationship will decrease and so will the investment of effort in maintaining the relationship (Lindenberg, 1990, p. 743). In this respect, socio-psychological need satisfaction has been found to be antecedents of engagement motivation in an online environment (for a detailed discussion see sub-section 1.4.2). Failing to engage passengers on SSP leads to no interactions from passengers with airport organizations on their corporate profile maintained on SSP. Without a dialogue, i.e. mutual interactions, economic need satisfaction of airport

organizations is unlikely to occur. In accordance with this reasoning, the main hypothesis of this promotional work is postulated as follows:

In addition to the main hypothesis, six theses are deduced from the discussed theoretical framework and developed causal model:

Thesis 1: The higher the investment of airport organizations in the relationship with passengers, in terms of number and type of human resources assigned to SSP management by the airport, the higher their economic need satisfaction.

Thesis 2: The higher the investment of passengers in the relationship with airport organizations, in terms of the type of interactions initiated by passengers, the higher their socio-psychological need satisfaction.

Thesis 3: The higher the socio-psychological need satisfaction of passengers, the higher the economic need satisfaction of airport organizations.

Thesis 4: The higher the investment of airport organizations in the relationship with passengers, in terms of number of interactions initiated by the airport, the higher their economic need satisfaction.

Thesis 5: The higher the investment of passengers in the relationship with airport organizations, in terms of the number of interactions initiated by passengers, the higher their socio-psychological need satisfaction.

Thesis 6: The higher the investment of airport organizations in the relationship with passengers, in terms of number of interactions initiated by the airport, the higher the investment of passengers in the relationship with airport organizations, in terms of the number of interactions initiated by passengers.

The chapter has proposed a causal model that links economic need satisfaction of airport organizations to human need satisfaction of passengers when interacting on SSP. The first- and second-order latent variables have been defined and the assumed relationships among the variables have been advanced. All variables have been operationalized by indicators, i.e. measurement variables, to allow for testing the predictions against experience. The postulated causal model and theses build the framework for the empirical study and can be considered as an organizing framework for the determination of the empirical design and data collection procedures.

3 MIXED-METHODS CROSS-SECTIONAL SURVEY RESEARCH AS STRATEGY OF INQUIRY FOR TESTING THE RELATIONSHIP BETWEEN SOCIO-PSYCHOLOGICAL NEED SATISFACTION AND ECONOMIC NEED SATISFACTION ON THE SSP FACEBOOK

The purpose of this chapter is to describe the empirical design and research methods applied for the testing of the causal model, main hypothesis and theses suggested in the previous chapter. Conducting quantitative and qualitative cross-sectional survey research was chosen as the preferred data collection method to a) quantitatively describe specific aspects of a given population, such as attitudes of airport organizations and their passengers towards SSP; and b) provide context by qualitatively describing the subjective dimension of behavior. The approach of conducting mixed-methods studies has been supported by various scholars. Creswell (2009, p. 5) postulated that "the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone". This view has been supported by Babbie (1990, p. 44): “a comprehensive inquiry profits from different methods used to study the same topic”.

Table 13 (next page) summarizes the selected research design and research methods for the test of the causal model to judge its fitness.

Table 13. Overview of selected research design and research methods

	Airport Survey	Passenger Survey
Population	Major German airport organizations; annual passenger volume > 5 Mio.	Passengers connected to the airports' corporate Facebook page and departing at least once a year from the airport.
Sampling Unit	Corporate Communication Managers of major German airport organizations responsible for Social Software activities.	Passengers connected to the airports' corporate Facebook page and departing at least once a year from the airport.
Sampling Method	Non-probability sample including six out of the eight major German airport organizations. Exclusion of two airports due to future airport closure and not comparable traffic segmentation was necessary.	Non-probability sample in terms of a volunteer panel due to uncertain population size and characteristics (e.g. multiple connections, multiple accounts, fake accounts).
Survey Instrument	Expert interviews based on a semi-structured, self-administered questionnaire with closed-ended questions (Likert-scale ratings, multiple choice, forced choice) and open-ended questions distributed by e-mail to the respondents prior to the personal interview.	Structured, self-administered questionnaire with closed-ended questions (Likert-scale ratings, multiple choice, forced choice) created with the online survey tool Surveymonkey. Invitation for survey participation including link to online-survey published by airport organizations on their corporate Facebook pages.
Incentive for Study Participation	Aggregated report of research study.	Raffle of iPod Shuffle.
Pre-test of Survey Instrument	Pre-test by five social software experts holding management positions in the German tourism, media and online industry: • logical consistency • ease of understanding • contextual relevance	Pre-test by five individuals who are connected to Hannover Airport on Facebook, take at least one airtrip per year from the airport and are not employed at the airport: • logical consistency • ease of understanding • usability

Source: own construction of author

The sub-chapters 3.1 – 3.3 explain the content of Table 13 in detail regarding population and sampling considerations, evaluation of survey instruments and description of survey instruments.

3.1 Population and Sampling Considerations

The airport target population focuses on German airports with an annual passenger traffic volume exceeding five million passengers. Those airports face comparable competitive conditions as they are bound by the European Airport Charges Directive 2009/12/EG (European Union, 2009), which was transposed into German national law on March 15, 2011. They are usually also not eligible for receiving operating or investment aid. Based on the official traffic reports issued by the German Airport Association (ADV) - eight out of 21 airports can be identified as a major airport: Frankfurt, Munich, Berlin, Dusseldorf, Hamburg, Stuttgart, Cologne-Bonn and Hannover (ADV, 2013, n.p.). The number of major German airports is small enough to allow for surveying all members of the population, as it comprises only eight airports. However, the airports Berlin (Tegel/Schoenefeld) and Cologne-Bonn needed to be excluded from the study. The existing airports in Berlin will close down due to the planned opening of the newly build airport Berlin Brandenburg International. The airport Cologne-Bonn focuses predominantly on the low-cost traffic segment and is therefore only to a limited extent comparable to the other airports, which have a balanced traffic segmentation. Therefore, the sample includes the airports Frankfurt, Munich, Dusseldorf, Hamburg, Stuttgart and Hannover. As the SSP activities of airport organizations are anchored in the department of Corporate Communication, the survey was addressed to the Directors of Corporate Communication as the sampling unit.

While the population size of major German airports can be easily identified, it is difficult to determine the true population of passengers that have connected to a major German airport on Facebook. While the number of ‘page likes’ for each corporate Facebook page approximates the number of passenger that have connected to an airport on Facebook, it is not possible to simply sum up the Facebook ‘page likes’ for all major German airports (in sum 167.566 page likes existed for the sampled airports per 31.10.2012). This is due to several reasons: first, not all individuals having connected to an airport on Facebook are necessarily passengers of the airport. Furthermore, aviation enthusiasts or employees of the airport not travelling by plane at all might have connected to an airport on Facebook. Secondly, an individual passenger might have connected to several airports on Facebook, hide

his or her identity by registering under a false name, or even maintain multiple Facebook accounts under different names.

As the true population size is not known and can only be reached via Facebook, a non-probability sample in the form of a voluntary-response sample was chosen as sampling-method. Statistical inference is much more difficult with non-probabilistic samples, such as voluntary-response samples. Schonlau et al. (2002, p. 34) put forward the example of a survey about the environment: respondents who care for environmental issues may be much more likely to volunteer for the survey than others. As a result, the survey might overestimate the degree of environmental concern within the general population. However, as this promotional work explicitly focuses on passengers connected to a major German airport organization on Facebook, all members of the population are likely to share a similar concern for the airport so that systematic response bias is reduced. Schonlau et al. (2002) also observe that non-probability sampling can be "extremely valuable for hard-to-reach (although electronically connected) populations" and for making "model-based inference" (ibid, p. 34) as it is intended by this promotional work.

Wright (2005) observes that "relatively little may be known about the characteristics of people in online communities, aside from some basic demographic variables, and even this information may be questionable" (ibid, n.p.). Given the uncertain population characteristics and based on common empirical conventions (t: 1.96, e: 0.05), the minimum sample size required for this study was calculated and resulted in 384 required respondents. The obtained result was cross-referenced with the minimum sample size table developed by Bartlett et al. (2001, p. 48). The comparison resulted in a similar recommended minimum sample size of 370 for making inferences about a population $\geq$ 10.000.

3.2 Evaluation of Survey Instruments

To assess the population characteristics of major German airport organization, semi-structured expert interviews were deemed most appropriate although involving high effort for the interviewer, such as considerable travel time and travel costs. Notwithstanding, semi-structured interviews are the instrument of choice, "if you won't get more than one chance to interview someone" (Bernard, 2006, p. 212) for example "high-level bureaucrats and elite members of a community - people who are accustomed to efficient use of their time" (ibid, p. 212), such as experts. In addition to pre-defined types of questions and order of questions,

semi-structured interviews allow adding questions or changing the order of questions if it benefits the research objective. A major threat to face-to-face interviewing is the social desirability bias. As the author of this dissertation herself holds a position in the airport industry and Facebook is currently almost virally adopted by business organization across industries and countries, the experts might report too positively on the contribution of SSP to economic need satisfaction to present their airport organization in a positive light. This would affect the internal validity of the study. To reduce potential bias, the experts were asked to provide the interviewer with an explanation for their reported extent of agreement or disagreement with a statement proposed by the interviewer. For example, if a respondent strongly agreed to the statement that compared traditional communication channels *'Facebook speeds up information dissemination'*, the respondent was asked how he or she arrived at this opinion and to provide examples from his or her own work experience to support the view.

To assess the population characteristics of passengers connected to major German airport organizations on Facebook, an online survey distributed via the Facebook pages of the sampled airports was conducted since the airport communities formed on Facebook "exist only in cyberspace" (Wright, 2005, n.p.). By publishing the survey through the Facebook pages of airport organizations, the author of this dissertation gained access to individuals, who share a specific interest and attitude regarding airports. Wright (2005) noted that "in the face-to-face research environment, it would take considerably longer - if it were possible at all - to find an equivalent number of people with specific attributes, interests, and attitudes in one location" (ibid, n.p.). The distribution of the survey by the airports prevents passengers from considering the survey as "unsolicited junk mail" (Evans & Mathur, 2005, p. 201).

The study used a commercial online survey tool offered by the online survey service provider Surveymonkey for questionnaire preparation and data collection. The survey tool prevents multiple responses from the same IP addresses to reduce the possibility of respondents taking the survey a second time. By technically designing the survey in a way that respondents must provide an answer to a question before being allowed to advance to the next question and by prescribing the possible answers to each question (for example multiple choice vs. forced-choice), item non-responses and improperly answered questions were avoided (ibid, p. 200).

Collected data from completed online questionnaires were instantly stored in the Surveymonkey data base, while allowing for the export of data to the statistics software SPSS (Statistical Package for the Social Sciences). By this the time effort for manually entering data in the statistics tool and potential error associated with manual data entry was reduced (ibid, p. 200). As compared to the face-to-face surveys, self-administered online surveys are less susceptible to social desirability bias as answers are transmitted anonymously (Kreuter et al., 2009, p. 847). While online surveys offer a variety of advantages, the impersonality of the instrument demands for clear answering instructions to prevent respondents from defecting (Evans & Mathur, 2005, p. 202). This issue was addressed by a thorough pre-test of the questionnaire.

3.3 Description of Survey Instruments

For the airport survey, a semi-structured written questionnaire was constructed as basis for the expert interviews. After obtaining the consent of the experts to participate in the study, the questions for the personal interviews were distributed to the experts by e-mail to allow for advance preparation of answers and return of the completed questionnaire to the author of this dissertation prior to the personal interview. This procedure held the advantage that the experts were able to familiarize themselves with the content of the questionnaire and efficiently gather required data in advance, while the interviewer was provided with the opportunity to more thoroughly prepare for the interview. In the cover letter of the questionnaire the study objectives were clearly stated. The experts were informed that the study also involved a passenger survey distributed on the corporate Facebook pages of the participating airports. Therefore, the consent to publish a link to the passenger survey on the corporate Facebook page of the airport was defined as a prerequisite for study participation. The questionnaire for the online survey was attached to the cover letter to assure informed consent of the participants. The cover letter also contained information regarding the time requirement for self-administration of the questionnaire (15 minutes) and for the follow-up face to face expert interview (60 minutes). Furthermore, it described that each participating airport will receive a report of the research results, while reporting survey results only in the aggregate to safeguard anonymity of the participants.

The content areas addressed by the questionnaire are listed in Table 14.

Table 14. Overview of content areas of airport questionnaire

Content Area	Content	Type of Data Collected / Scales
Cover letter	• Study objectives • Online passenger survey as precondition for study participation • Time requirements for administration of questionnaire and expert interview • Measures to safeguard anonymity of participants	
1. Information about expert	• Name • Hierarchical position	• String / free text • String / free text
2. Basic data about airport	• Shareholder structure (public, private-public venture) • Passenger volumes 2011	• Single choice scale • Numeric
3. Information about corporate Facebook page	• Years since launch of corporate Facebook page • Number of Facebook 'fans' per 31.10.2012 • Number of interactions initiated by the airport on Facebook per week (posts, comments) • Number of interactions initiated by the passengers connected to the airport on Facebook per week (posts, comments, likes, shares) • Reasons for maintaining a Facebook page	• Numeric • Numeric • Numeric • Numeric • Multiple choice scale plus string / free text for 'other'
4. Evaluation of Facebook as compared to traditional communication channels (e-mail, call-center, website etc.)	• Perceived change in the degree of economic need satisfaction as compared to traditional communication channels regarding customer insights, operational process efficiency, innovative strength, customer satisfaction and customer advocacy (attitudinal questions)	• 5-point Likert scale (1: strongly disagree; 2: somewhat disagree; 3: neither agree nor disagree; 4: somewhat agree; 5: strongly agree)
5. Organization of Facebook activities	• Responsible department for Facebook management • Assigned human resources (part-time, full-time, interdisciplinary) • Major challenges regarding the passenger communication via Facebook	• String / free text • String / free text • String / free text
6. Outlook	• Future importance of Facebook (stable, increasing, decreasing)	• String / free text
7. Gratitude for study participation	• Brief gratitude statement for dedicating time and effort in study participation	• n/a

Source: own construction of author

The *first content area* of the questionnaire was concerned with gathering data about the airport experts participating in the interviews, including their name and hierarchical position. Data was provided as free text. The *second content* area collected basic data about the participating airports regarding their shareholder structure (single choice scale: public, private, private-public venture) and passenger volumes 2011 (numeric data). The *third content* area was more specifically concerned with collecting data on the airport's corporate Facebook page, i.e. 'years since launch of the corporate Facebook page' and 'number of Facebook page likes per 31.10.2012', 'number of interactions initiated by the airport on Facebook per week (posts, comments)' and 'number of interactions initiated by the passengers connected to the airport on Facebook per week (posts, comments, likes, shares)'. The data needed to answer the questions related to 'page likes' and 'interactions initiated by airport or passenger' are easily obtainable by using the Facebook administrator statistics for the airports' corporate Facebook pages. The reasons for maintaining a corporate Facebook page are also collected using a multiple choice scale including the possibility to provide other additional reasons as free text. The *fourth content* area contrasted Facebook with the traditional communication channels of airports, such as e-mail, call-center or website. Attitudinal questions assessed the perceived change in the degree of economic need satisfaction since using Facebook regarding the underlying first-order variables customer insights, operational process efficiency, innovative strength, customer satisfaction and customer advocacy. The attitudinal questions were developed based on the measurement considerations discussed in chapter 2. Babbie (1990, p. 127) recommended the use of a Likert-scale, if a researcher is interested in determining the extent to which a respondent holds an opinion under the condition that it is possible to summarize the statements in a relatively brief sentence. The respondents were therefore asked to indicate to what extent they agree to each attitudinal statement on a five point Likert-scale using a verbal description of the scales from strongly disagree (1) to strongly agree (5). As these verbal descriptions have been found to be equidistant, data obtained from a 5-point Likert-scale can be treated as continuous data during statistical analysis (Raab-Steiner & Benesch, 2012, p. 56).

Table 15 on the next page provides a detailed overview of the attitudinal questions for assessment of the formative endogenous variable economic need satisfaction by reporting on the underlying first-order formative variables.

Table 15. Overview of attitudinal questions for assessment of endogenous variable economic need satisfaction (underlying first-order formative variables)

Latent Variable	Underlying Theoretical Concept	Measurement Items / Attitudinal Questions (5-Point-Likert Scale)	Comments
Customer Insights	Knowledge about customer (passenger) needs, requirements and attitudes are referred to as customer insights.	• On Facebook, we gain deeper insights into customer needs, requirements and attitudes • Facebook helps us to better determine where the customers' perceived service quality differs from the expected service quality • On Facebook we are able to better detect priority areas for service quality investment spendings with influence on customer satisfaction (root-cause detection)	Items developed by author based on Balanced Scorecard / Strategy Map approach (see chapter 2)
Operational Efficiency	The concept of efficiency is concerned with the relationship between input and output (Mann & Wüstemann, 2010, p. 677). Efficiency can be defined as "an effective operation as measured by a comparison of production with cost (as in energy, time, and money)" (Merriam-Webster, 2013, n.p.). Hence, an efficient operation considers time as a valuable asset, as saving time creates further opportunities to assign resources to other activities (Davies, 1994, pp. 100-101).	• Facebook speeds up information dissemination (e.g. crisis management) • Facebook accounts for a reduced response time to passenger inquiries/questions • Facebook facilitates management of passengers service quality expectations • Facebook facilitates complaint handling	Items developed by author based on Balanced Scorecard / Strategy Map approach (see chapter 2)
Innovative Strength	The basic rationale behind innovation is staying adaptive and competitive in a fast changing environment. A dialogue between organizations and their customer allows organizations to discover shifting customer needs ahead of competition. Innovative strength does not only relate to the ability of organizations to generate and evaluate new ideas for products or services that add value or improve quality, but also comprises the ability to bring an idea to market (Cohen & Levinthal, 1990, p. 128).	• Since using Facebook, we are able to notice shifts in customer expectations more timely • On Facebook, we get instant customer feedback on new service ideas • Facebook facilitates the introduction of new services to the passengers (uploading)	Items developed by author based on Balanced Scorecard / Strategy Map approach (see chapter 2)

Table 15 (continued). Overview of attitudinal questions for assessment of endogenous variable economic need satisfaction (underlying first-order formative variables)

Latent Variable	Description of Theoretical Concept	Measurement Items / Attitudinal Questions (5-Point-Likert Scale)	Comments
Customer Satisfaction	Customer satisfaction is a concept for the evaluation of how successfully products and services are fulfilling the needs and requirements of the market (Grönroos, 1998, p. 330).	• Since using Facebook, our passenger satisfaction scores improved (basis: passenger satisfaction surveys of airport – ACI survey or own survey)	Item developed by author based on Balanced Scorecard / Strategy Map approach (see Chapter 2)
Customer Advocacy	Customer advocacy in terms of positive Word-of-Mouth "is not rooted in the marketing of a particular brand, product, or service, but rather is based in the everyday relationships and conversations of people discussing other matters" (Carl, 2006, p. 601). WOM communication on SSP broadens the traditional WOM communication from personal one-to-one to virtual many-to-many communications (Jeong & Jang, 2011, p. 357).	• We noticed an increase in the amount of positive word-of-mouth since using Facebook (in traditional media and social media) • Since using Facebook, the reach of positive word-of-mouth increased (traditional media and/or social media)	Items developed by author based on Balanced Scorecard / Strategy Map approach (see Chapter 2)

Source: own construction of author

For each latent variable listed in Table 15, the underlying theoretical concept has been summarized based on the considerations in sub-chapter 2.4. In addition, for each deduced measurement item, the table indicates if the item was adapted from existing scales or has been developed by the author of this dissertation.

The *fifth content area* of the questionnaire focused on the organization of Facebook activities at each airport. Data collection included the 'responsible department for Facebook management', the 'assigned human resources (part-time, full-time, interdisciplinary)' and 'major challenges regarding the passenger communication via Facebook'. Although all questions of the fifth content area were open-ended questions, the answer to the question regarding the assigned human resources and organizational setting were later coded into a scale, as it was an important measurement item for the investment of airport organizations in their Facebook activities (1: Facebook maintenance exclusively by corporate communications department; no dedicated full time employee; 2: interdisciplinary Facebook maintenance; no dedicated full time employee; 3: Facebook maintenance exclusively by corporate communications department; dedicated Social Media Manager; 4: interdisciplinary Facebook maintenance; dedicated Social Media Manager). The *sixth content* area was concerned with an outlook on the future and assesses the opinion of the airport experts with regard to the future importance of Facebook in the form of open-ended questions. The questionnaire closed with a brief gratitude statement to the experts for dedicating time and effort in study participation.

For the passenger survey, an online questionnaire was constructed with the survey tool Surveymonkey. The link to the online survey was distributed by the airports participating in the study on their corporate Facebook pages. The content areas addressed by the questionnaire are listed in *Table 16*.

