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SUSTAINABLE TOURISM, B.A.

BACHELOR'S THESIS PROJECT:
REFLECTION ON STATISTICAL METHODS

NT_31 PROJECT
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Let us reason why primary research is necessary for NT_32 Bachelor's Thesis. While primary research usually costs money and time, and the existence of know-how in the subject area is necessary, it is worth the costs because we gather authentic data for our very specific questions. The answers will be topical, exclusive, and problem/goal-oriented. Thus, we will have gathered precise and relevant information for decision-making.

This project work represents an analysis and documentation of most applicable research methods for the three main research questions that have been identified in the preceding work "NT_29 Workshop Bachelor's Thesis (Exposé)". The goal of this project is to identify such research methods that promise high effectivity and efficiency regarding data collection. The final result of this project will be the completed operationalisation of the three main research questions, which will then be used for data collection and analysis as core content for NT_32 Bachelor's Thesis.

Regarding general organisational aspects, this project shows the structured planning process for the research activity necessary to complete this work's succeeding Bachelor's Thesis. Further, this planning process demonstrates how exposure to research risks can be managed effectively.

Chapter 1_ Restatement of thesis and core research questions

Bachelor's Thesis

"The relevance of Distributed Ledger Technology (DLT) for Travel Suppliers in the context of IATA's current Retailing Programs, such as New Distribution Capability (NDC) and ONE Order."

1. Main research question towards GDS

"Do Global Distribution Systems (GDS) consider "DLT as a Service" as a successful business model, specifically targeting small and medium-sized (hospitality) businesses?"

2. Main research question towards Intermediaries

"Do Intermediaries, such as Metasearch Engines and Online Travel Agencies (OTA), see how New Intermediaries, as defined in NT_29 Exposé (1.2.), change toxic traditional commission-based, price-parity business models?"

3. Main research question towards Suppliers

"Will IATA, a leader for suppliers in tourism, consider to enrich its NDC-program with DLT?"

Chapter 2_Operationalisation: Measurement of a hypothetical construct

In the second semester of this university degree, with module NT_10 Market and Trend Research, we learned about operationalisation and how to apply it practically. Operationalisation is the quantitative measurement of hypothetical constructs. Complex, subjective, abstract, not observable, and/or latent facts are measured by creation of the prerequisites for the empirical survey (cf. Häder, 2015, p. 45). Operationalisation for our case is the selection of measuring instruments and formulation of detailed research questions. This project work therefore is the operationalisation applied to our DLT-research case.

In this Chapter 2, we deepen the understanding for the thesis, and according to Häder (2015, p. 70), its reflection on statistical methods is the second phase of an empirical project:

“The elaboration of the design of the study including the necessary survey instruments. For this purpose, the ideas previously developed in the project plan must be specified and the appropriate instruments worked out.”

2.1. Explorative Market Research Design

In order to answer the in Chapter 1 restated research questions, this project work aims to identify the appropriate design for its research.

There are two types of market research in relation to their objectives (Häder, 2015, p. 62-63):

1. A qualitative market research takes small samples, has no standards. In relation to its objective, it is an exploration, a problem approximation. Such studies will be devoted to individual cases in detail and research them as intensively as possible. A previously standardised examination program cannot be used with it.
2. A quantitative market research takes larger samples and thereby determines frequencies and mean values. In relation to its objective, it is the description of a problem, the identification of cause-effect relationships.

Typical quantitative Cause-effect relationships may not be realised because decision makers express uncertainty and/or psychological irrationality in this speculative und volatile environment of DLT-themes. That we primary move in the realm of qualitative research further becomes very visible once we compare our DLT-theme with assumptions towards an “interpretative approach”, an approach oriented towards qualitative social science (Häder, 2015, p. 62-63):

