

**EXPERIMENTING OR ITERATING? EXPLORING ENTREPRENEURIAL
RETAILERS' DIGITAL BUSINESS ACTIVITIES THROUGH VISUAL DATA
GENERATION** - Insights from a research-based teaching and learning project

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ABSTRACT

Scholars and policymakers have discussed the emphasis on entrepreneurial growth, especially the importance of cooperation with local and regional stakeholders (e.g. local politics, social or innovation networks, or collaboration with regional universities) to gain inner-city economics resilience and to attract owner-managed retail (OMR) and support entrepreneurial SMEs. We aim to contribute to the discussion by adding an entrepreneurial learning perspective, using insights from an exploratory case study research project, which examined efforts made by entrepreneurial retailers in terms of digitalization during the COVID-19 pandemic through the support of their social network. In doing so, we are introducing and discussing the use of visual data collection within an ego-centered qualitative network analysis (ENA) framework, introducing the method in an entrepreneurship and business management research context.

Keywords: *Entrepreneurship, Digital business, Retail, Ego-centred network analysis.*

JEL classification: *I25, L81, O00, R11.*

1. INTRODUCTION

Following the collapse of the German Democratic Republic, and the dawn of the internet East Germany's inner cities are facing heavy economic and structural changes leading to shrinking economies and urban development challenges (Liebmann and Kuder, 2012). On a micro-level, an effect of this structural change is the decline of inner-city owner-managed retail (OMR), marked by increasing storefront vacancies. This is especially true for structurally weaker regions such as the city of Magdeburg, the capital of Saxony-Anhalt, where shifting demographics, lower income, and a negative influx of residents are worsening the problem (SPD, 2020). Scholars and policymakers have discussed the emphasis on entrepreneurial growth (Bernt, 2009), especially the importance of cooperation with local and regional stakeholders (e.g. local politics (Bernt, 2009), social innovation networks, or collaboration

with regional universities) (Welter and Neumann, 2007) in support of digitalisation of SMEs to gain inner city economics resilience and to attract OMR and support entrepreneurial SMEs (Martinelli *et al.*, 2018; Hardaker *et al.*, 2022).

We aim to contribute to the discussion of entrepreneurial learning, by providing insights into an exploratory empirical (a subset of a research-based teaching and learning project “Shopping 4.0” held in Winter and Summer 2019/20), which examined owner-managed retailers in Magdeburg during the COVID 19 pandemic, asking the following research question: *How (and what for) did retail entrepreneurs engage their networks to cope with digitalisation needs within the pandemic?*

The additional scope of this paper is to provide an example for other scholars and teachers of entrepreneurship using visual methods of data collection within an ego-centred qualitative network analysis (ENA) framework. In doing so we are contributing to the spread of visual methods within the field of qualitative network research within an entrepreneurship and business management context.

2. METHODOLOGY

In general, network research distinguishes between two research paradigms: qualitative and quantitative methods. Quantitative methods are used to collect data on entire networks and prefer to examine groups (e.g. science and research networks) at the meso level or the structures of larger systems (e.g. states) at the macro level. The specific forms of network analysis are differentiated at the levels of analysis (micro, meso, and macro) and aggregation levels (dyad, triad, ego-centred network, group, and entire network). The results obtained using quantitative overall network surveys are limited in their explanatory scope. It can be shown how many network partners are involved in a network, but this cannot explain why and how these relationships are defined in their functionality. They are purely descriptive-mathematical approaches that lack qualitative justifications. In addition, overall network surveys are extremely time-consuming to collect.