Table 16. Overview of content areas of passenger questionnaire

Content Area	Content	Type of Data / Scales
Introductory page	• Study objectives and target audience • Time requirement for administration of questionnaire (5-7 minutes) • Information on raffle among study participants (iPod shuffle) • Measures to safeguard anonymity of participants	• n/a
1. Airport specific questions	• Name of airport to which passenger is connected on Facebook • Number of air trips per year starting from this airport • Major purpose of air trips (business, leisure, equal share of business and leisure)	• Single choice scale • Single choice scale • Single choice scale
2. Facebook usage and access	• Frequency of Facebook use (several times per day, once a day, several times per week, once per week, less than once per week) • Role of Facebook in everyday-life (attitudinal questions) • Devices for Facebook access (computer, laptop, smartphone, tablet) • Type of interactions on Facebook page of airport (read, like, share, comment, post)	• Single choice scale • 5-point Likert scale • Multiple choice scale • Multiple choice scale
3. Evaluation of Facebook as compared to traditional communication channels (e-mail, call-center, website etc.)	• Perceived change in the degree of socio-psychological need satisfaction as compared to traditional communication channels of airport organizations regarding self-determination, competence, relatedness and meaning (attitudinal questions)	• 5-point Likert-scale
4. Demographics	• Age • Gender • Household size	• Single choice scale • Forced choice scale • Single choice scale
5. Gratitude for study participation	• Brief gratitude statement for dedicating time and effort in study participation	• n/a
6. Raffle	• Invitation to participate in raffle (iPod Shuffle)	• E-mail address (stored separately from survey data)

Source: own construction of author

The *introductory page* of the questionnaire clearly stated the study objectives and intended target audience of the questionnaire, i.e. passengers connected to a major German airport on Facebook and departing at least once per year from the airport. The provided information on the introductory page also included the time requirement for administration of the questionnaire. Brown (2003) noted that it is not the number of questions that affect the response rate, but the amount of time needed to complete a survey (Brown 2003, cited in Evans & Mathur, 2005, p. 195). Therefore, the questionnaire was designed to be completed within a short time period of 5-7 minutes. A raffle among study participants aimed at further stimulating responses (iPod shuffle). Finally, the study participants were informed about measures to safeguard their anonymity (for example storage of e-mail address for raffle participation in a separate data base, confidential treatment of data and seclusion from third party use). *The first content area of the questionnaire* was concerned with the airport specific questions, such as the 'name of the airport to which the passenger is connected on Facebook', 'number of air trips per year starting from this airport' and the 'major purpose of air trips (business, leisure, equal share of business and leisure)'. In case a passenger is connected to several airports on Facebook, he is asked to select the most frequently used departure airport. *The second content area of the questionnaire* collected data concerning Facebook usage and access of the study participant including 'frequency of Facebook use', 'role of Facebook in everyday-life', 'devices for Facebook access' and type of interactions on Facebook page of airport'. *The third content area of the questionnaire* focused on the evaluation of Facebook as compared to traditional communication channels (e-mail, call-center, website etc.). Attitudinal questions assessed the perceived change in the degree of socio-psychological satisfaction since communicating with airports on Facebook regarding the underlying first-order variables self-determination, competence, relatedness and meaning. The attitudinal questions were developed based on the measurement considerations discussed in Chapter 2. The respondents were asked to indicate to what extent they agree to each attitudinal statement on a five point Likert scale using a verbal description of the scales from strongly disagree (1) to strongly agree (5). *Table 17* on the next page provides a detailed overview of the attitudinal questions for assessment of the endogenous variable socio-psychological need satisfaction by reporting on the underlying first-order formative variables.

Table 17. Overview of attitudinal questions for assessment of endogenous variable socio-psychological need satisfaction (underlying first-order formative variables)

Latent Variable	Underlying Theoretical Concept	Measurement Items / Attitudinal Questions (5-Point-Likert Scale)	Comments
Self-determination	Self-determination refers to a feeling of autonomy and choicefulness. Individuals experience themselves as initiators of their behavior when being allowed to choose both their goals and the way how to attain them. In an autonomy-supportive social context the self-determined activity is characterized by integration and the absence of conflict or pressure to cooperate or achieve expected outcomes. Events that control the behavior of individuals have been found to negatively influence intrinsic motivation and well-being (Deci & Ryan, 1987, p. 1025).	1. On Facebook, I am more free to express my ideas and opinions with regard to the airport and their services 2. On Facebook, the airport takes my feelings better into consideration 3. On Facebook, the airport more attentively listens to my opinion and the opinion of fellow passengers	• Items 1 and 2 adapted from Basic Psychological Needs Scale (Deci et al., 2001) • Item 3 based on (Scharmer, 2009)
Competence	Competence can be described as the motivation to succeed at optimally challenging tasks and being able to achieve expected outcomes. The need to feel competent and challenged is often linked to human actions that are targeted at fostering progress and is associated with feelings of curiosity and interest (Dambmann, 2004, p. 15). Taylor (1997) argues that "due recognition is not just a courtesy we owe to people. It is a vital human need" (ibid, p. 99). Identities are formed during communication with others. Individuals can suffer distortion, if a picture of themselves is mirrored back to them that is too restricted or even demeaning and degrading (Dambmann, 2004, p. 14; Taylor, 1997, pp. 98-99).	1. Facebook helps me to learn better about new and interesting things with regard to the airport 2. Most times, I am able to more easily receive all the important information I am looking for on the airports' Facebook page 3. On Facebook my ideas and suggestions and those of fellow passengers are better valued	• Items adapted from Basic Psychological Needs Scale (Deci et al., 2001)

(continued on next page)

Table 17 (continued). Overview of attitudinal questions for assessment of endogenous variable socio-psychological need satisfaction (underlying first-order formative variables)

Latent Variable	Underlying Theoretical Concept	Measurement Items / Attitudinal Questions (5-Point-Likert Scale)	Comments
Relatedness	Relatedness refers to the need of being connected to others. Human beings need affectionate care and a sense of belonging from infancy on. Research studies on attachment-theory confirm that the physical and mental development of an infant suffering maternal deprivation is likely to be impeded. Deprivation might even result in the death of the infant (Bolwby, 1963; Spitz, 1945). Relatedness is not concerned with outcomes, but rather with a need to belong and to feel cared for (Deci & Ryan, 2000, p. 231).	1. On Facebook I feel better cared about 2. On Facebook I feel closer to the airport 3. On Facebook I feel more like part of the airport community	• Items 1. and 2. adapted from Basic Psychological Needs Scale (Deci et al., 2001) • Item 3 adapted from Williams (2006) "Bridging Social Capital Scale"
Meaning	Individuals need values and norms that guide their activities and provide for orientation and meaning (Dambmann, 2004). Norms can be regarded as "a foundation for stable expectations that are efficient, because individuals act with greater assurance of the outcome." (Hetcher, 2004, p. 82). SSP facilitate access to peer reviews and recommendations. Both convey a public understanding of the superiority of a product or service relative to its asserted value propositions. By this SSP support orientation with regard to customer buying decisions and determine the image of an organization from the perspective of the customers.	1. On Facebook I get better information about which services, shops etc. to expect at the airport 2. On Facebook, I get more authentic information on the airport service portfolio and service quality 3. On Facebook, I get better information why I should choose the airport as my departure airport 4. Facebook will reveal better, if there are inconsistencies between advertising promises and the real airport experience of passengers.	• Items developed by author

Source: own construction of author

For each latent variable listed in Table 19, the underlying theoretical concept has been summarized based on the considerations in sub-chapter 2.4. In addition, for each deduced measurement items, it is indicated if the item was adapted from existing scales or has been developed by the author of this dissertation.

The *fifth content area* of the questionnaire collected demographic data, such as age, gender and household size. The questionnaire closed with a brief gratitude statement for dedicating time and effort in study participation and an invitation to participate in the raffle.

To ensure that the developed questionnaires are clear and unambiguous, pre-tests have been conducted to ensure logical consistency and ease of understanding. The *pre-test of the airport questionnaire* was conducted by five social software experts holding senior management positions in the German tourism, media and online industry. The social software experts were also asked to assess contextual relevance and breadth regarding the domain. The *pre-test of the passenger questionnaire* was conducted by five individuals connected to Hannover Airport on Facebook, but who were not employed at the airport. The collected comments led to several minor modifications of the wording of both questionnaires.

4 RESEARCH RESULTS FROM TESTING THE RELATIONSHIP BETWEEN SOCIO-PSYCHOLOGICAL NEED SATISFACTION AND ECOMIC NEED SATISFACTION ON THE SSP FACEBOOK

The purpose of this chapter is to report on the results of the data analyses. As a first step, construct validity was assessed for both reflective and formative constructs. Construct validation for reflectively measured constructs was conducted through reliability testing (Cronbach's Alpha) and confirmatory factor analysis (principal axis factoring). Construct validation for formative constructs is assessed through a review of inter-correlations between constructs (Spearman's Rho). As a second step, the descriptive results of the airport and passenger survey are provided including an analysis of the distribution of variables after aggregation of items to variables (median, mean, standard deviation). For the airport survey, the results of the content analysis for the expert interviews are also reported. Thirdly, the results of the theses tests are summarized and discussed drawing on correlation analysis (Spearman's Rho) and the analysis of differences between groups (Man-Withney U). Due to the rather specific research focus of this promotional work, the size of the airport sample did not allow for advanced statistical analysis, such as structural equation modeling. Finally, the main conclusions of the study are advanced.

4.1 Assessment of Construct Validity

Construct validity is concerned with how a theoretical concept was operationalized in the measurement of the construct. Construct validity provides evidence that the items in the survey measure the construct they are supposed to represent. The assessment of reflectively measured constructs is based on classical test theory (Jarvis et al. 2003, p. 199). Therefore, construct validation through reliability testing and confirmatory factor analysis, i.e. convergent and discriminant validity, is appropriate (Raschke & Freeze, 2007, p. 1486).

The latent first-order variables 'self-determination', 'competence', 'meaning' and 'relatedness' were measured on reflective scales. The test for the internal consistency of scales, Cronbach's Alpha was computed (*Table 18*).

Table 18. Results of internal consistency analysis (Cronbach's Alpha)

Variable	Cronbach's Alpha (	Number of Items	N
Self-Determination	0.77	3	626
Competence	0.73	3	626
Meaning	0.76	4	600
Relatedness	0.77	3	600

Source: own construction of author

The analysis resulted in an alpha coefficient of 0.77 for the self-determination factor (3 items), 0.73 for the competence factor (3 items), 0.76 for the meaning factor (4 items) and 0.77 for the relatedness factor (3 items). From the results, i.e. alpha > 0.7, it was possible to conclude that the developed measurement items have adequate internal consistency (Kline, 2011, p. 70).

To verify the existence of a multi-dimensional structure of the latent variable 'socio-psychological need satisfaction' coherent with the proposed latent first-order variables, confirmatory factor analysis was conducted using the principal axis factoring algorithm with Varimax rotation. Gorsuch (1983, p. 332) and Hatcher (1994, p. 73) recommend a minimum subject to item ratio of at least 5:1. This requirement was met since the subject to item ratio exceeded the minimum ratio required. The factorial analysis yielded a four-factor solution with Eigenvalues greater than 1.0 explaining a total of 66.3 % of the total variance (self-determination: 40.2 %, meaning: 10.4 %, relatedness: 8.3 %, competence: 7.4 %). The results of the factorial analysis are summarized in *Table 19*.

Table 19. Results of confirmatory factor analysis

	SDT	COM	MEA	REL
Self-Determination (SDT) / α: 0.77				
SDT1	.402			
SDT2	.822			
SDT3	.826			
Competence (COM) / α: 0.73				
COM1		.711		
COM2	*.826* [a)]			
COM3	*.756* [a)]			
Meaning (MEA) / α: 0.76				
MEA1			.808	
MEA2			.798	
MEA3			.785	
MEA4			.481	
Relatedness (REL) / α: 0.77				
REL1				.529
REL2				.821
REL3				.828

Note. Items were translated from English to German. Factor loadings < 0.4 are suppressed.
[a)] Item did not load on intended factor

Source: own construction of author

The factor labels suited the extracted factors. However, regarding the factor 'competence' two of its three items did not load on the intended factor, but on the factor 'self-determination'. As all items needed to be translated into German prior to survey conduction, a possible explanation for the unintended loadings is an infelicitous translation of the two items. Despite this weakness, the author decided to retain the factor 'competence' because of its theoretical importance as a fundamental component of self-determination theory.

Due to formative measurement of the latent first-order variables 'customer insights', 'operational efficiency', 'innovative strength' and 'customer advocacy', internal consistency reliability of scales, i.e. the degree of interrelatedness among the items was not a cause for concern (Cortina, 1993, p. 100). The same applied for the latent 'variable customer satisfaction', as it was operationalized with only one reflective measure, i.e. the airports' customer satisfaction score. For formative scales item reliability is difficult to assess with classical test theory. Items can have any pattern of inter-correlation, while they should possess the same directional relationship (Bollen, 1989, p. 222; Nunnally, 1978, p. 489; Diamantopoulos & Winklhofer; 2001, p. 271). Bollen (1984) emphasized that "indeed, use of internal-consistency checks on cause-indicators may lead researchers to discard valid measures improperly" (ibid, p. 381).

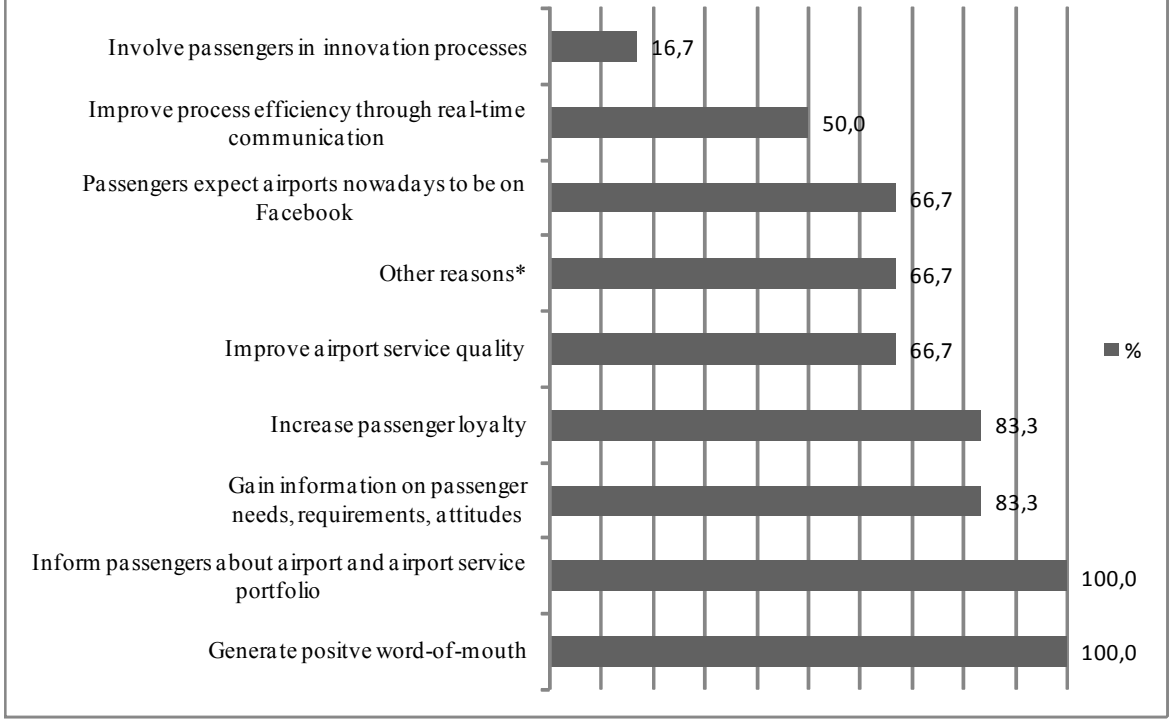
Notwithstanding, Edwards & Bagozzi (2000) stress that "if measures are specified as formative, their validity must still be established. It is bad practice to […] claim that one's measures are formative, and do nothing more" (ibid, p. 171). While multi-colinearity among indicators is beneficial for reflectively measured constructs, it can be a significant problem when the indicators are formative (Jarvis et al., 2003, p. 202). High correlations among formative indicators could imply that the items measure exactly the same concept (Raschke & Freeze, 2007, p. 1489). As a consequence, there would be the need to eliminate one or more indicators. When formative constructs are operationalized as 2nd order variables, Raschke & Freeze (2007, p. 1489) urge researchers to provide construct correlations to assess construct validity. Notwithstanding, Raschke & Freeze have been careful to argue that "this statistical review, does not provide final validation that the formative construct has been correctly operationalized" (ibid, p. 1.489). It can only provide an indication that there is no duplication of measurement.

Due to the small airport sample size (n = 6), the non-parametric correlation coefficient Spearman's Rho was applied to determine the strength and direction of relationship between the latent constructs 'customer insights', 'operational efficiency', 'innovative strength' and 'customer advocacy'. The results of correlation analysis have allowed drawing the conclusion that there was no duplication of measurement. All inter-construct correlations have been found to be not significant at only low and moderate levels ($r < 0.5$).

4.2 Descriptive Results of Airport Survey

The airports included in the sample have been using Facebook since 1 - 2 years (50.0 %) up to 3 - 4 years (50.0 %). There were 66.7 % of the airports that were private-public ventures, while 33.3 % were publicly owned entities. The average number of Facebook 'page likes' was 27.928 (median: 27.225, standard deviation: 18.106). The number of Facebook 'page likes' approximates the number of individuals who connected to an airport on Facebook and chose to receive information updates of the airport in their own Facebook profile.

The reasons for maintaining a Facebook profile for communication with passengers are not consistent across the airport sample (see Figure 7).



* other reasons: 'be state of the art in online communication'; 'reputation management'

Source: own construction of author based on research results

Figure 7. Reasons of German airports for maintaining a corporate Facebook page (in %)

While 100 % of the respondents agreed that they use Facebook to 'inform passengers about the airport and the airport service portfolio' and to 'generate positive WOM' about the airport, only 83.3 % of the respondents used Facebook to purposefully 'gain information on needs, requirements and opinions of passengers' or to 'increase passenger loyalty'. There are 66.7 % of the respondents who maintain a Facebook profile with the goal to 'improve the service quality of the airport' or because 'passengers expect airports nowadays to be present on Facebook'. Fifty percent (50.0 %) of the sample indicated that they use Facebook to improve their 'process efficiency through real-time communication with the passenger' and only 16.7 % indicated that the reasons include the intention to 'involve passengers in innovation processes'.'Other reasons included 'to be state of the art in online communication' and 'reputation management'.

Table 20 summarizes the consolidated quantitative results of the expert interviews with regard to the attitudinal questions of the study. The experts contrasted Facebook with their existing traditional communication channels, such as call-center, e-mail, website etc., regarding the economic needs for customer insights, operational efficiency, innovative strength, customer advocacy and customer satisfaction. The basis for the rating was a 5-point-likert scale. A rating of '1 = strongly disagree' indicates a major disadvantage of Facebook regarding the airports' economic need satisfaction as compared to other communication channels, while a rating of '2 = somewhat disagree' is equivalent to the existence of some disadvantage. A rating of '3 = neither agree nor disagree' corresponds with no advantage of Facebook regarding the airports' economic need satisfaction as compared to traditional communication channels, whereas a rating of ' 4 = somewhat agree' indicates the existence of some advantage and the rating of '5 = strongly agree' is equivalent to a strong advantage of Facebook. For the latent variables, the Likert items were combined and averaged to be able to run descriptive analysis for each variable, such as mean, median, standard deviation. Blank values in SPSS were treated as missing. To test for normal distribution, the Kolmogorov-Smirnov test was applied.

Table 20. Contribution of Facebook to economic need satisfaction of major German airports

	Mean	**Median**	**Std. Deviation**	**Kolmogorov-Smirnov Test**
Total Economic Need Satisfaction	**3.72**	**3.83**	**0.293**	**p = 0.838**
Customer Insights	3.54	3.50	0.332	p = 0.721
Operational Efficiency	3.83	4.12	0.563	P = 0.722
Innovative Strength	4.06	4.00	0.443	p = 0.612
Customer Advocacy	4.17	4.25	0.816	p = 0.990
Customer Satisfaction	3.00	3.00	0.632	p = 0.518

Note. Confidence interval: 95.0 %; p > 0.05: normally distributed data
5-point likert-scale: 1 = strongly disagree; 2 = somewhat disagree; 3 = neither agree nor disagree;
4: somewhat agree; 5: strongly agree

Source: own construction of author based on research results

The results of the Kolmogorov-Smirnov test with a confidence interval set at 95 % showed that the variables 'total economic need satisfaction', 'customer insights', 'operational efficiency', 'innovative strength', 'customer advocacy' and 'customer satisfaction' were normally distributed ($p > 0.05$). The data shows that Facebook contributes to an increase of total economic need satisfaction (mean: 3.72) as compared to other communication channels. However, some economic needs such as 'customer advocacy' (mean: 4.17) or 'innovative strength' (mean: 4.06) are rated higher by the experts as compared to 'customer insights' (mean: 3.54) and 'operational efficiency' (mean: 3.83). Regarding the need for customer satisfaction (mean: 3.00), Facebook currently does not contribute to an increase of need satisfaction as compared to other communication channels. From the transcribed expert interviews, explanations for the ratings were obtained to gain more information about the underlying opinions of the respondents.

The data was analyzed for recurring patterns. If at least 67.7 % of the sample mentioned the same topic, it was considered to be important and coded into an item. The most obvious items are the "topics that occur and reoccur" (Taylor & Bogdan, 1975, p. 83). *Table 21* shows that concerning the need satisfaction for 'customer insights' two items were identified. The tonality of the items was both positive and negative.

Table 21. Need for customer insights – items

No.	Tonality of Item	Item	Consolidated Interview Statements
1.	Positive	Get better feeling of customer moods and opinions	• Be closer to the passenger / get insights into needs • Get insights into needs and positive, negative opinions • People speak their mind freely • It was not expected that a specific topic was of such interest for the passengers
2.	Negative	Customer insights not yet representative	• Only individual opinions • Critical mass not yet reached • Compared with total passenger volumes of the airport, tool not representative • Other tools still more representative

Source: own construction of author based on research results

Airports report that Facebook enables them to get a better feeling of customer moods and opinions because "people speak their mind freely" and they can "be closer to the passenger".

However, despite a constant increase of Facebook page likes for all airports, they complain that the customer insights obtained are not yet representative.

With regard to the need satisfaction for 'operational process efficiency' two positive and one negative item were identified and summarized in *Table 22*.