1. *“There are no predetermined structures (...). Rather, people create these structures through their own actions.”*
 - Indeed, many DLT ventures advertise with “new structures”. Yet, no structure can be seen as long as we do not arrive in a commercial DLT-scenario. At the time of writing, the DLT-environment is an open source construction area with many plans but no standard structure.
2. *“Each person interprets the world according to their experiences. Reality is therefore the result of complex sequences of interactions.”*
 - This assumption very much describes the still on-going research and development process of a standard commercial DLT product in the future. Decision makers today still need much patience with ambitious programmers, who sometimes deliver on promises and other times not, or not yet at least. It is a very risky environment and people tend to make decisions dependent on developments and decisions of others. Thus, we have complex sequences of interactions that can be very slow overall, yet in peak situations of developed innovation very rapid among few participants. Agile management styles are needed in this environment mostly for fast interpretations towards considerable market developments.
3. *“(…) to gain experience in the respective field of study. The principle of openness prevails. Understanding becomes a central category.*
 - There are corporations that are big enough to afford experimentation with DLT, and they do so on a greater scale compared to single users, thereby becoming innovation leaders: In 2017, TUI launched its “BedSwap” hotel smart contract and inventory project. According to T. Dulle (2018), at that time the Head of Development of TUI InfoTec GmbH, TUI started with BedSwap as an internal use case, with which “it was possible to gain experience and test various ideas.” DLT communities express emotions of an “atmosphere of departure”. For departure from sometimes obsolete central organisation, people are eager to study, create, unite, test and produce. All of this is possible only with a general open-mindedness.
4. *“One of the tasks of qualitative survey approaches, for example, is the perception of the actors' definitions of the situation. Interpretive meanings are assigned in this way.”*
 - It is a great goal for the succeeding Bachelor’s Thesis of this work to see whether the very central market actors, that is, GDS, OTA and Supplier, perceive the same or a similar possible NDC/DLT development. Of course, this perception shall be in no way influenced

by our action/communication. Whatsoever the result of this research may be, we are free to go two steps further to interpret meaning into what has been communicated to us, being careful enough to distinguish between factual communication and interpretive meaning.

Häder (2015, p. 64) continues to describe characteristics of qualitative research that are applicable in the fast-paced, innovative DLT-environment. In the following, we use these characteristics of qualitative research to describe our research case:

With an *inductive procedure*, that is, inferring truth from specific cases to the general status-quo of the market, we seek to gather data from *undistorted field conditions*. Because this process is about *discoveries*, the principle of openness applies. We seek to understand *facts and truth* about our DLT-theme, and for that, *internal reasonings* leading corporation's must be considered. Planning this, we seek to use *soft, hardly standardised methods*. Based on the internal logic of statements on a case-by-case basis, we seek to *reconstruct truth* for the greater tourism industry/environment, comparing Kelle and Kluge from 1999 (as cited in Häder, 2003, p. 64).

2.2. Population and Typical Selection

The greater statistical frame population of our research we determine to be such tourism actors that are involved in third-party distribution, sales and marketing of tourism products. These actors would be more or less affected in case of future commercial DaaS-business models and a DLT-enriched NDC-program by IATA and/or other supplier organisations. Our research may be most relevant for few big-scaled tourism corporations right now, however, crucial innovations and changes are mid-term noticeable for smaller intermediaries as well.

To consciously determine a sample set by quota or cut-off procedures like we see it with the Gallup-Survey (Häder, 2015, p. 141) is not relevant in an environment where the identity of relevant elements in the statistical frame tourism industry population is apparent by desk research. On the contrary, we already implied that we seek to analyse only a few very specific market actors in total. For reasons of the in 2.1. of this work given characteristics of a qualitative, explorative research design, we seek to conduct a selection of typical cases for our DLT-research case.

It is questioned whether the framing of only a few very specific market actors in total can yield such results that can be generalised for a greater statistical target population (Häder, 2015, p. 67). While this concern would be comprehensible for an arbitrary selection within the statistical target population, answers/results from decisive market leading corporations, our frame population, are indeed objective and scientifically useful for this reason:

Of course, the perception, and therefore answers, of a person belonging to a leading corporation may be selective (Häder, 2015, p. 67). However, because a leading corporation's market power is highly influential for its native market's development, we assume that such answers remain representative. In the competitive market place decisions are made based on unequal profit maximisation ability. We therefore expect single, selective views that can be generalised for reasons of its own.