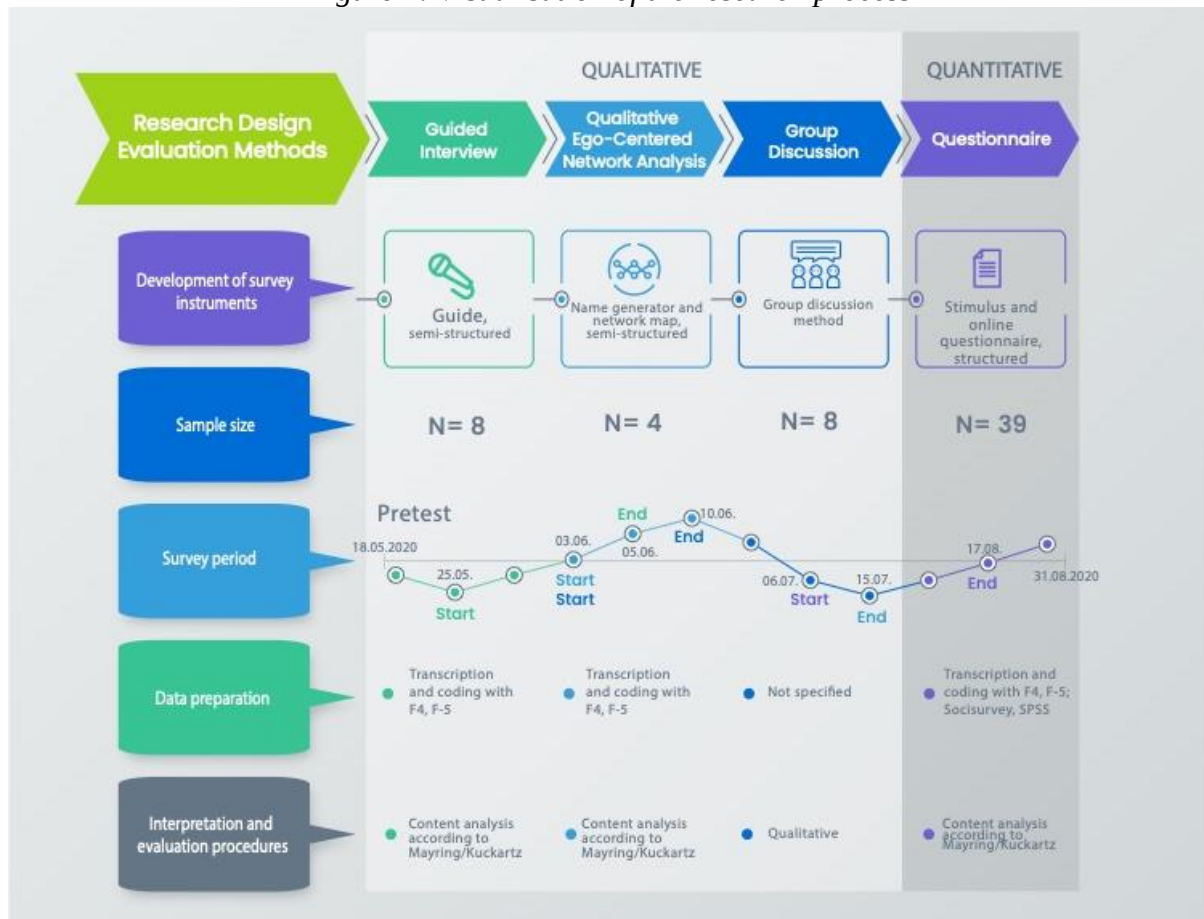
This is contrasted by the paradigm of qualitative network research. Our research aims to depict network structures (mostly social ones) (Wolf, 2005), as it focuses on the retail entrepreneurs (RE) and or their behaviour towards digitalisation, the ego-centred qualitative network analysis (ENA) is well suited to collect and visualise relationships between the ego and its network partners (alteri) in a short amount of time. Therefore, a name generator and a network map (Straus, 2010) are used as methodological instruments to visualise the network. The added value for the research interest lies in the collection of qualitative data that examines the underlying relationships between ego and alteri (Hollstein *et al.*, 2006). This means that the method provides reasons for how the ego is integrated into its network. This research approach is used in particular in health care research (e.g. integration of seniors into social networks to ensure care at home).

2.1. Research framework

Our teaching and learning project took place in winter and summer 2020, our study was conducted by h2 Magdeburg-Stendal University of Applied Sciences (Germany) after the first wave of COVID (from June to July 2020). During the track of two months 12 graduate students of h2s part-time “Digital Business Management” (DBM) and Crossmedia Master Programmes with the support of 15 students of h2 universities bachelor-level study program on social work developed a mixed-method approach of qualitative and highly explorative case studies and a quantitative questionnaire to provide detailed insights into how store-front owner-managers engaged in digitalisation and what positive and negative experiences they were confronted with. Secondly, students chose to explore the research question of the individual attributes of

a subset of OMR showing experimental behaviour for exploring how network partners would impact business models experimentation through COVID-19 in terms of digitalisation through a self-developed research framework guided by the authors.¹

Figure 1: Visualisation of the research process



(Source: Authors' calculations)

2.2. Sample generation

During the preparatory phase retailers' addresses and contacts were collected through a provided dataset of local chambers of commerce, student field trips and additional internet research, which was conducted by graduate students. Additionally, the 15 social work students were engaged in connecting to retailers via phone, email, or in-person to ask for retailers' participation, leading to a final n=53. Depending on OMR preference and methodological diversity, four research groups were formed: qualitative interviews (n=8), focus groups with other stakeholders (n=2), a quantitative survey (n=39), and a visual network analysis for an exploratory analysis of the role of network structures (n=4). For the ENA, we used purposive sampling [source] as the sample needed to include proactive experimenters with networking and digitalization. The low number of the subsample derived from availability issues and avoidance of physical contact, mostly related to the COVID pandemic, which led to the cautious behavior of potential participants.²

¹ The full research is available through the authors and visualised in figure 1.