Table 22. Need for operational efficiency – items

No.	Tonality of Item	Item	Consolidated Interview Statements
1.	Positive	Suitable tool for crisis communication and communication of air traffic irregularities	• Own experience confirms, that it works, e.g. strikes • Useful tool to quickly inform in times of crisis, strikes etc. • Tool used for communication of irregularities, e.g. strike, severe weather conditions • Useful for communication regarding acute incidents
2.	Positive	Faster information dissemination and reaction possible	• Communication on Facebook faster • Fast feedback to passenger possible • Faster information dissemination • Fast social channels complement traditional channels
3.	Negative	No increased efficiency of complaint management processes	• Not focused • Public discussion of complaints not intended • Internal processes not yet completely set up • Does not facilitate internal processes

Source: own construction of author based on research results

Airports consider Facebook as a suitable tool for crisis communication and communication of air traffic irregularities that is appropriate for faster information dissemination and reaction. All respondents confirmed during the interviews that they have already used Facebook as a communication channel for acute incidents, for example strikes or severe weather conditions. By contrast, currently no airport uses Facebook to increase the efficiency of complaint management processes. Reasons include that respective internal processes are either not yet set up or not adequate, complaint management on Facebook is not focused by the airport or that a public discussion of complaints is not intended to avoid the risk of a viral dissemination of negative word-of-mouth.

With regard to the need satisfaction for 'innovative strength' two positive and one negative item were identified and summarized in *Table 23*.

Table 23. Need for innovative strength – items

No.	Tonality of Item	Item	Consolidated Interview Statements
1.	Positive	Facilitated communication of new services to passengers	• Agreement to statement by all airports
2.	Positive	Frequent initiatives to generate passenger feedback regarding specific topics	• Passenger involvement takes place • Airport will continue to gather feedback • Feedback on new airport services gathered • Existing dialogue with departments to encourage use of Facebook to gather feedback on new services
3.	Negative	So far, little actionable knowledge from feedback obtained	• Too little passenger posts on requirements • Too little active and useful passenger feedback • Feedback not yet representative • Feedback not generalizable to all passenger

Source: own construction of author based on research results

All airports agree that Facebook accounts for a facilitated communication of new services to the passenger. The second positive item that was identified relates to the fact that airports reported frequent initiatives to generate passenger feedback regarding specific topics. The approaches to generate passenger feedback have been reported to be rather ad-hoc than strategic. This is in line with the result that only 16.7 % of the respondents claimed to be on Facebook to purposefully involve passengers in innovation processes. The respondents also stated that the obtained passenger feedback did not contain actionable knowledge. Reasons included too little participation of passengers as compared to total passenger volumes of the airport and the related problem of representativeness.

Concerning the need for 'customer advocacy' again two positive items and one negative item were identified. The identified items are summarized in *Table 24* (next page).

Table 24. Need for customer advocacy – items

No.	Tonality of Item	Item	Consolidated Interview Statements
1.	Positive	Emotionalization of airport possible	• Increase emotional attachment of passenger to the airport • Feel fascination of aviation / aviation related postings • Tell interesting and emotional stories about the airport and people at the airport • Humanization of airport / introduce departments and people • The public still regards airports as infrastructure provider
2.	Positive	Possibility to purposefully increase positive word-of-mouth (WOM) and virality	• Emotional posts, i.e. no pure facts and figures, foster WOM • Creation of posts that foster WOM • Aviation related topics arouse special interest /trigger interactions
3.	Negative	Not all target groups can be reached on Facebook	• Not all target groups on Facebook • Other target groups on Facebook • Limited reach

Source: own construction of author based on research results

Facebook holds the possibility to positively contribute to an emotionalization of the airport and by this increase the emotional attachment of the passenger to the airport. This is achieved by posting emotional stories and photos of the airport. As public opinion still regards airports as mere providers of infrastructure and noise producers, emotionalizing the airport experience is an important agenda point for the airport industry. Airports also reported on the opportunity to purposefully increase WOM. In particular, aviation related topics have been found to be of special interest to individuals connected to airports on Facebook and to trigger interaction. The effect of the positive aspects is constraint by the fact that not all target groups can be reached on Facebook as compared to other communication channels. However, vice versa, the experts also noted that new target groups emerge on Facebook that cannot be reached by traditional media. It is therefore intended to integrate Facebook with other communication channels.

Table 25 shows that it is not yet clear if Facebook has an impact on the customer satisfaction scores of airports as it is currently not monitored and measured.

Table 25. Need for customer satisfaction – items

No.	Tonality of Item	Item /	Consolidated Interview Statements
1.	Negative	Influence of Facebook on customer satisfaction not measured	• No monitoring, no benchmarking, no knowledge, if relationship exists

Source: own construction of author based on research results

Currently no link exists between the Facebook activities and operational performance indicators of the airport.

There are 83.3 % of the respondents who believe that the future importance of Facebook and other SSP is going to increase, 16.7 % predict a stable importance. Given the growing importance of the communication channel, organizational structure is seen as a success factor to be able to harvest its full potential (*Table 26*).

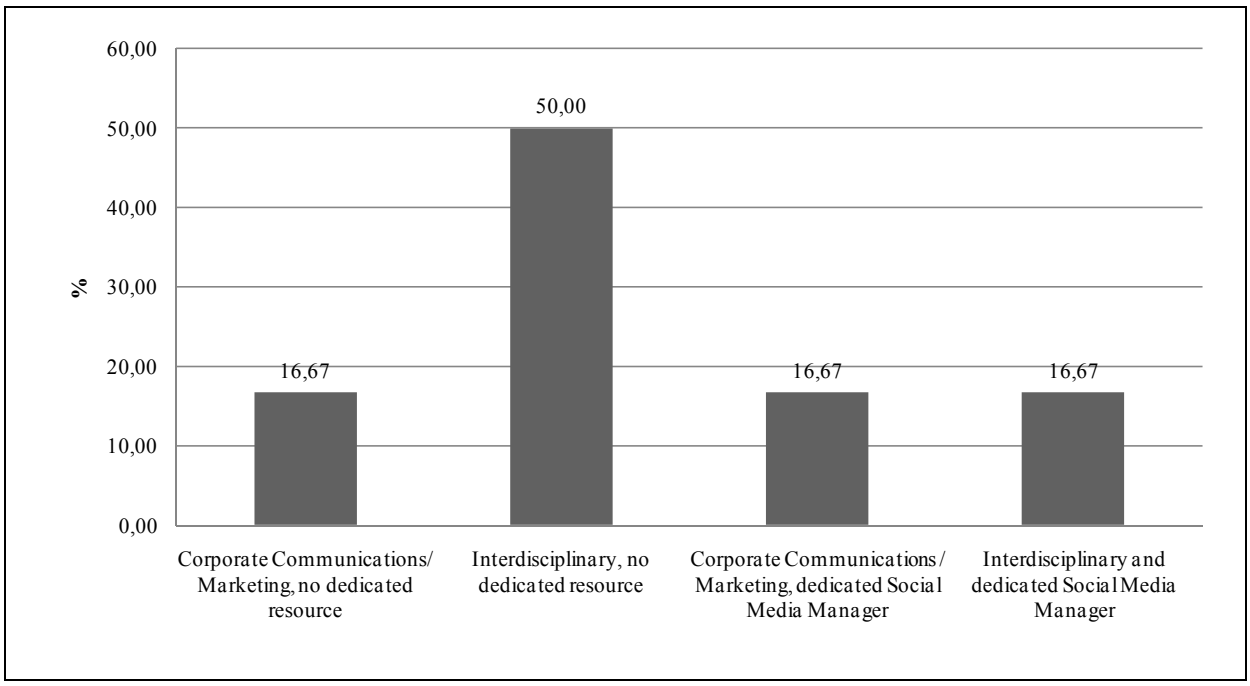
Table 26. Organizational challenges – items

No.	Tonality of Item	Item	Consolidated Interview Statements
1.	Neutral	Organizational structure as success factor for harvesting full potential of Facebook (interdisciplinary approach to Facebook management)	• Adequate organization of Facebook activities as a precondition • Increase involvement of other departments • Routines need to be developed • Transition from hierarchical structure to network structure necessary • Lack of resources

Source: own construction of author based on research results

Challenges mentioned by the experts include the transition from departmental silos to an interdisciplinary, network-oriented approach to Facebook maintenance, the development of standards and routines and a lack of human resources.

As shown in Figure 8 airports currently have heterogeneous approaches regarding the organization of their Facebook activities regarding the number and type of assigned resources.



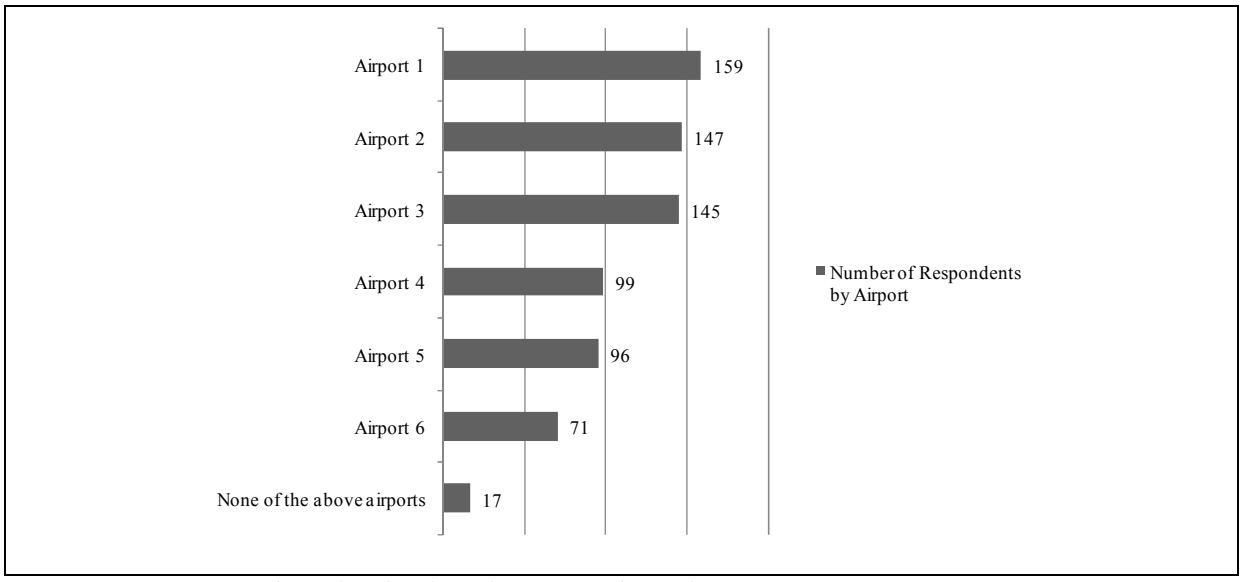
Source: own construction of author based on research results

Figure 8. Organization of Facebook activities by number and type of dedicated human resources (in %)

The majority of airports (66.67 %) has not assigned a dedicated human resource to their Facebook and Social Software activities. In this case Facebook management is either the sole responsibility of the department of Corporate Communications / Marketing (16.67 %) or the additional work effort is distributed more evenly by taking an interdisciplinary approach (50.00 %), while the department of Corporate Communications / Marketing is still the driver and coordinator of all communication activities. There were 33.34 % of airports that created a new dedicated job role 'Social Media Manager'. The Social Media Manager is located in the department of Corporate Communications / Marketing. Facebook management is either the sole responsibility of the Social Media Manager (16.67 %) or an interdisciplinary approach is taken with the Social Media Manager coordinating all communication activities (16.67 %).

4.3 Descriptive Results of Passenger Survey

Responses from 734 passengers were collected in the time period from February 25 to March 12, 2013. There were 600 passengers who fully completed the online survey. There were 134 passengers who only partially completed the questionnaire and dropped out at a certain point of the survey. Figure 9 provides a detailed overview of the number of respondents by airport.



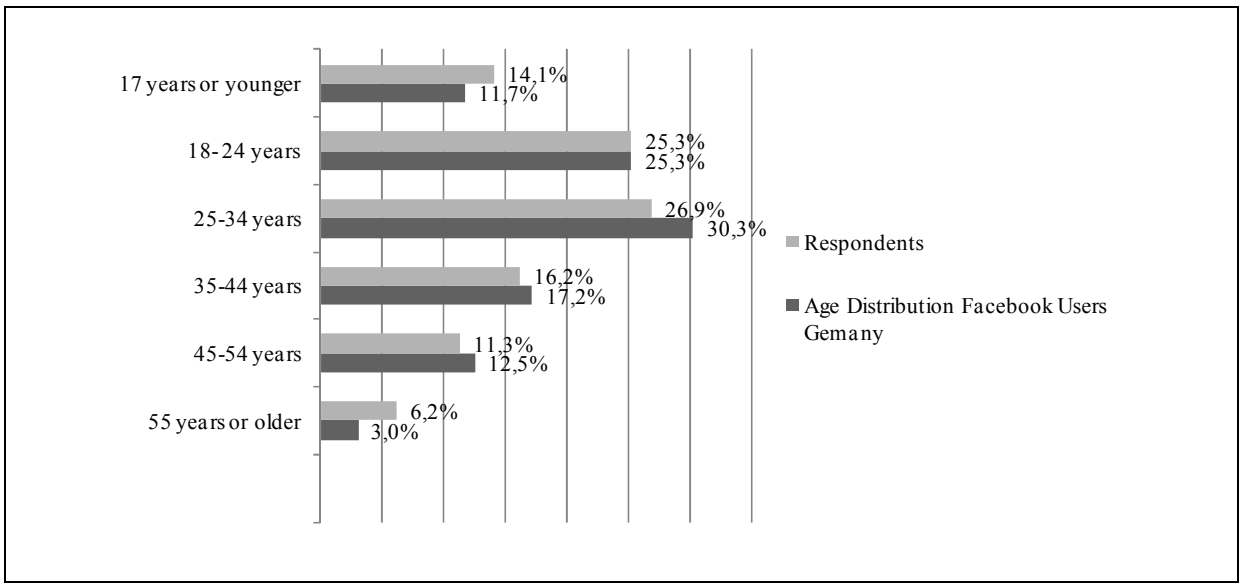
Source: own construction of author based on research results

Figure 9. Number of respondents by airport

For each airport, a sufficient amount of responses were generated ranging from 71 to 159 per airport. Seventeen (17) respondents indicated that they are not connected on Facebook to one of the airports participating in the study. Those respondents were redirected to an exit-page and notified that they had to be excluded from the survey.

The majority of the respondents reported 1 - 2 air trips per year from the indicated airport (52.80 %), 19.30 % depart 3 - 4 times per year by plane from the indicated airport and 22.40 % are frequent travelers with 5 or more air trips per year. There were 5.60 % of respondents who reported that they do not travel by plane at all. Those respondents were redirected to an exit-page and notified that they had to be excluded from the survey. There were 72.70 % of respondents who are leisure travelers, 10.30 % business travelers and 17.10 % report an equal share of leisure and business trips from the selected airport.

Figure 10 contrasts the age distribution of respondents with the age distribution of German Facebook users.



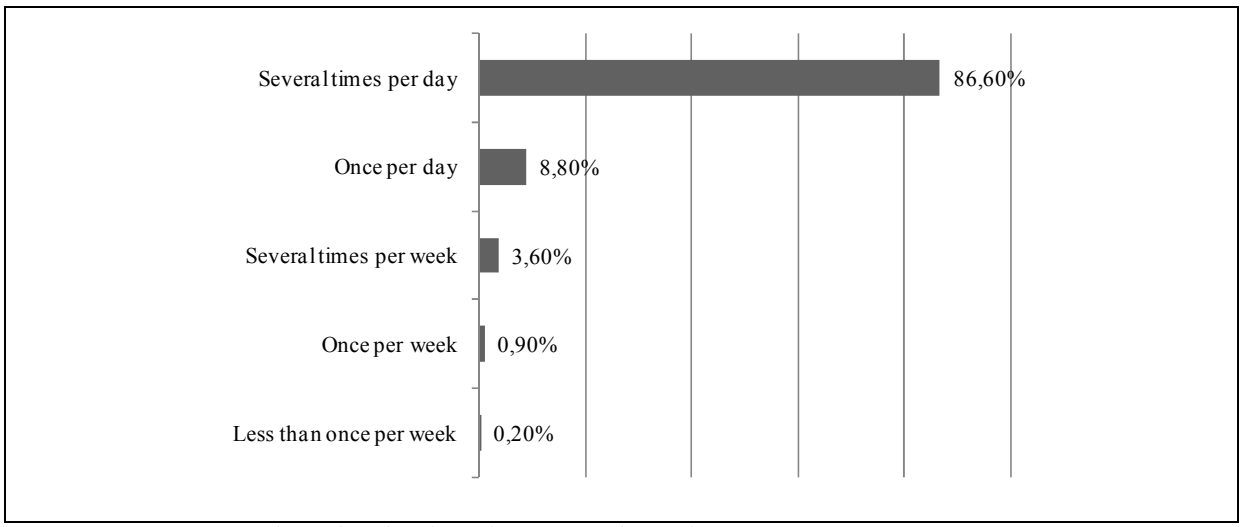
Source: own construction of author based on research results; Quintly (2012)

Figure 10. Age distribution of respondents compared to German Facebook users (in %)

The age distribution of respondents approximately resembles the age distribution of German Facebook users. As Facebook is a relatively new phenomenon, 66.7 % of respondents are younger than 35 years (German Facebook users < 35 years: 67.3 %). There were 16.2 % of respondents who are between 35 - 44 years old, 11.3 % between 45 – 54 years old and 6.2 % 55 years or older.

Male respondents accounted for 71.0 %, and female respondents for 29.0 %. Household sizes included 26.5 % singles, 26.83 % 2 persons and 46.67 % 3 or more persons.

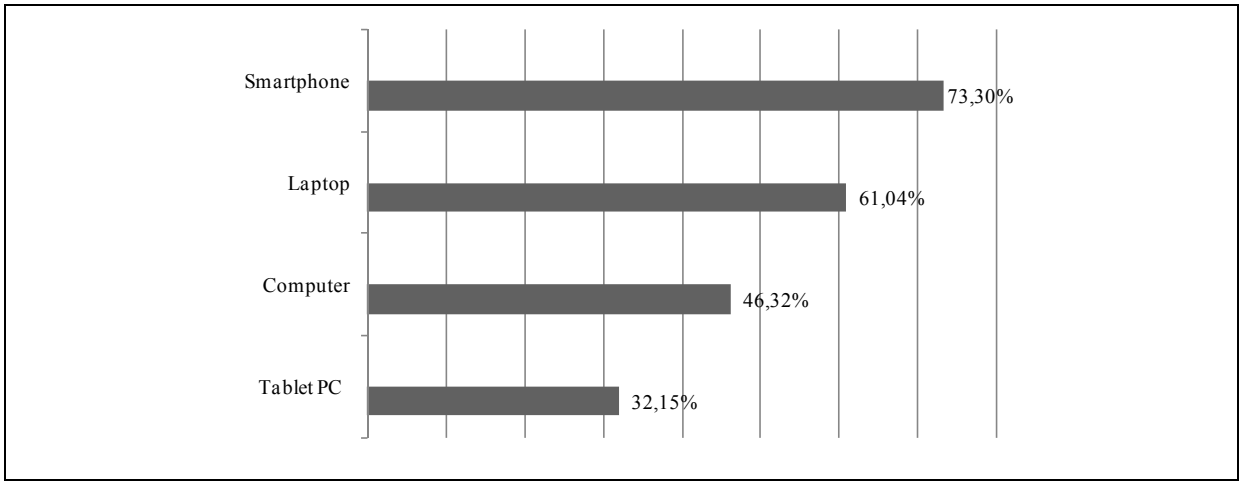
Figure 11 shows the frequency of Facebook access of passengers.



Source: own construction of author based on research results

Figure 11. Frequency of Facebook Access (in %)

The vast majority of respondents access Facebook several times per day (86.6 %), 8.8 % access Facebook once per day, 3.6 % several times per week, 0.9 % once per week and 2.2 % less than once per peek. The most popular devices for Facebook access are summarized in Figure 12.

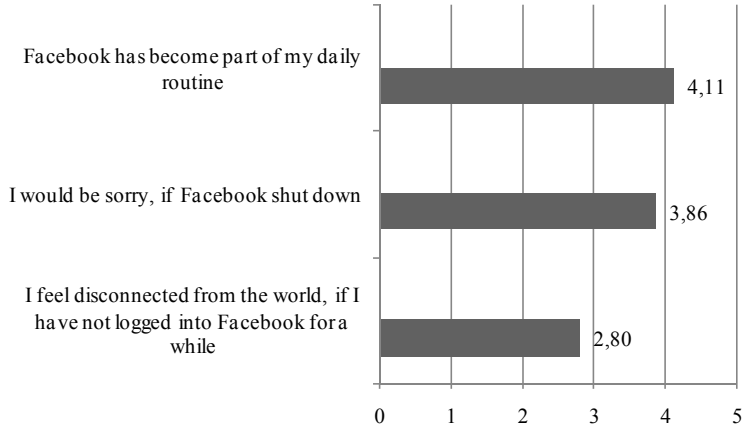


Source: own construction of author based on research results

Figure 12. Devices used for Facebook access (in %)

Smartphones rank first (73.30 %) followed by laptops (61.04 %), computers (46.32 %) and tablets (32.15 %).

Figure 13 illustrates the role of Facebook in passengers' everyday life.

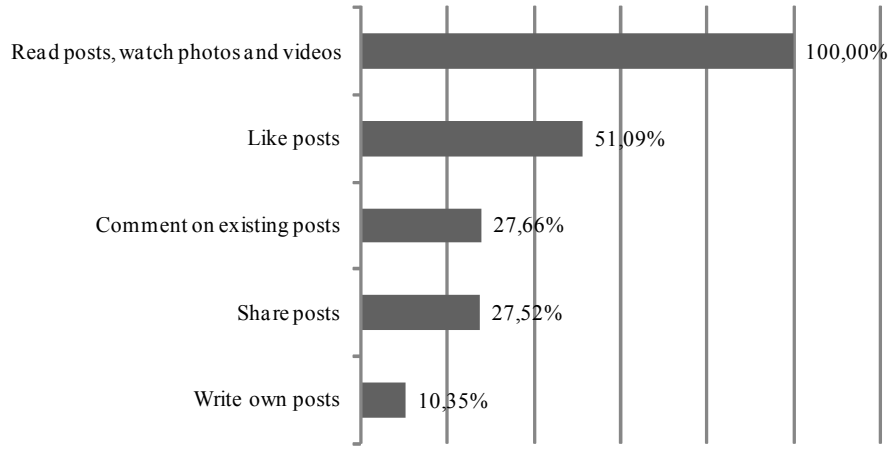


Note. 5-point Likert-scale: 1 = strongly disagree; 2 = somewhat disagree; 3 = neither agree nor disagree; 4: somewhat agree; 5: strongly agree

Source: own construction of author based on research results

Figure 13. Role of Facebook in everyday life

The respondents agree that Facebook has become part of their daily routine (mean: 4.11) and that they would be sorry, if Facebook shut down (mean: 3.86). However, they do not feel disconnected from the 'real' world, if they have not logged into Facebook for a while (mean: 2.80). Figure 14 illustrates that the activity level of passengers on the Facebook pages of airports is heterogeneous.