"On the basis of which considerations can we derive the justification that only relatively few elements can be used to make statements (including forecasts) about the population (...)"

(Häder, 2015, p. 142)

Our sample selection therefore is a conscious typical selection - in the sense of a theoretical concept - whereby it is open with which probability a certain element is added to the sample (Häder, 2015, p. 149), but rather based on the ability to influence its native market and stakeholders. Based on market power and relevant business specifications, we seek to gather qualitative information for every three research categories of ours, one representative corporation per research category:

1. Selected GDS representing corporations:

[Amadeus IT Group, S.A.](#) (Calle Salvador de Madariaga, 1, 28027 Madrid, ES)

Alternatives: [Sabre Corporation](#) (Southlake, Texas, US), and other GDS supplier

2. Selected Intermediary representing corporations:

[Skyscanner Ltd.](#) (Edinburgh, Scotland, UK)

Alternatives: [Expedia Group, Inc.](#), (Seattle, Washington, US), and other specialised media

1. Selected Supplier representing corporations:

[IATA](#) (Torre Europe, Paseo de Castellana 95, 28046 Madrid, ES)

Alternative: [TUI](#) (Karl-Wiechert-Allee 4, 30625 Hannover, DE)

2.3. Explorative Expert Interviews

As we have determined by our typical selection, we seek a small, not standardised sample size (n) (Häder, 2015, p. 142). Doing this, it is important to recruit a sufficiently broad spectrum of experts (Ullrich, 2006, p.102), which we realise by categorising three different kind of market actors. Experts are such interview partners that have relevant operational and contextual knowledge and are interested or actively involved in the context of action (Ullrich, 2006, p.106).

“Particularly in field exploration, the greatest possible openness for the relevance structures of the interviewees is required (unless they have completely deviate from the topic) and thus informality in the arrangement of the questions (Ullrich, 2006, p.106).”

The main task for the interviewer with a neutral strategy is to register the respondent's behavior and not to make any comments on the answers. He adheres to the norms of the conversation and reacts accordingly, for example, if the interviewee tells him something entertaining (Häder, 2015, p. 193). New and unknown points should be deepened as much as possible. The possibility of adding to the guideline after opening up new and important areas should always remain open. (Ullrich, 2006, p.103). And even beyond one actual interview, the principle of theoretical sampling applies: Through direct recommendation / mediation of our interview partners, we “take up traces” (Häder, 2015, p. 177) and seek further contacts, possibly for opportunities after one interview process.

According to explorative market research design, we seek to conduct personal or online expert semi-structured interviews with our frame population from the typical selection as stated in 2.2. of this work. In a semi-structured interview, some of the questions asked are determined in advance by the interviewee. The order in which the questions are asked is flexible and the respondents can answer completely freely (Genau, 2020).

2.3.1. Non-response Management

The most difficult part is to find the prerequisite for conversations: Expert partners who show the willingness to cooperate. In a time of information flooding we need to have great marketing for our research activity. Our aim is to reach 100 percent of first selection interview partners. Increase in the number of contact attempts and the variation in contact times may help (Häder, 2015, p. 181). Häder (2015, p. 196) further points out tips to motivate responses:

We should be able to communicate that we are a partner for a *pleasant conversation*, an opportunity for the other to exercise positive self-expression regarding professional matters and

maybe even private matters. It should be communicated that this expert interview provides a *productive alternative to daily routines*, productive for the partner because we believe that our years-long desk observance and research regarding the DLT and tourism market is worthy the time our interview partner would invest. Indeed, our frame population of experts may be particularly unavailable due to high committed to their work (Häder, 2015, p. 180). We will therefore position ourselves as an internal, knowledgeable partner that provides specialised information within the field of that expert. Finally, we want to communicate that our interview partner *does something good* by supporting a university student's research, next to communicating a *prize for Interview completion*: One free IOTA unit for experimentation purposes.