Source: own construction of author based on research results

Figure 14. Activities of passengers on the Facebook pages of airports (in %)

While all passengers indicated that they read posts on the airports' Facebook pages and watch photos and videos, Figure 14 shows that only a small amount of passengers write own posts on the Facebook timeline of airports (10.35 %) or comment on existing posts on the Facebook page (27.52%). There are 27.66 % of passengers who share existing post with their Facebook friends while 51.09 % click the 'like' button to indicate content as interesting. The findings are consistent with the results of the expert interviews. The airport experts complain that they still experience too little passenger engagement on Facebook.

Table 27 summarizes to what extent the communication between airports and their passengers on Facebook increases the socio-psychological need satisfaction of passengers, when contrasting Facebook with traditional communication channels.

Table 27. Socio-psychological need satisfaction of passengers on the Facebook pages of major German airports as compared to traditional communication channels

	Median	**Mean**	**Std. Deviation**	**Kolmogorov-Smirnov Test**
Total Socio-Psychological Need Satisfaction	**3.63**	**3.60**	**0.627**	p = 0.366
Self-Determination	3.33	3.44	0.818	p < 0.001
Competence	4.00	3.79	0.715	p < 0.001
Meaning	3.50	3.45	0.741	p = 0.001
Relatedness	3.75	3.72	0.763	P < 0.001

Note. Confidence interval: 95.0 %; p > 0.05: normally distributed data
5-point Likert-scale: 1 = strongly disagree; 2 = somewhat disagree; 3 = neither agree nor disagree; 4: somewhat agree; 5: strongly agree

Source: own construction of author based on research results

Basis for the rating was a 5-point-likert scale. A rating of '1 = strongly disagree' indicates a major disadvantage of Facebook regarding the socio-psychological need satisfaction of respondents as compared to other communication channels of the airport, while a rating of '2 = somewhat disagree' is equivalent to the existence of some disadvantage. A rating of '3 = neither agree nor disagree' indicates no change in the perceived socio-psychological need satisfaction of passengers when communicating with airports on Facebook as compared to traditional communication channels, whereas a rating of '4 = somewhat agree' indicates the existence of

some advantage and the rating of '5 = strongly agree' is equivalent to a strong advantage of Facebook. For the latent variables, the Likert items were combined and averaged to be able to run descriptive analysis for each variable, such as mean, median, and standard deviation. Blank values in SPSS were treated as missing. Data analysis has shown that communication between airports and their passengers on Facebook contributes to an increase of 'total socio-psychological need satisfaction' of passengers (mean: 3.60; median: 3.63) and the respective underlying needs for 'self-determination' (mean: 3.44; median: 3.33), 'competence' (mean: 3.79; median: 4.00), 'meaning' (mean: 3.45; median: 3.50) and 'relatedness' (mean: 3.72; median: 3.75). The results of the Kolmogorov-Smirnov test with the confidence interval set at 95 % indicated that the variables 'self-determination', 'competence', 'meaning' and 'relatedness' do not follow a normal distribution ($p < 0.05$).

As the majority of respondents (71.0%) were male, the Man-Whitney U Test was applied to assess the differences in need satisfaction for males and females to detect potential bias. The analysis found no statistically significant differences between the mean ranks of need satisfaction of males and females except the need for meaning. Females have a higher degree of need satisfaction for meaning as compared to males (mean rank females: 323 / mean rank males: 291; $p = 0.041$). The satisfaction of the human need for *meaning* depends on a transparent communication of value propositions, the fulfilment of promised value propositions and an authentic communication in case of service shortfalls. Regarding leisure travelers, females have been found to play the primary role in the identification stage of holiday choices and are regarded as the gatekeepers of holiday-decision making (Mottiar & Quinn, 2004). Therefore, females are probably more likely to seek information on value propositions on Facebook.

4.4 Test of Postulated Cause-Effect Relationships

In line with empirical convention an alpha level of 0.05 and confidence interval of 95.0 % were set to determine the significance of the statistical tests. As data did not meet the assumptions for using parametric tests, the correlation coefficient Spearman's Rho was used to determine the strength and direction of relationship between the exogenous and endogenous variables. Correlation must not be equated with causation (Bollen & Pearl, 2013, p. 309). However, a correlation coefficient approaching one has been described by Pearson et al. (1897) as the "passage of correlation into causal relationship" (ibid, p. 459). Correlation coefficients were calculated using the non-parametric test Spearman's Rho for two reasons: a non-parametric test is more appropriate when dealing with a small sample size, as is the case for the surveyed airports (n=6) and if data was not normally distributed, as is the case for the variables self-determination, competence, meaning and relatedness. To analyze the degree of separation (or the amount of overlap) between groups, the non-parametric Man-Whitney U Test was applied.

Thesis 1: *The higher the investment of airport organizations in the relationship with passengers, in terms of number and type of human resources assigned to SSP management by the airport, the higher their economic need satisfaction.*

The results of the statistical test provided support for thesis 1. The number of human resources refers to the existence or non-existence of a dedicated Social Media Manager job role. The type of human resources refers to the organizational setting and distinguishes between a departmental and an interdisciplinary approach to Facebook management. The number and type of human resources assigned to Facebook management and the perceived economic need satisfaction of airports was found to be strongly positively related ($r = +0.820$). The associated probability level of $p = 0.046$ showed that such a result is unlikely to have arisen by sampling error. The number and type of human resources assigned to Facebook management is positively associated with the perceived economic need satisfaction of airport organizations. Airports that have set up a new job role 'Social Media Manager' with a dedicated resource and that have chosen an interdisciplinary approach to Facebook management have a higher economic need satisfaction as compared with airports that do not assign a dedicated resource to Facebook management and/or take only a departmental approach.

Thesis 2: *The higher the investment of passengers in the relationship with airport organizations, in terms of the type of interactions initiated by passengers, the higher their socio-psychological need satisfaction.*

The results of the statistical test provided support for thesis 2. The Man-Whitney U-Test was applied to contrast the perceived degree of socio-psychological need satisfaction of passengers performing a certain activity on Facebook and passengers not engaging in the respective activity (*Table 28*).

Table 28. Relationship between socio-psychological need satisfaction of passengers and their activity level on the Facebook pages of major German airports (Man-Whitney U-Test)

Activity	Mean Rank of Socio-Psychological Need Satisfaction Activity Performed	Mean Rank of Socio-Psychological Need Satisfaction Activity not Performed	Sig. Level	N
Read (all respondents)	**313.50**	**n/a**		626
Like posts	347.41	265.14	$p < 0.001$	626
Share posts	348.47	292.54	$p < 0.001$	626
Comment on existing posts	388.93	278.86	$p < 0.001$	626
Write own posts	408.49	300.77	$p < 0.001$	626

Note. Confidence interval: 95.0 %; $p < 0.05$: statistically significant difference between the mean ranks of groups
Source: own construction of author based on research results

The activities are listed starting with the most passive activity (read) to the most active activity (write own posts). From the results of the Man-Whitney U-Test, it was possible to draw the conclusion that there is a significant statistical difference between the mean ranks of analyzed groups:

- reading content on the airports' Facebook page (mean rank of need satisfaction: 313.50, all passengers indicated that they read the content of the airports Facebook page)
- liking content on the airports' Facebook page, i.e. clicking the 'Like-Button' to indicate content as interesting (mean rank of need satisfaction, if activity is performed: 347.41 / if activity is not performed: 265.14, $p < 0.001$)
- sharing content of the airports' Facebook page with others (mean rank of need satisfaction, if activity is performed: 348.47 / if activity is not performed: 292.54, $p < 0.001$)

- commenting on existing content on the airports' Facebook page (mean rank of need satisfaction, if activity is performed: 388.93 / if activity is not performed: 278.86, $p < 0.001$)
- posting own (new) content on the airports' Facebook page (mean rank of need satisfaction, if activity is performed: 408.49 / if activity is not performed: 300.77, $p < 0.001$)

The results also show that the mean rank of socio-psychological need satisfaction increases with an increasing activity level of the passenger on Facebook. *Table 29* suggests satisfiers for socio-psychological needs on SSP to foster customer engagement for economic benefit.

Table 29. Generating satisfiers for human needs on SSP to foster customer engagement for economic benefit

Human Need / Theoretical Concept	Need Satisfier
Self-determination refers to a feeling of autonomy and choicefulness. In an autonomy-supportive social context, the self-determined activity is characterized by integration and the absence of conflict or pressure to cooperate. Events that control the behavior of individuals have been found to negatively well-being (Deci & Ryan, 1987, p. 1025).	Autonomy-supportive communication context: • Communication is not controlled by events – for example deletion of critical user posts • Passengers are free to express their ideas and opinions with regard to the airport and their service
Competence can be described as the motivation to succeed at optimally challenging tasks and being able to achieve expected outcomes. The need to feel competent and challenged is often linked to human actions that are targeted at fostering progress and is associated with feelings of curiosity and interest. Identities are formed during communication with others. Individuals can suffer distortion, if a picture of themselves is mirrored back to them that is too restricted or even demeaning and degrading (Dambmann, 2004, p. 15; Taylor, 1997, p. 98-99).	Competence-supportive communication content: • Communication enables passenger to achieve expected outcomes (fast resolution of service request etc.) • Communication is interesting and opens up new perspectives Competence-supportive communication tonality: • Passenger ideas and suggestions are valued and encouraged • Airport provides positive competence feedback
Relatedness refers to the need to be connected to others. Human beings need affectionate care and a sense of belonging from infancy on. Relatedness is not concerned with outcomes, but rather with a need to belong and to feel cared for (Deci & Ryan, 2000, p. 231).	Personalized communication: • Communication acknowledges unique distinctness of passenger Community building communication: • Communication creates a sense of belongingness – passengers feel like part of a larger airport community
Meaning is provided by values and norms that can be regarded as "a foundation for stable expectations that are efficient because individuals act with greater assurance of the outcome" (Hetcher, 2004, p. 82). SSP facilitate access to peer reviews and recommendations. Both convey a public understanding of the superiority of a product or service relative to its asserted value propositions. By this SSP support orientation with regard to customer buying decisions.	Orientation supportive communication: • Transparent communication of value propositions regarding the airport service portfolio • Fulfillment of promised value propositions • Authentic communication in case of service shortfalls

Source: own construction of author

The satisfaction of the need for self-determination demands for an autonomy-supportive communication context. Meaning that the communication between airports and their passengers is not controlled by events such as the deletion of critical user posts. Passengers must be free to express their ideas and opinions with regard to the airport and their services. Otherwise, the motivation to volunteer information will decrease.

A competence-supportive communication content on SSP is required to generate satisfiers for the human need for competence. Competence-supportive communication not only enables passengers to achieve expected outcomes such as a fast resolution of a service request. It is also interesting since it opens up new perspectives for the passengers. By ensuring a competence-supportive communication tonality and positive competence feedback, passenger ideas and suggestions are valued and further encouraged.

Satisfiers for the human need for relatedness include a personalized communication that acknowledges the unique distinctness of each passenger. Equally important is a community building communication, which creates a sense of belonging, so that passengers feel like part of a larger airport community.

The satisfaction of the human need for meaning depends on an orientation-supportive communication on SSP. This requires a transparent communication of value propositions, the fulfilment of promised value propositions and an authentic communication in case of service shortfalls.

All suggested need satisfiers are not airport-industry specific, but can be applied to any other industry.

Thesis 3: *The higher the socio-psychological need satisfaction of passengers on Facebook, the higher the economic need satisfaction of airport organizations on Facebook.*

The results of the statistical test did provide partial support for thesis 3. The results of correlation analyses indicated statistically significant strong positive relationships between the following variables:

- socio-psychological need for competence and economic need for operational process efficiency ($r = +0.820$, $p = 0.046$)
- socio-psychological need for meaning and economic need for operational process efficiency ($r = +0.924$, $p = 0.008$)

- socio-psychological need for relatedness and economic need for operational process efficiency ($r = +0.907$, $p = 0.013$)

From the perspective of airport organizations, operational process efficiency is currently related to the speed of passenger communication on Facebook. The results of the content analysis have shown that airports consider Facebook as a suitable tool for fast information dissemination and reaction to passenger request in times of crisis, incidents or air traffic irregularities. Mobile Facebook access further facilitates real-time communication on Facebook. The study has shown that 73.3 % of passengers access Facebook with their smartphones. The results of the correlation analysis therefore suggest a link between real-time communication and the satisfaction of the human needs for competence, meaning and relatedness. Real-time communication enables passengers to satisfy their innate need for competence. As compared to traditional communication channels, passengers are able to more quickly achieve expected outcomes on SSP. The need for competence is also associated with a feeling of curiosity and interest, which is satisfied by gaining access to the most recent information of the airport without a time lag. The need for meaning is addressed by the airports by quickly providing information and orientation in uncertain situations. An immediate reaction of airports in uncertain situation to passenger requests also generates satisfiers for the need for relatedness, as passengers feel cared for by the airport. Moreover, real-time communication, though virtual, also approximates human communication.

Correlation analysis also indicated a statistically significant strong negative relationship between the variables: socio-psychological need for self-determination and economic need for customer satisfaction ($r = -0.822$, $p = 0.045$). The satisfaction of the need for self-determination on Facebook requires passengers to feel free to express their ideas and opinions with regard to the airport and their services. While passengers have reported an increase in the need satisfaction for self-determination when communicating with airports on Facebook, the results of the airport expert interviews have revealed that airports do not consider Facebook as a tool for complaint management, have not yet set up the internal processes to manage complaints on Facebook or even do not intent to publicly discuss complaints on Facebook at all. Also, no link exists between the Facebook activities of airports and their respective impact on passenger satisfaction scores. The negative correlation suggests that critical customer feedback on Facebook is not yet considered as an opportunity to improve processes, but that the public visibility of feedback is rather considered as a threat by airport organizations.

Regarding the economic needs for customer insights, innovative strength and customer advocacy no significant correlation with one of the socio-psychological needs has been found. This result supports the findings obtained from content analysis: regarding all three economic needs airport managers have emphasized the lack of representativeness of passenger feedback (too little active passenger participation on Facebook, not all target groups can be reached on Facebook). From the results of the passenger survey, it also became evident that there is still a lack of balance on Facebook regarding for example age, gender or the ratio of business and leisure passengers.

Thesis 4: *The higher the investment of airport organizations in the relationship with passengers, in terms of number of interactions initiated by the airport, the higher their economic need satisfaction.*

The results of the statistical test did not provide support for thesis 4. The relationship between the number of interactions initiated by the airport and the economic need satisfaction of airports was found to be strong positively related ($r = +0.771$). However, the correlation was not significant ($p = 0.072$). The mere quantity of airport interactions on Facebook does not seem to be associated with the economic need satisfaction of airport organizations.

Thesis 5: *The higher the investment of passengers in the relationship with airport organizations, in terms of the number of interactions initiated by passengers, the higher their socio-psychological need satisfaction.*

The results of the statistical test did not provide support for thesis 5. The relationship between the number of interactions initiated by passengers and their perceived socio-psychological need satisfaction was found to be moderately negatively related ($r = -0.486$) and not significant ($p = 0.329$). The mere quantity of interactions initiated by passenger on Facebook is not associated with their perceived socio-psychological need satisfaction.

Thesis 6: *The higher the investment of airport organizations in the relationship with passengers, in terms of number of interactions initiated by the airport, the higher the investment of passengers in the relationship with airport organizations, in terms of the number of interactions initiated by passengers.*

The results of the statistical test provided support for thesis 6. The number of interactions initiated by the airport and the number of interactions initiated by the passengers were found to be strongly positively related ($r = +0.943$). The associated probability level of $p = 0.005$ showed that such a result is unlikely to have arisen by sampling error alone.

The number of interactions initiated by the airport on Facebook is positively associated with the number of interactions initiated by passengers on Facebook. This result is in line with the norms of reciprocity that have been found to govern social relationships.

The results of the theses tests have shown that while airport organizations already derive fruitful benefits from their SSP activities, such as fast information dissemination in times of air traffic disruptions or a facilitated communication of new services to passengers, they are not yet able to tap their full potential. As the SSP activities of airports are anchored in the department of Corporate Communications, classical communication goals have priority over other business process-oriented goals, such passenger-centric innovation management. Due to the strategic focus on communication processes, the contribution of SSP to the economic need satisfaction of airport organizations is currently still limited.

CONCLUSIONS

I. Literature analysis

- The analysis of literature has contributed to an understanding that the advent of SSP causes implications for social capital theory that are not yet considered in the existing body of literature. SSP enable the formation of network ties between ‘customers’ and ‘organizations’ – two focal actors novel to social capital theory. SSP also facilitate the creation and maintenance of network ties, so that the size of an actors’ network may grow substantially leading to a decrease of structural holes in a network configuration.
- As SSP make the dialogue between organizations and their customers visible, researchers are provided with unobtrusive ways for analyzing postulated cause-effect-relationships.
- Further to discussing the implications of SSP for social capital theory, the theoretical review has shown that existing measures of social capital need to be rethought. Network location must not be treated as a measure of social capital when analyzing the relationship between customers and organizations on SSP, as structural holes can easily be spanned with a mouse-click. Embedded resources in social networks must also not be treated as a measure of social capital with regard to relationships maintained on SSP, as the existence of valued network resources per se does not predict that the actor is able to mobilize the resource for his own benefit.

II. Model Development

- Following the notion of social capital as investment in social relations with expected return, the dissertation has proposed a new theoretical model that specifies 'investment' and 'return' for the focal actors 'airport organization' and 'passenger' in the context of SSP.
- The 'investment' in social relations is reflected by the effort invested by an actor in maintaining the relationship, i.e. number of interactions, type of interactions, and assigned human resources of an organization.
- The expected return-on-investment of airport organizations in a relationship with passengers on SSP can be operationalized as economic need satisfaction.
- Adopting a Balanced Scorecard (BSC) / strategy map approach is beneficial to deduce the underlying economic needs and to determine appropriate measures, as the framework considers intangible assets as the ultimate source of organizational performance. Due to the rather internal focus of the BSC / strategy map concept and its lack of taking network ties maintained with the external environment into account, the framework needed to be evolved by the author of this promotional work to include the intangible asset social (relational) capital.
- Based on the development of a generic airport strategy map, five economic needs of airport organizations have been deduced that are satisfied when interacting with passengers on SSP: need for customer insights, need for operational efficiency, need for innovative strength, need for customer advocacy, and need for customer satisfaction.
- The expected return-on-investment of passengers in a relationship with airport organizations on SSP can be operationalized as socio-psychological need satisfaction (well-being), as individuals maintain network ties on SSP to leverage the social support of others to satisfy their fundamental human needs for self-determination, competence, relatedness and meaning.
- The content exchanged in each interaction, i.e. the dialogue between customers and organizations on SSP, contributes to the human need satisfaction of customers and economic need satisfaction of organization.

III. Data Analyses

- Overall, the results of data analyses provided support for the main hypothesis: **H_A: The interaction with passengers on SSP increases the economic need satisfaction of airport organizations, if also the socio-psychological need satisfaction of passengers increases.** Socio-psychological need satisfaction can be considered as a vital source of engagement motivation in an online environment. Only if airports are able to generate need satisfiers they will profit from increased passenger engagement as potential resource of economic need satisfaction. If passenger needs are impaired, those potential resources cannot be harvested and no benefits will be provided for airports.
- The mean rank of socio-psychological need satisfaction of passengers increases with an increasing activity level on Facebook. The study findings support the proposed thesis that a higher investment of passengers in the relationship with airports in terms of type of interactions on SSP is positively associated with their social-psychological need satisfaction.
- The advanced thesis that a higher socio-psychological need satisfaction of passengers is positively associated with the economic need satisfaction of airport organizations was only partially confirmed. While socio-psychological need satisfaction of passengers on SSP is a necessary condition for economic need satisfaction of airports to occur, the study has demonstrated that it is not a sufficient condition. Well-developed dynamic capabilities are required to take advantage of the entrepreneurial opportunities inherent in passenger relationships on SSP**.**
- By setting up corporate profiles on SSP, airport organizations have demonstrated that they are alert to the discovery of new market data and opportunities. However, data gained on SSP are not yet purposefully transformed into organizational action. Passenger insights are not utilized to constantly improve or innovate processes or services and by this adapt to changing market requirements. There is also no linkage between the SSP activities of airports and their operational performance indicators, such as customer satisfaction scores. It can be concluded that the potential for profit generation incorporated in passenger relationships and passenger data gathered on SSP is not yet fully recognized by airports.

- Airports are still at the beginning of a transition process regarding an adaption of existing organizational structures as well as routines and resources. The results of the promotional work have provided support for the thesis that the number and type of human resources assigned to SSP management is positively associated with the economic need satisfaction of airports. Airports that have set up a new job role 'Social Media Manager' with a dedicated resource and that have chosen an interdisciplinary approach to Facebook management have a higher economic need satisfaction as compared with airports that do not assign a dedicated resource to Facebook management and/or take only a departmental approach.
- Against the background of the new restrictive guidelines on 'State Aid to Airports and Airlines' issued by the European Commission in 2014, it will become even more important for airports to constantly adapt to changing market conditions. This might lead to a growing perception of passenger relationships on SSP, i.e. bridging social capital, as a competitively unique resource.
- After completion of this research the author of this promotional work considers that the overall research goal has been attained and all research tasks have been completed.

SUGGESTIONS

- The **German Airport Association** should foster the awareness of its member airports regarding the notion of passenger relationships on SSP, i.e. bridging social capital, as competitively unique resource.
- The **German Airport Association** should invite SSP experts from other industries to its regular member meetings to foster knowledge and best-practice exchange at senior management level.
- The **airports' senior management** should encourage an interdisciplinary approach to identify clear business goals regarding their SSP activities.
- The **airports' senior management** should utilize a Balanced Scorecard / strategy map approach for clarification of business goals regarding their SSP activities based on overall corporate strategy and for defining required internal resources as well as adequate key performance indicators (KPIs).

- The **airports' senior management** should identify the best suitable types of SSP to support the attainment of each business goal. Online social networks, such as Facebook, might be best suited to extend the relationships with passengers beyond a single service episode and to contribute to an emotionalization of the airport experience. However, micro-blogging services, such as Twitter, are likely to better support real-time communication (for example in times of crisis or time critical customer service requests). To evaluate the quality of airport services provided by airport concessionaires, peer review platforms are needed.
- The **airports' senior management** should allocate dedicated human resources to the coordination of their SSP activities in order to incorporate a mechanism for a continuous harmonization of SSP strategy with corporate strategy and for tracking the efficiency and effectiveness of their SSP activities.
- To further increase the activity level of passengers on SSP, all **employees communicating with passengers on SSP** should focus on generating satisfiers for the socio-psychological needs for self-determination, competence, relatedness and meaning.

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7) Social Software Platforms

Facebook: http://www.facebook.com
Flickr: http://www.flickr.com
Google+: http://www.plus.google.com
Instagram: http://www.instagram.com
Tripadvisor: http://www.twitter.com
Twitter: http://www.twitter.com
Yelp: http://www.yelp.com
Youtube: http://www.youtube.com

APPENDICES

Appendices - List of Contents

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I. Blank Copy of Questionnaire for Airport Survey – German Version

Liebe Umfrageteilnehmerin, lieber Umfrageteilnehmer,

vielen Dank für Ihre Unterstützung dieser wissenschaftlichen Studie im Rahmen meines berufsbegleitenden Promotionsvorhabens an der Universität Riga in Kooperation mit der Fachhochschule Kufstein. Die Beantwortung des Fragebogens dauert ca. 15 Minuten. Gerne würde ich alle Antworten im Rahmen eines persönlichen Termins in Ihrem Hause anschließend gemeinsam mit Ihnen durchsprechen. Der Zeitbedarf für diesen Termin beträgt max. 60 Minuten.

Ziel der *Expertenbefragung* ist es zu ermitteln,

- wie Flughäfen den Nutzen von Facebook im Vergleich zu traditionellen Kommunikationskanälen einschätzen (z.B. Call-Center, Website) mit Bezug auf das Erreichen ökonomischer Ziele.
- wie die Facebook-Aktivitäten an den Flughäfen aktuell organisiert sind.
- welche Herausforderungen aus Sicht der Flughäfen bei einem Einsatz des Kommunikationskanals Facebook bestehen.

Die Studie richtet sich an deutsche Flughäfen mit einem jährlichen Passagiervolumen > 5 Mio. Passagiere, die neben der Beantwortung des Fragebogens ebenfalls bereit sind, einen Link zu einer Online-Passagier-Umfrage auf Ihrer Facebook Seite zu posten bzw. durch mich posten zu lassen. Ziel der *Online-Passagier-Umfrage* ist es zu ermitteln,

- wie Passagiere den Nutzen von Facebook im Vergleich zu traditionellen Kommunikationskanälen von Flughäfen einschätzen in Bezug auf die Befriedigung ihrer sozio-psychologischen Grundbedürfnisse.

Der Fragebogen zur Online-Passagier-Befragung ist zu Ihrer Information als Anlage beigefügt.

Nach Abschluss der beiden Befragungen werden Ihnen selbstverständlich die Ergebnisse für Ihren Flughafen zur Verfügung gestellt. Ergebnisse der weiteren Flughäfen, die an dieser Studie teilnehmen, werden anonymisiert dargestellt. Analog werden die Ergebnisse Ihres Flughafens gegenüber den weiteren Teilnehmern der Studie ebenfalls anonymisiert.

Herzlichen Dank für Ihre Zeit und Unterstützung!

Marion Tenge
Leiterin Strategie und Beteiligungsmanagement
Flughafen Hannover-Langenhagen GmbH

Tel +49 (0)511 977-1596
Fax +49 (0)511 977-1430
Mobil + 49 (0) 173 9971509
E-Mail: m.tenge@hannover-airport.de

Name des Flughafens:	
Name des Interviewpartners:	
Funktion des Interviewpartners / Einordnung in Organigramm:	

I. Basisdaten

1. Wie ist die Anteilseignerstruktur Ihres Flughafens?
Bitte wählen Sie eine Antwort aus.

Ausschließlich öffentliche Anteilseigner	☐	Private und öffentliche Anteilseigner	☐

2. Wie hoch war das Gesamtpassagiervolumen Ihres Flughafens in 2011?
Bitte wählen Sie eine Antwort aus.

> 5 Mio bis <= 10 Mio.	☐	> 20 Mio.	☐
> 10 Mio. bis <= 20 Mio.	☐		

II. Facebook-Nutzung

3. Seit wann betreiben Sie eine eigene Facebook-Seite?
Bitte wählen Sie eine Antwort aus.

Seit weniger als 1 Jahr.	☐	Seit über 2 Jahren	☐
Zwischen 1 bis 2 Jahren.	☐		

4. Wie viele „Fans“ haben Sie auf Facebook?
Bitte geben Sie die Anzahl der Fans zum Stichtag 31.10.2012 an.
(ermittelbar z.B. über http://www.allfacebook.de/tracking/hannoverairport)

5. Die folgenden Aussagen beziehen sich auf mögliche Gründe, warum Flughäfen auf Facebook für ihre Passagiere präsent sind.
Bitte wählen Sie alle Antworten aus, die für Ihren Flughafen zutreffen.

Unser Flughafen ist auf Facebook für Passagiere präsent, ...	
… um Passagiere über unseren Flughafen und unser Service-Portfolio zu informieren.	☐
…um Informationen über Bedürfnisse, Meinungen und Anforderungen der Passagiere zu erhalten.	☐
…um die Service-Qualität unseres Flughafens zu verbessern.	☐
…um die Flughafenprozesseffizienz durch Echtzeitkommunikation mit den Passagieren zu erhöhen, z.B. Krisenmanagement, Beschwerdemanagement.	☐
…um Passagiere in Innovationsprozesse einzubeziehen, z.B. Generierung und Bewertung von Ideen für neue Service-Angebote des Flughafens.	☐
… um positive Mundpropaganda über den Flughafen zu generieren (word-of-mouth).	☐
…um die Bindung der Passagiere an den Flughafen zu erhöhen.	☐
…weil unsere Passagiere heutzutage erwarten, dass Flughäfen auf Facebook vertreten sind.	☐
Sonstige Gründe (bitte ergänzen):	☐

6. Die folgenden Fragen beziehen sich auf die Facebook-Aktivitäten des Flughafens auf der eigenen Facebook-Seite.
Bitte geben Sie für jede genannte Aktivität die durchschnittliche Anzahl pro Woche an (Woche = Montag bis Sonntag). Referenzzeitraum: 01.01.-31.10.2012.

Durchschnittliche Anzahl der veröffentlichten Facebook Posts inklusive Fotos und Videos pro Woche	
Durchschnittliche Anzahl der veröffentlichten Facebook Comments pro Woche, z. B. Antworten auf Fragen.	

7. Die folgenden Fragen beziehen sich auf die Aktivitäten der Facebook-Fans des Flughafens auf der Facebook-Seite des Flughafens.
Bitte geben Sie für jede genannte Aktivität die durchschnittliche Anzahl pro Woche an (Woche = Montag bis Sonntag). Referenzzeitraum: 01.01.-31.10.2012.

Durchschnittliche Anzahl Fan Posts pro Woche	
Durchschnittliche Anzahl Fan Comments pro Woche	
Durchschnittliche Anzahl Fan Likes pro Woche	
Durchschnittliche Anzahl Fan Shares pro Woche	

8. Bewertung von Facebook im Vergleich zu bisherigen, traditionellen Kommunikationskanälen des Flughafens.
Bitte geben Sie für jede Aussage an, inwiefern Sie dieser zustimmen.

	Stimme gar nicht zu	Stimme eher nicht zu	Unent-schieden	Stimme eher zu	Stimme voll zu
Auf Facebook erhalten wir tiefere Einblicke in die Bedürfnisse, Anforderungen und Meinungen unserer Passagiere. *(CIN_1)*	☐	☐	☐	☐	☐
Facebook hilft uns besser zu verstehen, an welchen Stellen die durch den Passagier wahrgenommene Service-Qualität des Flughafens von den Erwartungen der Passagiere abweicht. *(CIN_2)*	☐	☐	☐	☐	☐
Facebook macht besser transparent, welche Investitionen in die Service-Qualität des Flughafens mit Priorität vorgenommen werden müssen, um die Passagierzufriedenheit zu steigern. *(CIN_3)*	☐	☐	☐	☐	☐

(Fortsetzung Tabelle)

	Stimme gar nicht zu	Stimme eher nicht zu	Unent-schieden	Stimme eher zu	Stimme voll zu
Facebook beschleunigt die Verteilung / Verbreitung von Informationen (z.B. Krisenmanagement). *(OEF_1)*	☐	☐	☐	☐	☐
Facebook reduziert die Antwortzeit auf Passagier-Anfragen. *(OEF_2)*	☐	☐	☐	☐	☐
Auf Facebook können wir die Erwartungen der Passagiere an die Service-Qualität des Flughafens einfacher managen. *(OEF_3)*	☐	☐	☐	☐	☐
Facebook vereinfacht Beschwerdemanagement-Prozesse. *(OEF_4)*	☐	☐	☐	☐	☐
Facebook ermöglicht es uns, veränderte Passagiererwartungen/-anforderungen schneller zu erkennen. *(INS_1)*	☐	☐	☐	☐	☐
Auf Facebook erhalten wir sofortiges Feedback zu neuen Service-Ideen. *(INS_2)*	☐	☐	☐	☐	☐
Facebook vereinfacht die Kommunikation neuer Service-Leistungen an den Passagier. *(INS_3)*	☐	☐	☐	☐	☐
Facebook hat zu einem Anstieg positiver Mundpropaganda (word-of-mouth) über den Flughafen geführt. *(CAD_1)*	☐	☐	☐	☐	☐
Facebook erhöht die Reichweite positiver Mundpropaganda über den Flughafen. *(CAD_2)*	☐	☐	☐	☐	☐
Seit wir Facebook nutzen, haben sich unsere Kundenzufriedenheitswerte in den Passagierbefragungen verbessert. *(CSA_1)*	☐	☐	☐	☐	☐

Abschließend einige Frage zur Organisation der Facebook-Aktivitäten an Ihrem Flughafen, den Herausforderungen von Facebook als Kommunikationsinstrument für die Passagierkommunikation sowie zu Ihrer Einschätzung der zukünftige Bedeutung des Kommunikationskanals.

9. Wo sind die Facebook-Aktivitäten an Ihrem Flughafen angesiedelt und mit welcher Ressourcenausstattung?
Bitte stichpunktartig beschreiben.

10. Welche wesentlichen Herausforderungen sehen Sie für Flughäfen bezüglich der Nutzung von Facebook als Kommunikationsinstrument für die Passagierkommunikation?
Bitte stichpunktartig beschreiben.

11. Wie schätzen Sie die zukünftige Bedeutung von Facebook als Kommunikationskanal für Ihren Flughafen ein (abnehmend / zunehmend / gleichbleibend)?
Bitte stichpunktartig beschreiben.

Vielen Dank für Ihre Teilnahme und Ihre Zeit!

II. Blank Copy of Questionnaire for Airport Survey - English Version

Dear study participant,

thank you very much for supporting my research study I am conducting for my dissertation at the University of Latvia in cooperation with the University of Applied Sciences Kufstein, Austria. The time requirement for questionnaire administration is approximately 15 minutes. I would also appreciate very much the opportunity to personally discuss your responses with you in the form of a face-to-face interview (max. 60 minutes).

The goal of the expert survey is to assess:

- …how airports evaluate the contribution of Facebook to their economic goal attainment as compared to traditional communication channels, such as call-center or website).
- …how the Facebook activities of airports are currently organized.
- …what challenges arise from the perspective of airports when using Facebook as a communication channel with passengers.

The research study focuses on major German airports with an annual passenger volume of > 5 million passengers. The participating airports will agree to also publish a link to an online passenger survey on their corporate Facebook page. Goal of the online passenger survey is to assess:

- …how passengers evaluate the contribution of Facebook to their perceived socio-psychological need satisfaction as compared to traditional communication channels of airports.

Please find the full passenger questionnaire attached.

Upon study completion each participating airport will receive a report of the research results, while survey results are only reported in the aggregate to safeguard the anonymity of the participants.

Thank you very much for dedicating time in study participation!

Marion Tenge
Director Strategy and Corporate Investments
Flughafen Hannover-Langenhagen GmbH

Tel +49 (0)511 977-1596
Fax +49 (0)511 977-1430
Mobil + 49 (0) 173 9971509
E-Mail: m.tenge@hannover-airport.de

Name of airport:	
Name of expert:	
Job role of expert / hierarchical position:	

I. Basic Data

1. Shareholder structure of airport
Single choice.

Public ownership	☐	Private-public venture	☐

2. Total passenger volume in 2011
Single choice.

> 5 Mio to <= 10 Mio.	☐	> 20 Mio.	☐
> 10 Mio. to <= 20 Mio.	☐		

II. Facebook-Usage

3. Years since launch of airports' Facebook page
Single choice.

Less than 1 year.	☐	More than 2 years	☐
1 to 2 years.	☐		

4. Number of the airports' Facebook „Fans"
Please indicate the total number of fans per 31.10.2012.
(see for example http://www.allfacebook.de/tracking/hannoverairport)

5. Please indicate the reasons for maintaining a corporate Facebook page for interacting with passengers.
Multiple choice.

The airport maintains a corporate Facebook page, ...	
… to inform passengers about the airport and the airport service portfolio.	☐
… to gain information on needs, requirements and opinions of passengers.	☐
…to improve the service quality of the airport.	☐
… to improve process efficiency through real-time communication with the passenger, for example crisis management, complaint management.	☐
…to involve passengers in innovation processes, for example idea generation and evaluation for new airport services.	☐
… to generate positive WOM about the airport.	☐
…to increase passenger loyalty.	☐
…because passengers expect airports nowadays to be present on Facebook.	☐
Other reasons (please indicate):	☐

6. Activities of the airport on the corporate Facebook page
For each activity please indicate the average frequency per week (week = Monday to Sunday). Time period of reference: 01.01.-31.10.2012.

Average number of airport posts per week including photos and videos.	
Average number of airport comments per week, for example responses to passenger inquiries.	

7. Activities of passengers (fans) on the corporate Facebook page
For each activity please indicate the average frequency per week (week = Monday to Sunday). Time period of reference: 01.01.-31.10.2012.

Average number of fan posts per week	
Average number of fan comments per week	
Average number of fan likes per week	
Average number of fan shares per week	

8. Evaluation of Facebook as compared to traditional communication channels of the airport (e-mail, call-center, website etc.)
Please indicate to what extend you agree / disagree with each statement.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
On Facebook, we gain deeper insights into customer needs, requirements and attitudes *(CIN_1)*	☐	☐	☐	☐	☐
Facebook helps us to better determine where the customers' perceived service quality differs from the expected service quality. *(CIN_2)*	☐	☐	☐	☐	☐
On Facebook we are able to better detect priority areas for service quality investment spendings with influence on customer satisfaction (root-cause detection). *(CIN_3)*	☐	☐	☐	☐	☐

(table continued)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Facebook speeds up information dissemination (e.g. crisis management). *(OEF_1)*	☐	☐	☐	☐	☐
Facebook accounts for a reduced response time to passenger inquiries/questions. *(OEF_2)*	☐	☐	☐	☐	☐
Facebook facilitates management of passengers service quality expectations. *(OEF_3)*	☐	☐	☐	☐	☐
Facebook facilitates complaint handling. *(OEF_4)*	☐	☐	☐	☐	☐
Since using Facebook, we are able to notice shifts in customer expectations more timely. *(INS_1)*	☐	☐	☐	☐	☐
On Facebook, we get instant customer feedback on new service ideas. *(INS_2)*	☐	☐	☐	☐	☐
Facebook facilitates the introduction of new services to the passengers (uploading). *(INS_3)*	☐	☐	☐	☐	☐
We noticed an increase in the amount of positive word-of-mouth since using Facebook (in traditional media and social media). *(CAD_1)*	☐	☐	☐	☐	☐
Since using Facebook, the reach of positive word-of-mouth increased (traditional media and/or social media). *(CAD_2)*	☐	☐	☐	☐	☐
Since using Facebook our passenger satisfaction scores improved (basis: passenger satisfaction surveys of airport – ACI survey or own survey). *(CSA_1)*	☐	☐	☐	☐	☐

9. Responsible department for Facebook management and assigned human resources (part-time, full-time, interdisciplinary)
Please briefly describe (bullet points).

10. Major challenges regarding the passenger communication via Facebook?
Please briefly describe (bullet points).

11. Prediction of the future importance of Facebook (stable, increasing, decreasing)?
Please briefly describe (bullet points).

Thank you very much for study participation!

III. Blank Copy of Questionnaire for Passenger Survey – German Version

Liebe Umfrageteilnehmerin, lieber Umfrageteilnehmer,

vielen Dank für Ihre Unterstützung dieser wissenschaftlichen Studie. Ziel der Umfrage ist es zu ermitteln, wie Sie die Kommunikation mit Flughäfen über Facebook im Vergleich zu den bisherigen Kommunikationskanälen einschätzen (z.B. Call-Center, E-Mail, Website). Unter allen Teilnehmern wird ein iPod Shuffle verlost. Die Studie richtet sich an Personen, die auf Facebook „Fan" einer der folgenden Flughäfen sind und mindestens einmal im Jahr eine Flugreise von dort aus unternehmen:

- Flughafen Düsseldorf
- Flughafen Frankfurt
- Flughafen Hamburg
- Flughafen Hannover
- Flughafen München
- Flughafen Stuttgart

Die Umfrage dauert ca. 5-7 Minuten und wird selbstverständlich streng vertraulich und anonym behandelt. Zur Teilnahme an der Verlosung für den iPod Shuffle tragen Sie bitte optional Ihre E-Mail-Adresse am Ende der Umfrage ein. Ihre E-Mail-Adresse wird ausschließlich zum Zweck der Gewinnbenachrichtigung verwendet.

Herzlichen Dank für Ihre Zeit und Unterstützung.
Marion Tenge (stud.marion.tenge@fh-kufstein.ac.at)
Fachhochschule Kufstein / Universität Riga

1. Von welchem der u.g. Flughäfen sind Sie Fan auf Facebook?
Bitte wählen Sie eine Antwort aus. Sofern Sie Fan von mehreren Flughäfen sind, entscheiden Sie sich bitte für den Flughafen, von dem Sie am häufigsten abfliegen.

Flughafen Düsseldorf	☐
Flughafen Frankfurt	☐
Flughafen Hamburg	☐
Flughafen Hannover	☐
Flughafen München	☐
Flughafen Stuttgart	☐
Keiner der o.g. Flughäfen*	☐

***Abbruchseite**
Leider gehören Sie nicht zu der Zielgruppe, die wir mit dieser Befragung ansprechen möchten, da Sie kein „Fan" der Flughäfen [1-n] auf Facebook sind. Wir danken Ihnen trotzdem sehr für Ihr Interesse und Ihre Motivation an der Umfrage teilzunehmen.

2. Wie viele Flugreisen unternehmen Sie in der Regel pro Jahr ab diesem Flughafen?
Bitte wählen Sie eine Antwort aus.

Weniger als 1*	☐	3 bis 4	☐
1 bis 2	☐	5 oder mehr	☐

***Abbruchseite**
Leider gehören Sie nicht zu der Zielgruppe, die wir mit dieser Befragung ansprechen möchten, da Sie weniger als einmal pro Jahr eine Flugreise ab dem ausgewählten Flughafen durchführen. Wir danken Ihnen trotzdem sehr für Ihr Interesse und Ihre Motivation an der Umfrage teilzunehmen.

3. Was ist der überwiegende Anlass Ihrer Flugreisen?
Bitte wählen Sie eine Antwort aus.

Überwiegend geschäftlich	☐	Etwa zu gleichen Teilen privat und geschäftlich	☐
Überwiegend privat	☐		

4. Wie häufig nutzen Sie Facebook?
Bitte wählen Sie eine Antwort aus

Mehrmals täglich	☐
Einmal täglich	☐
Mehrmals pro Woche	☐
Einmal pro Woche	☐
Weniger als einmal pro Woche	☐

5. Die folgenden Fragen beziehen sich auf die Rolle von Facebook in Ihrem Alltag
Inwiefern stimmen Sie den folgenden Aussagen zu?

	Stimme gar nicht zu	Stimme eher nicht zu	Unent-schieden	Stimme eher zu	Stimme voll zu
Facebook ist zu einem festen Bestandteil meines Alltags geworden.	☐	☐	☐	☐	☐
Ich fühle mich von der Welt abgeschnitten, wenn ich mich längere Zeit nicht bei Facebook eingelogged habe.	☐	☐	☐	☐	☐
Ich fände es schade, wenn es Facebook nicht mehr geben würde.	☐	☐	☐	☐	☐

5. Welches Endgerät nutzen Sie, um sich auf Facebook einzuloggen?
Mehrfachnennung möglich

Computer	☐	Smart Phone	☐
Laptop	☐	Tablet PC (z.B. iPad)	☐

6. Welche Aktivitäten führen Sie auf der Facebook-Seite des Flughafens durch?
Bitte wählen Sie alle Antworten aus, die auf Sie zutreffen

Facebook Posts des Flughafens lesen, Fotos und Videos anschauen.	☐	Facebook Posts des Flughafens, Fotos oder Videos kommentieren.	☐
Facebook Posts des Flughafens „liken“, d.h. den Like-Button klicken, um zu zeigen, dass mir ein Post gefällt.	☐	Eigene Posts an die Timeline des Flughafens schreiben.	☐
Interessante Facebook Posts, Fotos oder Videos des Flughafens mit meinen Facebook-Freunden teilen.	☐		

7. Bewertung von Facebook im Vergleich zu bisherigen, traditionellen Kommunikationskanälen (z.B. Call-Center, Website) des Flughafens.
Bitte geben Sie für jede Aussage an, inwiefern Sie dieser zustimmen.