2.3.2. Data protection

“For the institute it is important to note that the data received may not be used for purposes other than those known.” (Häder, 2015, p. 137)

Regarding the collection of personal data in expert interviews, we prepared a declaration of data protection, much like it is presented by Häder (2015, p. 136), with information about the purpose of the survey and about compliance with data protection regulations. The declaration will be handed over to our interview partner in advance of the data collection because the requirement for an informed consent from the person concerned applies (Häder, 2015, p. 142).

2.3.3. Pretests

With a pretest we question the thesis that we have formed previously. We then ask about possible alternatives to our communication strategies (Häder, 2015, p. 401). Pretests in the field can also serve as a warm-up and a getting to know the research environment.

Cognitive pretests, such as Think Aloud Method or Paraphrasing (Häder, 2015, p. 402), can be conducted with every one of our research questions but a pretest in the field should only occur with traditional OTA's because we have nothing to lose with them, assuming they would have to exit the market if they do not change their current business models.

2.4. Item Formulation and Example Interview Guide

To formulate goal-oriented detailed questions (items) for each of our three relevant research categories, we use public communications by our frame population's specific corporations. From corporate presentations and report statements we can see how a certain corporation sees itself, what kind of strategies it follows to reach its goals, and what sources of revenue are maintained as of right now. In this way we can develop items for our research questions that are inclusive to the corporation's predefined goals. Again, every item must have this ultimate goal: To retrieve "the perception of the actors' definition of the situation", an orientation towards qualitative social science (Häder, 2015, p. 63).

Below is given the interview guide for an expert from Sabre Corporation (Southlake, Texas, US).

2.4.1. Interview guide towards GDS: Sabre Corporation

General Bachelor's Thesis:

"Suppliers will work together for a DLT-enriched New Distribution Capability (NDC), and specifically small and medium-sized businesses will demand" DLT-as-a-Service "products."

Research question specifically for GDS:

"Will Global Distribution Systems (GDS) consider "DLT as a Service" as a successful business model, specifically targeting small and medium-sized (hospitality) businesses?"

Start:

Greetings and thanks for the time investment; Brief outline of the topic; Statement of the open, explorative interview process and the approximate duration (ca. 30 Min); Data protection agreement

Introductory questions:

- *How long have you been with Sabre and what is your exact job title?*
- *What are your tasks for Sabre?*
- *What do you associate with Distributed Ledger Technology (DLT)?*

Call back question: *How/when did this evolve?*

Question 1:

In 2021, Sabre received the Level 4 NDC certification from IATA (Sabre Corporation, 2021).

- *What do you think, what is the best response for Sabre if IATA, a leader for Suppliers, continues to develop successful retailing (NDC, ONE Order..) programs?*
 - O Improving NDC IT services as well*
 - O Increasing research towards NDC solutions*
 - O Increasing general research towards data usage*

Question 2:

The IOTA Foundation¹ says that IOTA transactions will be feeless, at live-speed, infinitely scalable, and also environmentally friendly, compared to Blockchain solutions.

- *Do you think that DLT-products can play a role in supporting Direct Bookings for Suppliers? What can be the role of Sabre in a commercial-DLT-scenario? One single database to which IT providers, suppliers in travel and intermediaries in travel connect, would that not make sense for travel distribution?*

Review and Outlook:

Brief summary of what has been said, Thank you again for the time, Information about the Bachelor's thesis / results, Farewell

Dennis Schönke

¹ iota.org

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List of Abbreviations

- DLT = Distributed Ledger Technology
- DaaS = DLT as a Service
- GDS = Global Distribution System
- OTA = Online Travel Agency
- IATA = International Air Transport Association
- NDC = New Distribution Capability by IATA

Declaration of Academic Integrity

I, Dennis Schönke, hereby declare that the work presented here is our own work, which was completed without the use of any aids other than those listed. Any material from other sources or works by others has been duly acknowledged and listed in the reference section. Sentences or parts of sentences that are quoted verbatim are marked as quotations; The identification of other references related to the statement and scope of the work has been cited. The work presented here has not been published or submitted elsewhere for evaluation in the same or a similar form.

Vicálvaro, Madrid, ES, May 1st, 2021

Dennis Schönke

A handwritten signature in blue ink, consisting of a stylized 'D' followed by a series of loops and a final horizontal stroke.