	Stimme gar nicht zu	Stimme eher nicht zu	Unent-schieden	Stimme eher zu	Stimme voll zu
Auf Facebook fühle ich mich freier, meine Ideen und Meinung zum Flughafen und dessen Service-Angebot ausdrücken. *(SDT_1)*	☐	☐	☐	☐	☐
Auf Facebook berücksichtigt der Flughafen meine Kritik bzw. die Kritik anderer Passagieren besser. *(SDT_2)*	☐	☐	☐	☐	☐
Auf Facebook hört der Flughafen meiner Meinung und der Meinung anderer Passagiere aufmerksamer zu. *(SDT_3)*	☐	☐	☐	☐	☐
Auf Facebook erfahre ich besser neue, interessante Dinge über den Flughafen. *(COM_1)*	☐	☐	☐	☐	☐
Auf Facebook erhalte ich bzw. andere Passagiere meistens schneller eine zufriedenstellende Antwort auf Rückfragen. *(COM_2)*	☐	☐	☐	☐	☐
Auf Facebook werden Ideen und Anregungen von mir bzw. anderen Passagieren besser wertgeschätzt. *(COM_3)*	☐	☐	☐	☐	☐

	Stimme gar nicht zu	Stimme eher nicht zu	Unent-schieden	Stimme eher zu	Stimme voll zu
Auf Facebook werde ich besser darüber informiert, welche Dienstleistungen, Geschäfte, Restaurants etc. ich am Flughafen erwarten kann. *(MEA_1)*	☐	☐	☐	☐	☐
Auf Facebook erhalte ich authentischere Informationen über das Dienstleistungsportfolio und die Service Qualität des Flughafens. *(MEA_2)*	☐	☐	☐	☐	☐
Auf Facebook erhalte ich bessere Informationen darüber, warum ich den Flughafen als meinen Abflughafen wählen sollte. *(MEA_3)*	☐	☐	☐	☐	☐
Facebook macht besser transparent, ob die Werbeversprechen des Flughafens mit den tatsächlichen Erfahrungen der Passagiere überein stimmen. *(MEA_4)*	☐	☐	☐	☐	☐
Auf Facebook kümmert sich der Flughafen besser um mich. *(REL_1)*	☐	☐	☐	☐	☐
Auf Facebook fühle ich mich dem Flughafen näher. *(REL_2)*	☐	☐	☐	☐	☐
Auf Facebook fühle ich mich mehr als ein Teil der Flughafen-Community. *(REL_3)*	☐	☐	☐	☐	☐

Zum Ende der Befragung abschließend einige kurze Fragen zu Ihrer Person:

8. Wie alt sind Sie?
Bitte wählen Sie eine Antwort aus.

Bis 17 Jahre	☐	45 bis 54 Jahre	☐
18 bis 24 Jahre	☐	55 bis 64 Jahre	☐
25 bis 34 Jahre	☐	65 Jahre oder älter	☐
35 bis 44 Jahre	☐		

9. Welches ist Ihr Geschlecht?
Bitte wählen Sie eine Antwort aus.

Weiblich	☐	Männlich	☐

10. Wie viele Personen wohnen in Ihrem Haushalt?
Bitte wählen Sie eine Antwort aus.

Single-Haushalt	☐	3 Personen oder mehr	☐
2 Personen	☐		

Wenn Sie an der Verlosung des iPod teilnehmen möchten, teilen Sie uns bitte an dieser Stelle Ihre E-Mail-Adresse mit:

Ihre E-Mail-Adresse: *(Textfeld, manuelle Eingabe)*

Selbstverständlich behandeln wir Ihre Angaben anonym und nutzen Ihre E-Mail-Adresse für keine weiteren Zwecke.

Die Gewinnbenachrichtigung erfolgt im April.

Vielen Dank für Ihre Teilnahme!

IV. Blank Copy of Questionnaire for Passenger Survey – English Version

Dear study participant,

thank you very much for supporting this research study. The goal of the online survey is to assess how passengers evaluate the communication with airports via Facebook as compared to traditional communication channels (for example call-center, e-mail, website). All participants will have the chance to participate in the raffle of an iPod Shuffle. The research study is targeted at individuals who are connected to one of following airports on Facebook and who take at least one air trip per year from this airport:

- Dusseldorf Airport
- Frankfurt Airport
- Hamburg Airport
- Hannover Airport
- Munich Airport
- Stuttgart Airport

Please reserve approximately 5-7 minutes for the administration of the questionaire. All data will be treated as confidential and is only used for the purpose of the study. To participate in the raffle of the iPod Shuffle, please enter your e-mail address at the end of the survey.

Thank you very much for dedicating time in study participation!
Marion Tenge (stud.marion.tenge@fh-kufstein.ac.at)
University of Applied Sciences Kufstein / University of Latvia, Riga

1. To which of the following airports are you connected on Facebook?
Please select one airport. If you are connected to several airports on Facebook, please select the airport form which you are departing most frequently.

Dusseldorf Airport	☐
Frankfurt Airport	☐
Hamburg Airport	☐
Hannover Airport	☐
Munich Airport	☐
Stuttgart Airport	☐
None of the above airports*	☐

***Exit Page**
Unfortunately you are not included in the target group of this survey, as you are not connected to one of the mentioned airports on Facebook. However, we are grateful for your interest and motivation in study participation.

2. How many air trips per year are you taking from this airport?
Please select one answer.

Less than 1*	☐	3 to 4	☐
1 to 2	☐	5 or more	☐

***Exit Page**
Unfortunately you are not included in the target group of this survey, as you indicated that you are taking less than 1 air trip per year from the selected airport. However, we are grateful for your interest and motivation in study participation.

3. What is your purpose of travel from the selected airport?
Please select one answer.

Predominantly business	☐	Equal share of business and leisure trips	☐
Predominantly leisure	☐		

4. How frequently to you access Facebook?
Please select one answer.

Several times per day	☐
Once per day	☐
Several times per week	☐
Once per week	☐
Less than once per week	☐

5. The next questions are related to the role of Facebook in your everyday life
Please indicate to what extend you agree or disagree with a given statement.

	Strongly disagree	Some-what disagree	Neither agree nor disagree	Some-what agree	Strongly agree
Facebook has become part of my daily routine.	☐	☐	☐	☐	☐
I feel disconnected from the world, if I have not logged into Facebook for a while.	☐	☐	☐	☐	☐
I would be sorry, if Facebook shut down.	☐	☐	☐	☐	☐

5. Which devices do you use to access Facebook?
Multiple choice possible.

Computer	☐	Smart phone	☐
Laptop	☐	Tablet PC (for example iPad)	☐

6. Please indicate your activities on the coporate Facebook page of the airport
Multiple choice possible.

Read Facebook posts of the airport, watch videos and photos	☐	Comment on Facebook posts, videos and photos of the airport	☐
‚Like' Facebook posts of the airport, i.e. click the 'like' button to indicate content as interesting	☐	Write own posts on the Facebook timeline of the airport	☐
Share interesting Facebook posts, photos and videos of the airport with my Facebook friends.	☐		

7. Evaluation of Facebook compared to the traditional communication channels of the airport (for example call-center, website)

Please indicate to what extend you agree or disagree with a given statement

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
On Facebook, I am more free to express my ideas and opinions with regard to the airport and their services. *(SDT_1)*	☐	☐	☐	☐	☐
On Facebook, the airport takes my feelings better into consideration *(SDT_2)*	☐	☐	☐	☐	☐
On Facebook, the airport more attentively listens to my opinion and the opinion of fellow passengers. *(SDT_3)*	☐	☐	☐	☐	☐
Facebook helps me to learn better about new and interesting things with regard to the airport. *(COM_1)*	☐	☐	☐	☐	☐
Most times, I am able to more easily receive all the important information I am looking for on the airports' Facebook page. *(COM_2)*	☐	☐	☐	☐	☐
On Facebook my ideas and suggestions and those of fellow passengers are better valued. *(COM_3)*	☐	☐	☐	☐	☐

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
On Facebook I get better information about which services, shops etc. to expect at the airport. *(MEA_1)*	☐	☐	☐	☐	☐
On Facebook, I get more authentic information on the airport service portfolio and service quality *(MEA_2)*	☐	☐	☐	☐	☐
On Facebook, I get better information why I should choose the airport as my departure airport *(MEA_3)*	☐	☐	☐	☐	☐
Facebook will reveal better, if there are inconsistencies between advertising promises and the real airport experience of passengers. *(MEA_4)*	☐	☐	☐	☐	☐
On Facebook I feel better cared about. *(REL_1)*	☐	☐	☐	☐	☐
On Facebook I feel closer to the airport. *(REL_2)*	☐	☐	☐	☐	☐
On Facebook I feel more like part of the airport community. *(REL_3)*	☐	☐	☐	☐	☐

8. How old are you?
Single choice.

17 years or younger	☐	45 to 54 years	☐
18 to 24 years	☐	55 to 64 years	☐
25 to 34 years	☐	65 years or older	☐
35 to 44 years	☐		

9. What is your gender?
Single choice.

female	☐	male	☐

10. How many persons live in your household?
Single choice.

Only me	☐	3 persons or more	☐
2 persons	☐		

Please indicate your e-mail address, if you would like to participate in the raffle of the iPod shuffle.

E-mail address: *(free text)*

Please note that the anonymity of your data will be safeguarded at any time and that data will only be used for evaluation of the research study, not for any other purposes.

The winner of the iPod shuffle will be notified in April.

Thank you very much for study participation!

V. List of Individuals Participating in Pre-Test of Questionnaires

Table 1: List of Experts and Passengers for Pre-Test

Name	Company	Position	Questionnaire
Birk, Alexander	Best Western Hotels AG	Director E-Commerce	Airport
Buttenberg, Katharina	Experteer GmbH	Head of Customer Marketing and Brand Europe & US	Airport
Rose, Olaf	ODIEGO AG (formerly: Opodo.com)	Head of Marketing (Opodo, eDreams, GO Voyages, Travellink)	Airport
Schulzendorff, Andrea	TUI AG	Senior Manager Sales Marketing TUI Hotels & Resorts	Airport
Stratmann, Tanja	Axel Springer AG	Deputy Head of New Media AUTO, COMPUTER & SPORT / Head of Projects & New Platforms,	Airport
Haufer, Birgit	n/a	n/a	Passenger
Hinz, Michael	n/a	n/a	Passenger
Schaarschmidt, Tim	n/a	n/a	Passenger
Le Thiec, Fabienne	n/a	n/a	Passenger
Von dem Bruch, Ulrich	n/a	n/a	Passenger

Source: compiled by author

VI. List of Airport Experts for Personal Interviews

Table 2: List of Experts by Airport

Airport	Name	Position
Düsseldorf	Kötter, Thomas	Head of Corporate Communications
Frankfurt	Schwindling, Anne; Tuncay, Jasmin	Head of Corporate Communications Marketing Manager Social Media
Hamburg	Harder, Susanne (completion of written questionnaire); Tost, Torben (personal interview)	Head of Corporate Communications; Manger Corporate Communications
Hannover	Jacobsen, Sönke	Head of Corporate Communications
Munich	Schindelbeck, Helmut; Brandl, Markus	Head of Online Media Manager Corporate Communications
Stuttgart	Lörtz, Nicola	Head of Corporate Communications

Source: compiled by author

VII. Key Performance Indicators of the German Airports 2009-2012

Table 3: Key Performance Indicators of the German Airports 2009-2012

Airport	Key Performance Indicator	2009	2010	2011	2012	Average profit / loss per passenger 2009-2012 in €	Passenger Growth 2009 / 2012
Berlin (Tegel/ Schönfeld)	Passenger volumes (Tsd)	20.977	22.324	24.034	25.261		20,4%
	EAT (T€)	862	4.054	-74.537	n/a		
	Profit/loss per passenger (T€)	0,0	0,2	-3,1	n/a	-1,0	
Bremen	Passenger volumes (Tsd)	2.613	2.447	2.560	2.676		2,4%
	EAT (T€)	145	-807	2.100	-2.863		
	Profit/loss per passenger (T€)	0,1	-0,3	0,8	-1,1	-0,1	
Dortmund	Passenger volumes (Tsd)	1.717	1.748	1.918	1.902		10,8%
	EAT (T€)	-23.223	-19.778	-19.493	-18.499		
	Profit/loss per passenger (€)	-13,5	-11,3	-10,2	-9,7	-11,2	
Dresden	Passenger volumes (Tsd)	1.719	1.843	1.918	1.902		10,6%
	EAT (T€)	-10.930	-15.235	-7.823	-11.235		
	Profit/loss per passenger (T€)	-6,4	-8,3	-4,1	-5,9	-6,2	
Dusseldorf	Passenger volumes (Tsd)	17.793	18.988	20.339	20.833		17,1%
	EAT (T€)	18.412	7.557	39.864	30.770		
	Profit/loss per passenger (T€)	1,0	0,4	2,0	1,5	1,2	
Erfurt	Passenger volumes (Tsd)	270	322	281	184		-31,9%
	EAT (T€)	-2.771	-3.895	-3.618	-4.203		
	Profit/loss per passenger (T€)	-10,3	-12,1	-12,9	-22,8	-14,5	
Frankfurt	Passenger volumes (Tsd)	50.933	53.009	56.436	57.520		12,9%
	EAT (T€)	151.900	271.500	250.800	251.600		
	Profit/loss per passenger (T€)	3,0	5,1	4,4	4,4	4,2	
Friedrichs-hafen	Passenger volumes (Tsd)	578	591	572	545		-5,7%
	EAT (T€)	-2.766	-2.659	-2.663	n/a		
	Profit/loss per passenger (T€)	-4,8	-4,5	-4,7	n/a	-4,6	

Table 3 (continued): Key Performance Indicators of the German Airports 2009-2012

Airport	Key Performance Indicator	2009	2010	2011	2012	Average profit / loss per passenger 2009-2012 in €	Passenger Growth 2009 / 2012
Hahn	Passenger volumes (Tsd)	3.794	3.493	2.894	2.791		-26,4%
	EAT (T€)	-7.114	-10.886	-10.626	-5.678		
	Profit/loss per passenger (T€)	-1,9	-3,1	-3,7	-2,0	-2,7	
Hamburg	Passenger volumes (Tsd)	12.229	12.963	13.558	13.697		12,0%
	EAT (T€)	35.034	42.567	49.918	39.711		
	Profit/loss per passenger (T€)	2,9	3,3	3,7	2,9	3,2	
Hannover	Passenger volumes (Tsd)	4.970	5.061	5.340	5.287		6,4%
	EAT (T€)	2.331	-5.747	2.768	-2.513		
	Profit/loss per passenger (T€)	0,5	-1,1	0,5	-0,5	-0,2	
Karlruhe/ Baden-Baden	Passenger volumes (Tsd)	1.088	1.177	1.114	1.287		18,3%
	EAT (T€)	-1.779	892	-3.752	n/a		
	Profit/loss per passenger (T€)	-1,6	0,8	-3,4	n/a	-1,4	
Cologne/ Bonn	Passenger volumes (Tsd)	9.742	9.852	9.623	9.280		-4,7%
	EAT (T€)	-4.761	15.037	10.013	4.008		
	Profit/loss per passenger (T€)	-0,5	1,5	1,0	0,4	0,6	
Leipzig/Halle	Passenger volumes (Tsd)	2.411	2.348	2.263	2.279		-5,5%
	EAT (T€)	-40.194	-73.098	-66.423	-73.876		
	Profit/loss per passenger (T€)	-16,7	-31,1	-29,4	-32,4	-27,4	
Munich	Passenger volumes (Tsd)	32.681	34.721	37.763	38.361		17,4%
	EAT (T€)	6.727	4.909	197.119	94.188		
	Profit/loss per passenger (T€)	0,2	0,1	5,2	2,5	2,0	
Munster/ Osnabruck	Passenger volumes (Tsd)	1.382	1.332	1.324	1.021		-26,1%
	EAT (T€)	-2.690	-909	37	-5.271		
	Profit/loss per passenger (T€)	-1,9	-0,7	0,0	-5,2	-1,9	

Table 3 (continued): Key Performance Indicators of the German Airports 2009-2012

Airport	Key Performance Indicator	2009	2010	2011	2012	Average profit / loss per passenger 2009-2012 in €	Passenger Growth 2009 / 2012
Nuremberg	Passenger volumes (Tsd)	3.970	4.074	3.963	3.597		-9,4%
	EAT (T€)	-4.798	-3.059	-8.355	-2.466		
	Profit/loss per passenger (T€)	-1,2	-0,8	-2,1	-0,7	-1,2	
Paderborn/ Lippstadt	Passenger volumes (Tsd)	984	1.028	975	873		-11,3%
	EAT (T€)	-1.461	-392	-1.451	-1.361		
	Profit/loss per passenger (T€)	-1,5	-0,4	-1,5	-1,6	-1,2	
Saarbrucken	Passenger volumes (Tsd)	470	491	452	425		-9,6%
	EAT (T€)	-9.306	-8.806	-10.065	-18.450		
	Profit/loss per passenger (T€)	-19,8	-17,9	-22,3	-43,4	-25,9	
Stuttgart	Passenger volumes (Tsd)	8.934	9.218	9.582	9.721		8,8%
	EAT (T€)	17.621	23.889	30.523	30.261		
	Profit/loss per passenger (T€)	2,0	2,6	3,2	3,1	2,7	
Weeze	Passenger volumes (Tsd)	2.402	2.897	2.421	2.208		-8,1%
	EAT (T€)	426	35	367	n/a		
	Profit/loss per passenger (T€)	0,2	0,0	0,2	n/a	0,1	

Source: calculation of author based on data retrieved from ADV (2012); Bundesministerium der Justiz und für Verbraucherschutz (2014)

VIII. SPSS Calculations Airport Questionnaire

Table 4: Shareholder Structure of Airports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Public shareholders	2	33,3	33,3	33,3
	Public and private shareholders	4	66,7	66,7	100
	Total	**6**	**100**	**100**	

Source: calculation of author in SPSS

Table 5: Passenger Volumes of Airports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	> 5 Mio. <= 10 Mio.	2	33,3	33,3	33,3
	> 10 Mio. <=20 Mio.	1	16,7	16,7	50
	> 20 Mio.	3	50	50	100
	Total	**6**	**100**	**100**	

Source: calculation of author in SPSS

Table 6: Years Since Launch of Corporate Facebook Page

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 - 2 years	3	50	50	50
	> 2 years	3	50	50	100
	Total	**6**	**100**	**100**	

Source: calculation of author in SPSS

Table 7: Number of Facebook Fans per 31.10. 2012 (=Page Likes)

Number of Facebook fans per 31.10.2012 (=Page Likes)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5667	1	16,7	16,7	16,7
	14360	1	16,7	16,7	33,3
	26626	1	16,7	16,7	50
	27823	1	16,7	16,7	66,7
	35043	1	16,7	16,7	83,3
	58047	1	16,7	16,7	100
	Total	**6**	**100**	**100**	

Source: calculation of author in SPSS

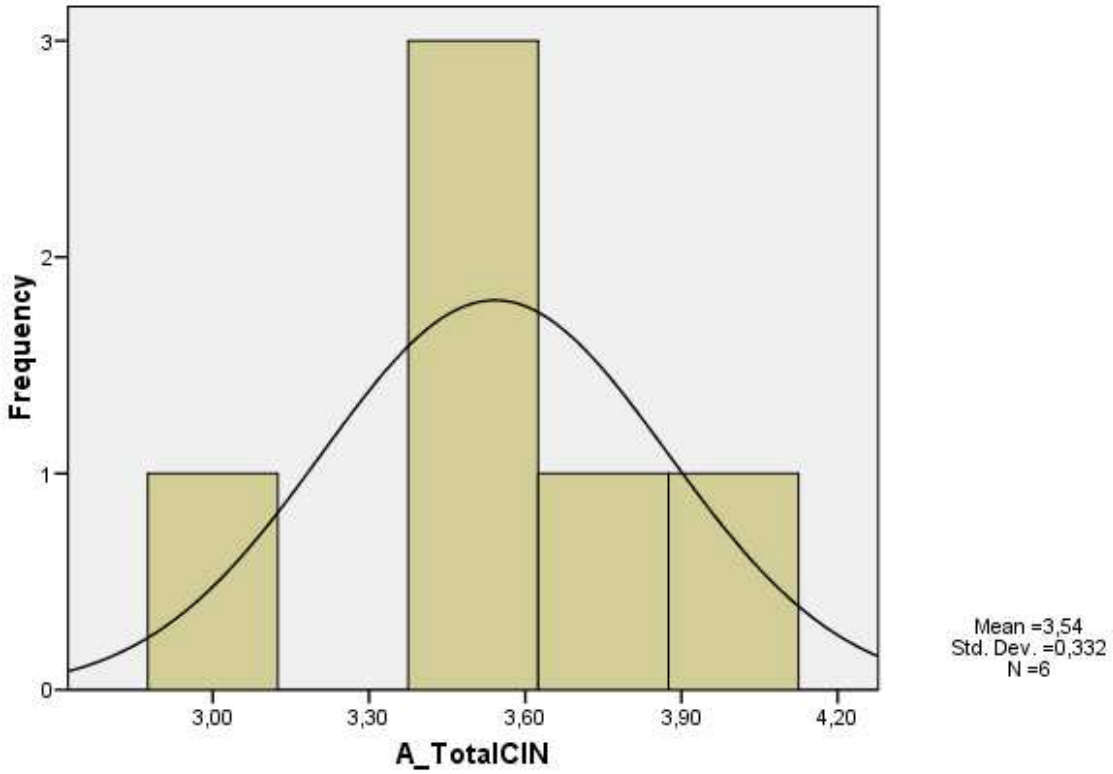
Table 8: Kolmogorov-Smirnov Test for Variable "Number of Facebook Fans per 31.10. 2012 (=Page Likes)"

One-Sample Kolmogorov-Smirnov Test

		Number of Facebook fans per 31.10.2012 (=Page Likes)
N		6
Normal Parameters(a,b)	Mean	27927,6667
	Std. Deviation	18105,94576
Most Extreme Differences	Absolute	,180
	Positive	,180
	Negative	-,138
Kolmogorov-Smirnov Z		,442
Asymp. Sig. (2-tailed)		,990

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

Figure 1: Histogram of Variable Customer Insights (A_TotalCIN)

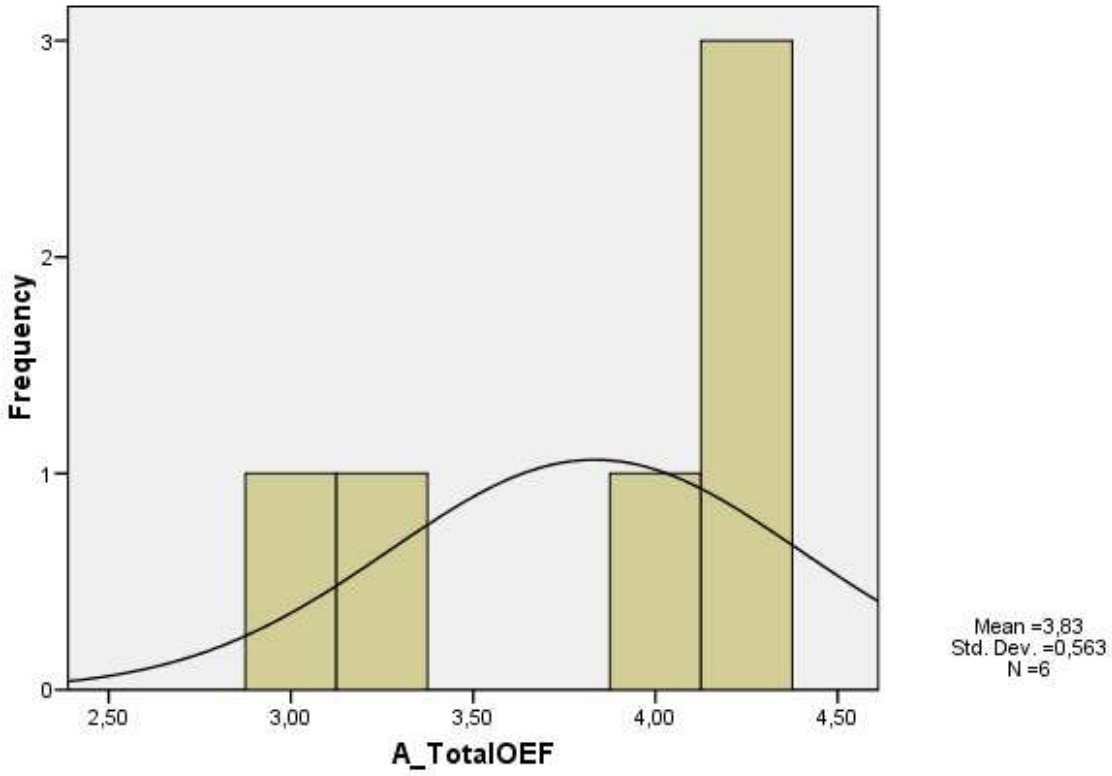
Table 9: Kolmogorov-Smirnov Test of Variable CustomerInsights (A_TotalCIN)

One-Sample Kolmogorov-Smirnov Test

		A_TotalCIN
N		6
Normal Parameters(a,b)	Mean	3,5417
	Std. Deviation	,33229
Most Extreme Differences	Absolute	,283
	Positive	,217
	Negative	-,283
Kolmogorov-Smirnov Z		,694
Asymp. Sig. (2-tailed)		,721

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

Figure 2: Histogram of Variable Operational Efficiency (A_TotalOEF)

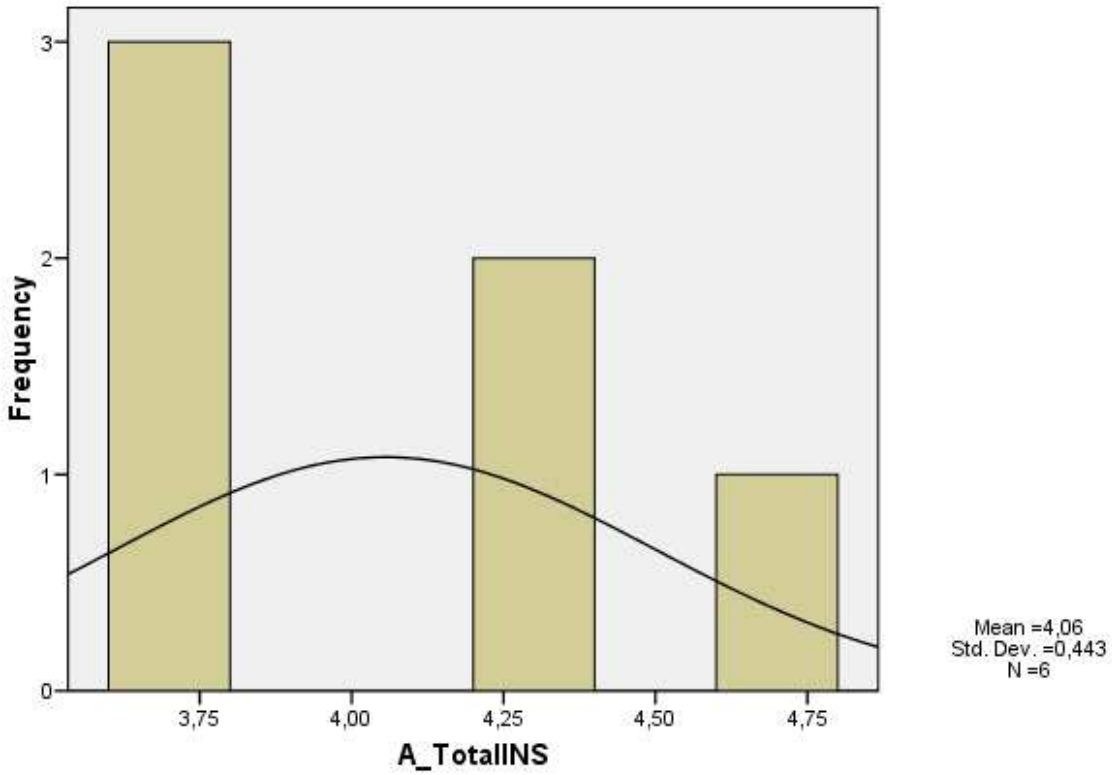
Table 10: Kolmogorov-Smirnov Test of Variable Operational Efficiency (A_TotalOEF)

One-Sample Kolmogorov-Smirnov Test

		A_TotalOEF
N		6
Normal Parameters(a,b)	Mean	3,8333
	Std. Deviation	,56273
Most Extreme Differences	Absolute	,283
	Positive	,230
	Negative	-,283
Kolmogorov-Smirnov Z		,693
Asymp. Sig. (2-tailed)		,722

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

Figure 3: Histogram of Variable Innovative Strength (A_TotalINS)

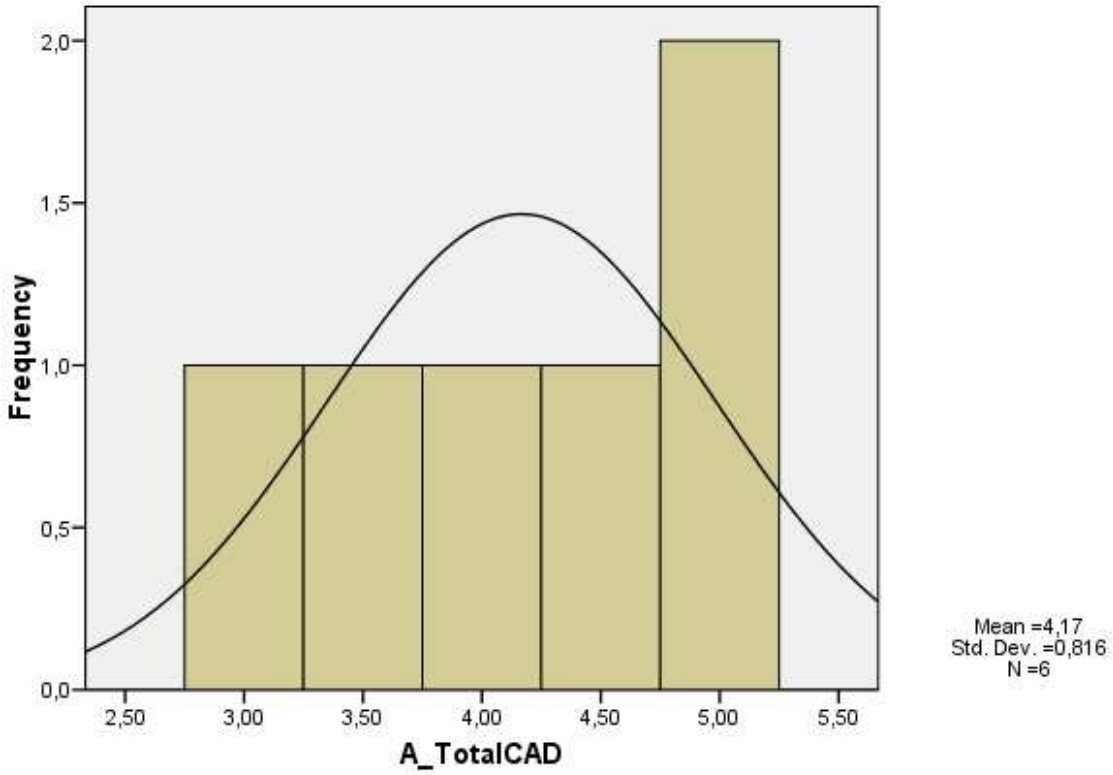
Table 11: Kolmogorov-Smirnov Test of Variable Innovative Strength (A_TotalINS)

One-Sample Kolmogorov-Smirnov Test

		A_TotalINS
N		6
Normal Parameters(a,b)	Mean	4,0556
	Std. Deviation	,44305
Most Extreme Differences	Absolute	,310
	Positive	,310
	Negative	-,235
Kolmogorov-Smirnov Z		,759
Asymp. Sig. (2-tailed)		,612

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

Figure 4: Histogram of Variable Customer Advocacy (A_TotalCAD)

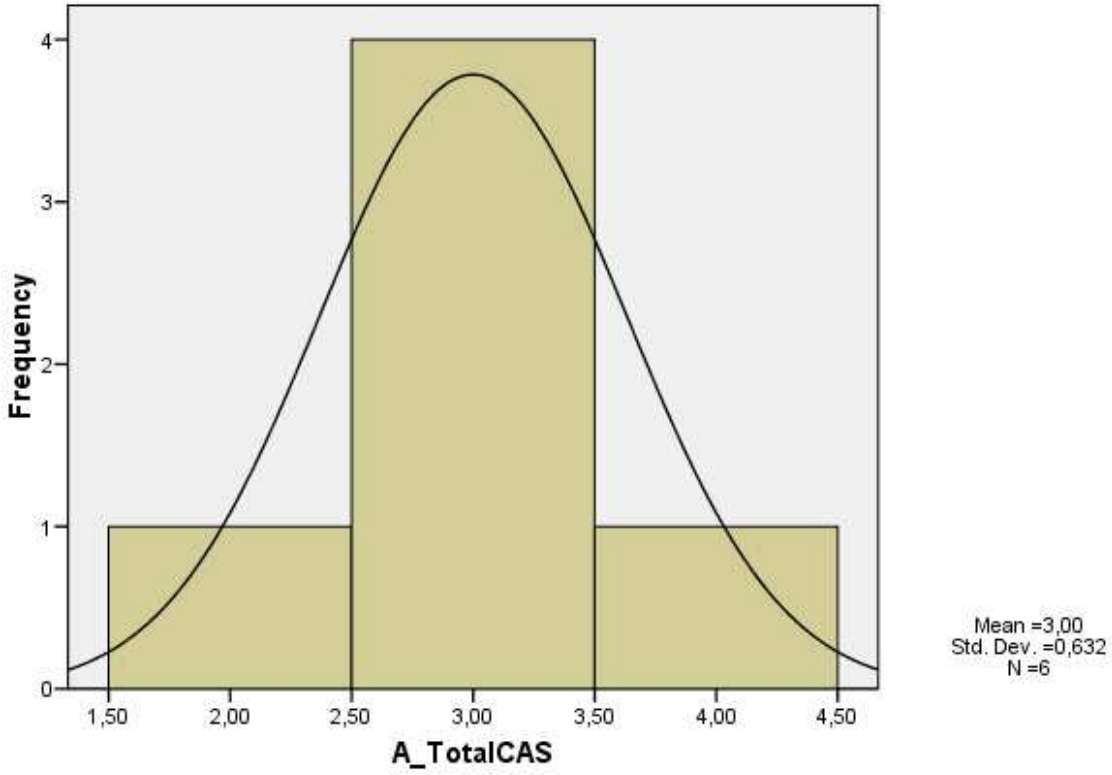
Table 12: Kolmogorov-Smirnov Test of Variable Customer Advocacy (A_TotalCAD)

One-Sample Kolmogorov-Smirnov Test

		A_TotalCAD
N		6
Normal Parameters(a,b)	Mean	4,1667
	Std. Deviation	,81650
Most Extreme Differences	Absolute	,180
	Positive	,154
	Negative	-,180
Kolmogorov-Smirnov Z		,440
Asymp. Sig. (2-tailed)		,990

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

Figure 5: Histogram of Variable Customer Satisfaction (A_TotalCAS))

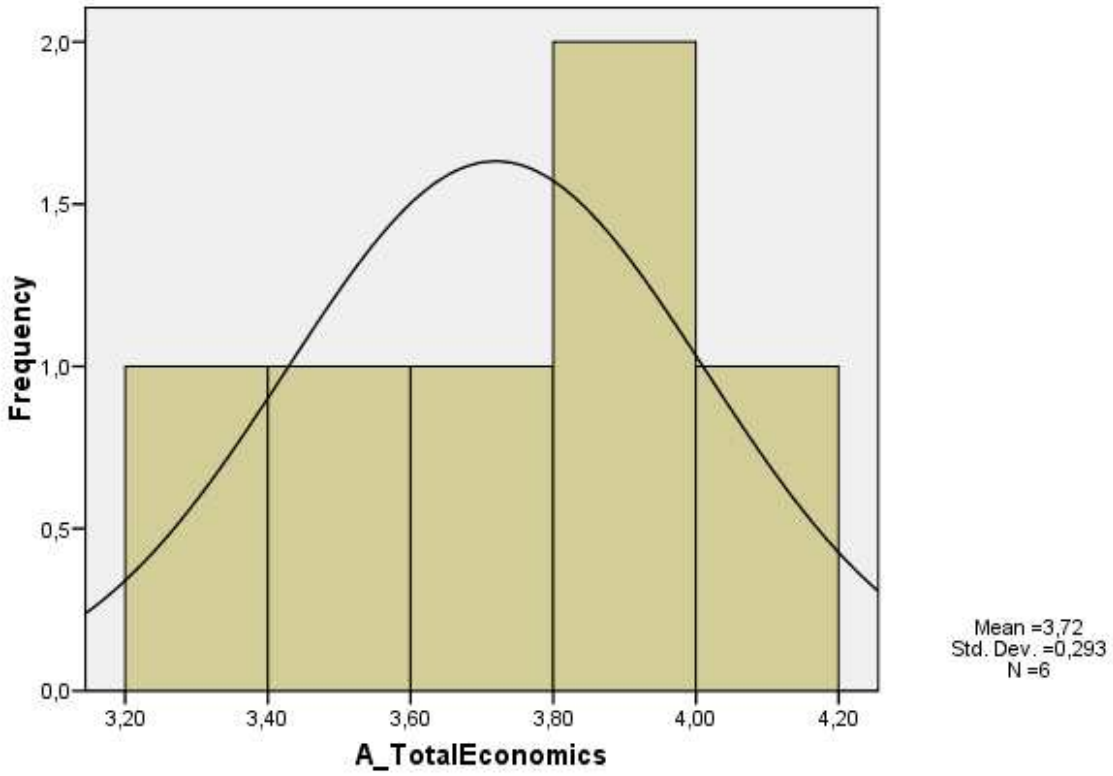
Table 13: Kolmogorov-Smirnov Test of Variable Customer Satisfaction (A_TotalCAS)

One-Sample Kolmogorov-Smirnov Test

		A_TotalCAS
N		6
Normal Parameters(a,b)	Mean	3,0000
	Std. Deviation	,63246
Most Extreme Differences	Absolute	,333
	Positive	,333
	Negative	-,333
Kolmogorov-Smirnov Z		,816
Asymp. Sig. (2-tailed)		,518

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

Figure 6: Histogram of Variable Total Economic Need Satisfaction (A_TotalEconomics)

Table 14: Kolmogorov-Smirnov Test of Variable Total Economic Need Satisfaction (A_TotalEconomics)

One-Sample Kolmogorov-Smirnov Test

		A_TotalEconomics
N		6
Normal Parameters(a,b)	Mean	3,7194
	Std. Deviation	,29334
Most Extreme Differences	Absolute	,253
	Positive	,169
	Negative	-,253
Kolmogorov-Smirnov Z		,619
Asymp. Sig. (2-tailed)		,838

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS

Table 15: Organization of Facebook Activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Corporate Communications / Marketing, no dedicated resource	1	16,7	16,7	16,7
	Interdisciplinary, no dedicated resource	3	50,0	50,0	66,7
	Corporate Communications / Marketing, dedicated Social Media Manager	1	16,7	16,7	83,3
	Interdisciplinary and dedicated Social Media Manager	1	16,7	16,7	100,0
	Total	**6**	**100,0**	**100,0**	

Source: calculation of author in SPSS

Table 16: Future Importance of Facebook as Communication Channel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	importance will neither decrease nor increase	1	16,7	16,7	16,7
	importance will increase	5	83,3	83,3	100,0
	Total	**6**	**100,0**	**100,0**	

Source: calculation of author in SPSS

IX. SPSS Calculations Passenger Questionnaire

Table 17: Respondents by Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Airport 1	159	21,7	21,7	21,7
	Airport 2	147	20,0	20,0	55,2
	Airport 3	145	19,8	19,8	84,6
	Airport 4	99	13,5	13,5	35,1
	Airport 5	96	13,1	13,1	97,7
	Airport 6	71	9,7	9,7	64,9
	None of the above airports	17	2,3	2,3	100
	Total	**734**	**100**	**100**	

Source: calculation of author in SPSS

Table 18: Number of Trips per Year from this Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 Airtrip	39	5,3	5,5	5,5
	1 to 2 Airtrips	373	50,8	52,8	58,4
	3 to 4 Airtrips	136	18,5	19,3	77,6
	5 or more Airtrips	158	21,5	22,4	100
	Total	706	96,2	100	
Missing	System	28	3,8		
Total		**734**	**100**		

Source: calculation of author in SPSS

Table 19: Age Distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17 years or younger	70	9,5	11,7	11,7
	18 to 24 years	152	20,7	25,3	37,0
	25 to 34 years	182	24,8	30,3	67,3
	35 to 44 years	103	14,0	17,2	84,5
	45 to 54 years	75	10,2	12,5	97,0
	55 to 64 years	13	1,8	2,2	99,2
	65 years and older	5	,7	,8	100,0
	Total	600	81,7	100,0	
Missing	System	134	18,3		
Total		**734**	**100,0**		

Source: calculation of author in SPSS

Table 20: Household Size

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	159	21,7	26,5	26,5
	2 persons	161	21,9	26,8	53,3
	3 or more persons	280	38,1	46,7	100,0
	Total	600	81,7	100,0	
Missing	System	134	18,3		
Total		**734**	**100,0**		

Source: calculation of author in SPSS

Table 21: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	174	23,7	29	29
	Male	426	58	71	100
	Total	600	81,7	100	
Missing	System	134	18,3		
Total		734	100		

Source: calculation of author in SPSS

Table 22: Purpose of Travel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Predominantly business trips	68	9,3	10,3	10,3
	Predominantly leisure trips	481	65,5	72,7	82,9
	Approximately equal share of business and leisure trips	113	15,4	17,1	100
	Total	662	90,2	100	
Missing	System	72	9,8		
Total		734	100		

Source: calculation of author in SPSS

Table 23: Frequency of Facebook Access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Several times per day	573	78,1	86,6	86,6
	Once per day	58	7,9	8,8	95,3
	Several times per week	24	3,3	3,6	98,9
	Once per week	6	0,8	0,9	99,8
	Less than once per week	1	0,1	0,2	100
	Total	662	90,2	100	
Missing	System	72	9,8		
Total		734	100		

Source: calculation of author in SPSS

Table 24: Role of Facebook in Everyday Life

		Facebook has become part of my daily routine	I feel disconnected, if I have not logged into Facebook for a while	I would be sorry, if Facebook shut down
N	Valid	654	654	654
	Missing	80	80	80
Mean		4,1086	2,7951	3,8578
Std. Deviation		0,95799	1,21284	1,09137

Source: calculation of author in SPSS

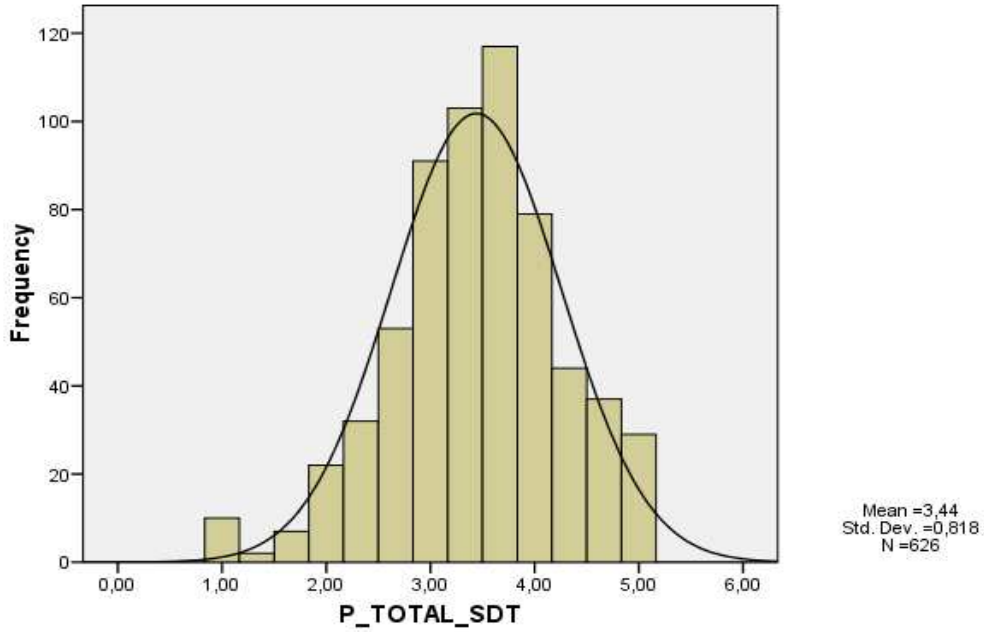
Table 25: Results of Factor Analysis Socio-Psychological Need Satisfaction

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,034	40,226	40,226	5,601	37,337	37,337	3,090	20,601	20,601
2	1,565	10,435	50,661	1,170	7,798	45,135	2,032	13,546	34,147
3	1,250	8,334	58,995	,810	5,397	50,532	1,695	11,301	45,448
4	1,099	7,327	66,322	,674	4,492	55,023	1,436	9,575	55,023
5	,824	5,494	71,815						
6	,668	4,453	76,268						
7	,559	3,724	79,992						
8	,537	3,577	83,569						
9	,457	3,049	86,618						
10	,427	2,847	89,465						
11	,375	2,501	91,966						
12	,372	2,480	94,447						
13	,314	2,091	96,538						
14	,280	1,863	98,401						
15	,240	1,599	100,000						

Extraction Method: Principal Axis Factoring.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

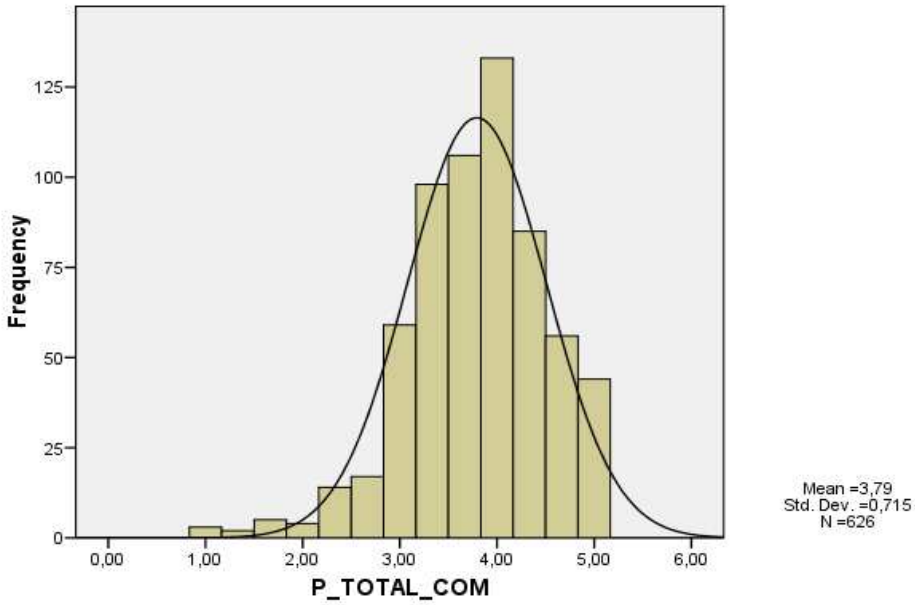
Figure 7: Histogram of Variable Self-Determination (P_TOTAL_SDT)

Table 26: Kolmogorov-Smirnov Test of Variable Self-Determination (P_TOTAL_SDT)

		P_TOTAL_SDT
N		626
Normal Parameters(a,b)	Mean	3,4409
	Std. Deviation	,81767
Most Extreme Differences	Absolute	,101
	Positive	,089
	Negative	-,101
Kolmogorov-Smirnov Z		2,528
Asymp. Sig. (2-tailed)		,000

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

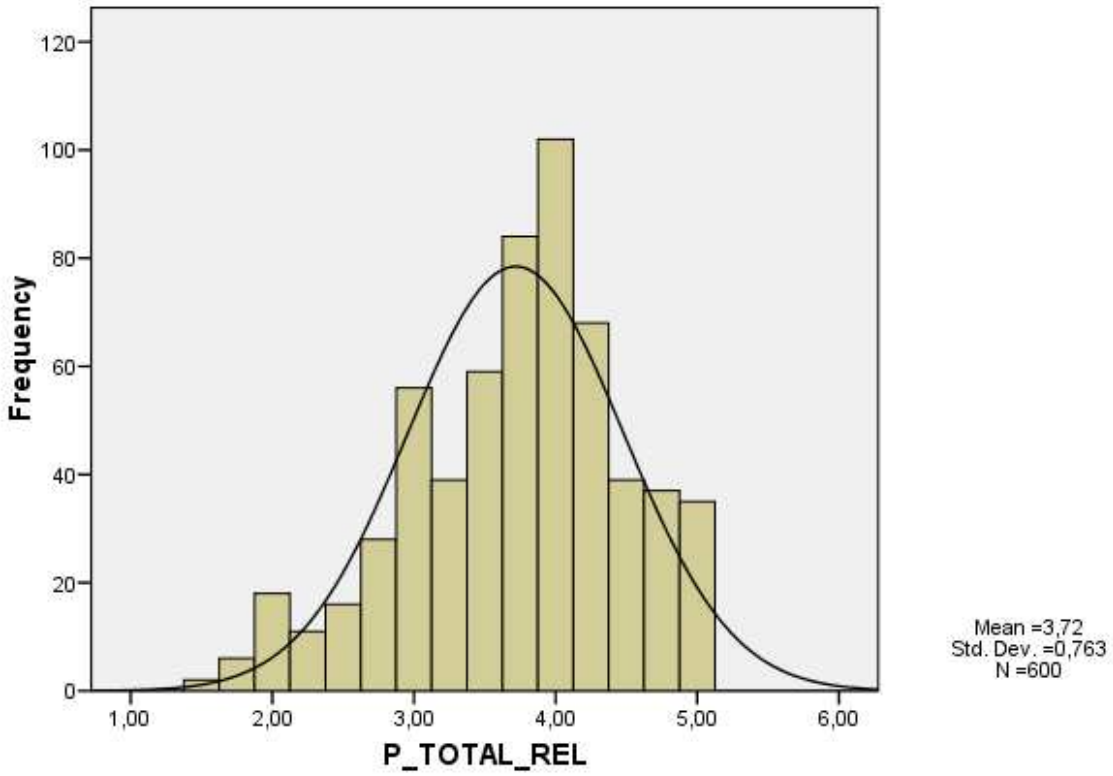
Figure 8: Histogram of Variable Competence (P_TOTAL_COM)

Table 27: Kolmogorov-Smirnov Test of Variable Competence (P_TOTAL_COM)

		P_TOTAL_COM
N		626
Normal Parameters(a,b)	Mean	3,7923
	Std. Deviation	,71468
Most Extreme Differences	Absolute	,122
	Positive	,090
	Negative	-,122
Kolmogorov-Smirnov Z		3,060
Asymp. Sig. (2-tailed)		,000

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

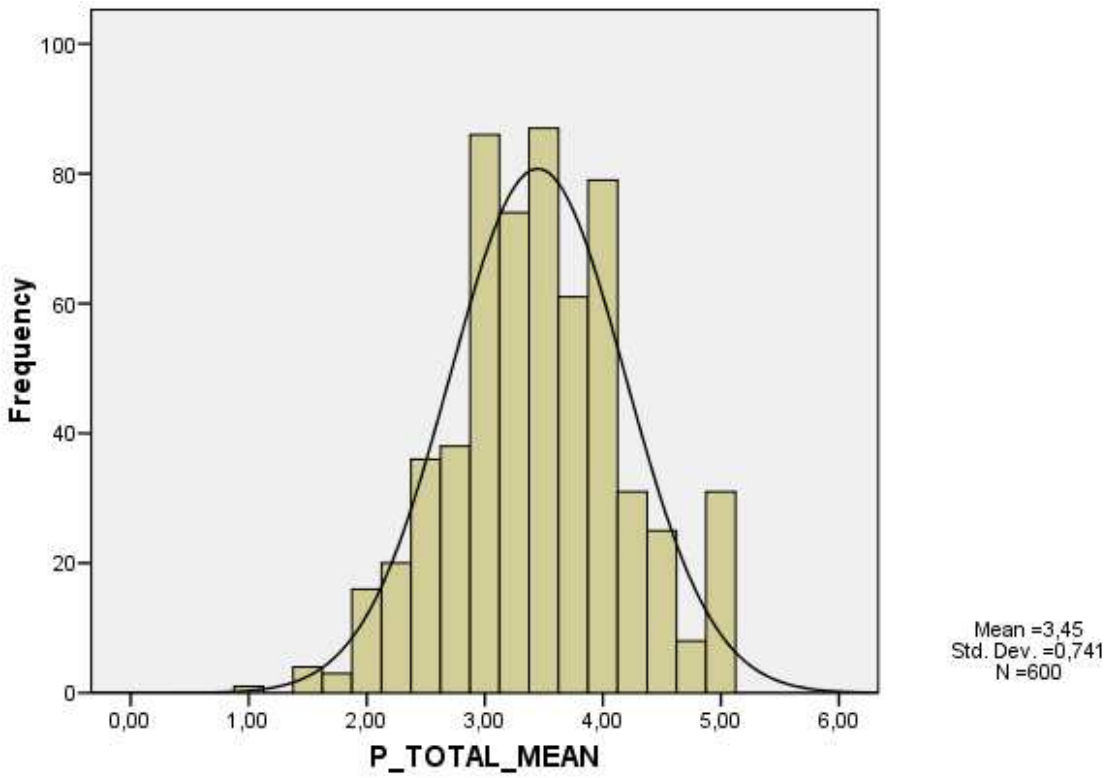
Figure 9: Histogram of Variable Relatedness (P_TOTAL_REL)

Table 28: Kolmogorov-Smirnov Test of Variable Relatedness (P_TOTAL_REL)

		P_TOTAL_REL
N		600
Normal Parameters(a,b)	Mean	3,7179
	Std. Deviation	,76256
Most Extreme Differences	Absolute	,125
	Positive	,058
	Negative	-,125
Kolmogorov-Smirnov Z		3,065
Asymp. Sig. (2-tailed)		,000

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

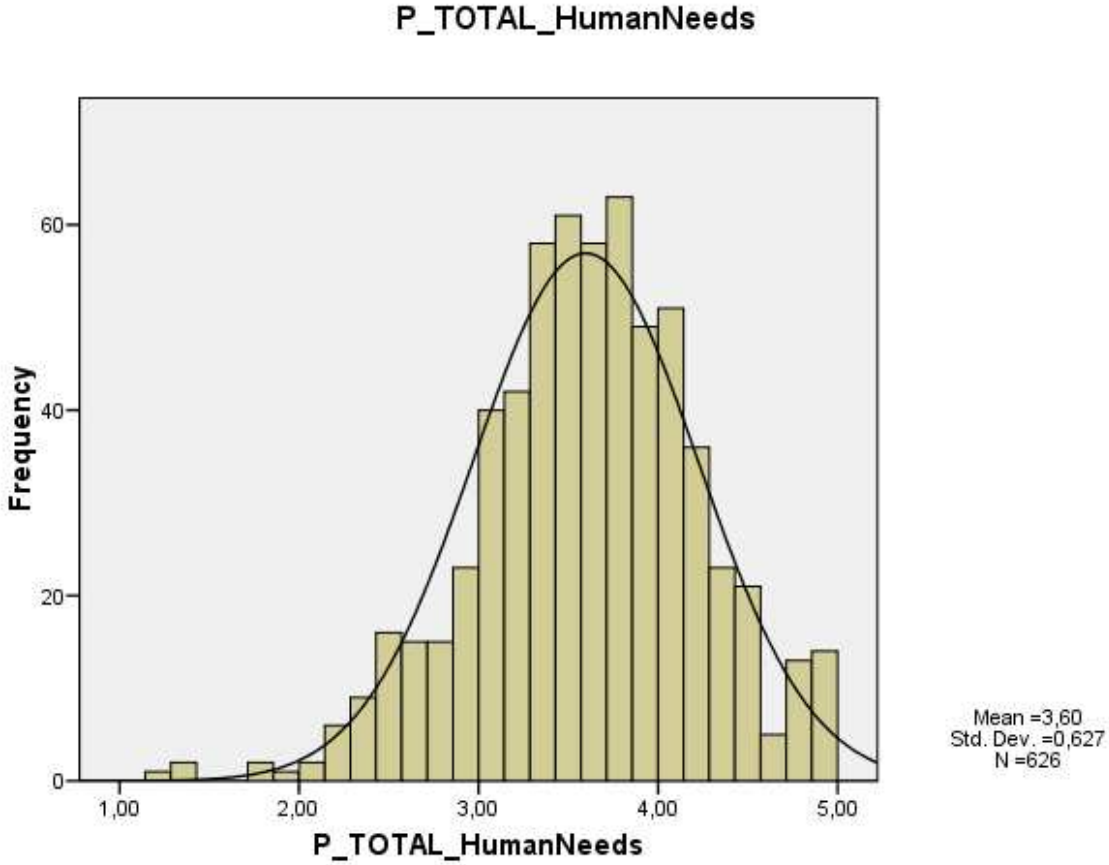
Figure 10: Histogram of Variable Meaning (P_TOTAL_MEAN)

Table 29: Kolmogorov-Smirnov Test of Variable Meaning (P_TOTAL_MEA)

		P_TOTAL_MEAN
N		600
Normal Parameters(a,b)	Mean	3,4479
	Std. Deviation	,74090
Most Extreme Differences	Absolute	,080
	Positive	,080
	Negative	-,076
Kolmogorov-Smirnov Z		1,967
Asymp. Sig. (2-tailed)		,001

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS



Source: calculation of author in SPSS

Figure 11: Histogram of Variable Total Socio-Psychological Need Satisfaction (P_TOTAL_HumanNeeds)

Table 30: Kolmogorov-Smirnov Test of Variable Total Socio-Psychological Need Satisfaction (P_TOTAL_HumanNeeds)

		P_TOTAL_HumanNeeds
N		626
Normal Parameters(a,b)	Mean	3,5959
	Std. Deviation	,62655
Most Extreme Differences	Absolute	,037
	Positive	,027
	Negative	-,037
Kolmogorov-Smirnov Z		,920
Asymp. Sig. (2-tailed)		,366

a Test distribution is Normal.
b Calculated from data.

Source: calculation of author in SPSS

Table 31: Man Whitney U-Test Socio-Psychological Need Satisfaction by Gender

Ranks

	Gender	N	Mean Rank	Sum of Ranks
P_TOTAL_SDT	Female	174	310,82	54082,00
	Male	426	296,29	126218,00
	Total	600		
P_TOTAL_COM	Female	174	311,98	54284,00
	Male	426	295,81	126016,00
	Total	600		
P_TOTAL_MEAN	Female	174	322,95	56193,50
	Male	426	291,33	124106,50
	Total	600		
P_TOTAL_REL	Female	174	296,73	51631,00
	Male	426	302,04	128669,00
	Total	600		

Test Statistics(a)

	P_TOTAL_SDT	P_TOTAL_COM	P_TOTAL_MEAN	P_TOTAL_REL
Mann-Whitney U	35267,000	35065,000	33155,500	36406,000
Wilcoxon W	126218,000	126016,000	124106,500	51631,000
Z	-,940	-1,048	-2,040	-,343
Asymp. Sig. (2-tailed)	,347	,294	,041	,732

a Grouping Variable: Gender

Source: calculation of author in SPSS

X. SPSS Analysis Regarding Proposed Theses 1-6

Thesis 1

Table 32: Correlation Analysis Thesis 1

Correlations

			A_TotalEconomics	Active Facebook Management
Spearman's rho	A_TotalEconomics	Correlation Coefficient	1,000	,820(*)
		Sig. (2-tailed)	.	,046
		N	6	6
	A_NumberTypeRessources	Correlation Coefficient	,820(*)	1,000
		Sig. (2-tailed)	,046	.
		N	6	6

* Correlation is significant at the 0.05 level (2-tailed).

Thesis 2

Table 33: Man-Whitney U Test Thesis 2: Read

	Activity: Read	N	Mean Rank	Sum of Ranks
P_TOTAL_HumanNeeds	,00	0(a)	,00	,00
	Read Facebook Posts of Airport, watch photos and videos	626	313,50	196251,00
	Total	626		

a Mann-Whitney Test cannot be performed on empty groups.

Note. All respondents indicated that they read the Facebook posts of airports. Hence a comparison between groups was not reasonable (only 1 group existing).

Source: calculation of author in SPSS

Table 34: Man-Whitney U Test Thesis 2: Like

	Activity: Like	N	Mean Rank	Sum of Ranks
P_TOTAL_HumanNeeds	Like Facebook posts of airports, i.e. click of like-button	368	347,41	127846,00
	No likes	258	265,14	68405,00
	Total	626		

	P_TOTAL_HumanNeeds
Mann-Whitney U	34994,000
Wilcoxon W	68405,000
Z	-5,603
Asymp. Sig. (2-tailed)	,000

a Grouping Variable: Aktivität: liken

Source: calculation of author in SPSS

Table 35: Man-Whitney U Test Thesis 2: Share

	Activity: share	N	Mean Rank	Sum of Ranks
P_TOTAL_HumanNeeds	Share Facebook posts of aiport with others	199	358,47	71336,00
	No share	427	292,54	124915,00
	Total	626		

	P_TOTAL_HumanNeeds
Mann-Whitney U	33537,000
Wilcoxon W	124915,000
Z	-4,248
Asymp. Sig. (2-tailed)	,000

a Grouping Variable: Aktivität: teilen

Source: calculation of author in SPSS

Table 36: Man-Whitney U Test Assumption 2: Comment

	Activity: Comment	N	Mean Rank	Sum of Ranks
P_TOTAL_HumanNeeds	Comment on Facebook posts of airport incl. photos and videos	197	388,93	76620,00
	No commenting	429	278,86	119631,00
	Total	626		

	P_TOTAL_HumanNeeds
Mann-Whitney U	27396,000
Wilcoxon W	119631,000
Z	-7,073
Asymp. Sig. (2-tailed)	,000

a Grouping Variable: Aktivität: kommentieren

Source: calculation of author in SPSS

Table 37: Man-Whitney U Test Thesis 2: Post

	Activity: Post	N	Mean Rank	Sum of Ranks
P_TOTAL_HumanNeeds	Write own posts on Facebook timeline of airport.	74	408,49	30228,50
	No posts	552	300,77	166022,50
	Total	626		

	P_TOTAL_HumanNeeds
Mann-Whitney U	13394,500
Wilcoxon W	166022,500
Z	-4,812
Asymp. Sig. (2-tailed)	,000

a Grouping Variable: Activity: Post

Source: calculation of author in SPSS

Thesis 3

Table 38: Correlation Analysis Thesis 3

Spearman's Rho		Customer Insights	Operational Efficiency	Innovative Strength	Customer Advocacy	Customer Satisfaction
Self-Determination	Correlation Coefficient	-,361	,328	-,633	-,250	-,822(*)
	Sig. (2-tailed)	,482	,526	,177	,632	,045
	N	6	6	6	6	6
Competence	Correlation Coefficient	,131	,820(*)	,033	-,407	-,365
	Sig. (2-tailed)	,804	,046	,950	,423	,477
	N	6	6	6	6	6
Meaning	Correlation Coefficient	-,031	,924(**)	,141	-,103	,000
	Sig. (2-tailed)	,954	,008	,790	,846	1,000
	N	6	6	6	6	6
Relatedness	Correlation Coefficient	,063	,907(*)	,111	-,373	-,174
	Sig. (2-tailed)	,906	,013	,834	,466	,742
	N	6	6	6	6	6

**correlation is significant at 0.01 level
* correlation is significant at 0.05 level

Source: calculation of author in SPSS

Thesis 4

Table 39: Correlation Analysis Thesis 4

Correlations

			A_TotalInteractionsAirport	A_TotalEconomics
Spearman's rho	A_TotalInteractionsAirport	Correlation Coefficient	1,000	,771
		Sig. (2-tailed)	.	,072
		N	6	6
	A_TotalEconomics	Correlation Coefficient	,771	1,000
		Sig. (2-tailed)	,072	.
		N	6	6

Source: calculation of author in SPSS

Thesis 5

Table 40: Correlation Analysis Thesis 5

Correlations

			P_TOTAL_HumanNeeds	A_TotalInteractionsFans
Spearman's rho	P_Total_HumanNeeds	Correlation Coefficient	1,000	-,486
		Sig. (2-tailed)	.	,329
		N	6	6
	A_TotalInteractionsFans	Correlation Coefficient	-,486	1,000
		Sig. (2-tailed)	,329	.
		N	6	6

Source: calculation of author in SPSS

Thesis 6

Table 41: Correlation Analysis Thesis 6

Correlations

			A_TotalInteractionsAirport	A_TotalInteractionsFans
Spearman's rho	A_TotalInteractionsAirport	Correlation Coefficient	1,000	,943(**)
		Sig. (2-tailed)	.	,005
		N	6	6
	A_TotalInteractionsFans	Correlation Coefficient	,943(**)	1,000
		Sig. (2-tailed)	,005	.
		N	6	6

** Correlation is significant at the 0.01 level (2-tailed).

Source: calculation of author in SPSS