² Generally, our main sample shows two types of retailers were specified on the basis of the data collected: Digitalisation Sceptics (DS) or non-active and those willing to experiment. DS mainly have been discouraged by previous digitalisation experiences or hearsay, would have hardly used the lockdown period for digitalisation activities made up the largest group (w. approx 85%), while the group of experimenters increased their main digital activities in order to stay in contact with their regular customers.

Table 1: Structure of the exploratory subsample

Type of retail product/service	Gender	In business since		# of employees	prior www	digitisation project(s)	# of alteri
Fair Fashion	Female	2019	full-time	0	yes	- establishment of an online shop system - online marketing campaign via social media - first-time use of digital outdoor advertising spaces	7
Tea Store	Male	2014	full-time	1	yes	- social media marketing - newsletter for delivery and pick-up service - update of online shop and cash register software and system (GER) - integration of cashback- and payment provider - cross-marketing with a regional online-marketplace	7
paint store and manufacture	female	2017	full-time	0	no	- Web shop concept development - digital product development for digital distribution (DIY easter present offer) - digital photography Idea trigger for online video course, participation in social media and social sales platform (both US) - support by regional online-marketplace (photography)	8
wool and	female	2012	pt.	0	yes	- renovation of online	10

yarn Store			time			shop system - search engine optimization - social media marketing - digital customer advice sessions	
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(Source: Authors' calculations)

2.3. Data collection

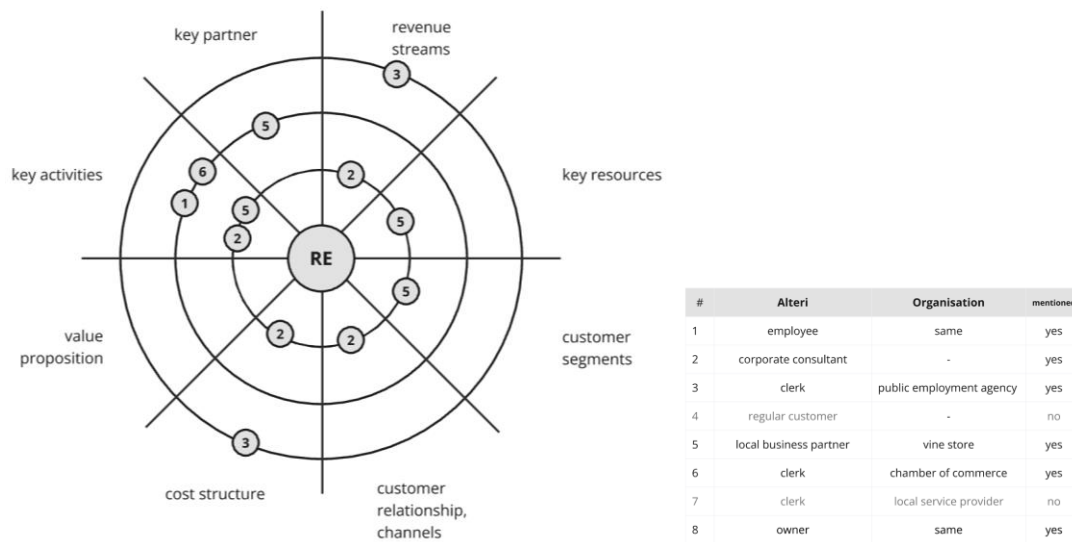
The ENA (ENA) was engaged within a subset of n=4 focussing on examining the social connections and relationships of one or more focal individuals (egos) from their own perspective. The individual networks are constructed from the viewpoint of the ego /the business owner), capturing their subjective perception of their social environment. It maps out the ego's direct connections (alters) and the relationships between those alters (von der Lippe & Gamper, 2016).

The data collection was structured as follows: 1. Interviewee self-introduction | 2. collection of network participants using a name generator (Straus, 2010) incl. information about attributes of alters (e.g. age, gender, relationship type) | 3. Generation of a visual network map (Straus 2010) through semi-structured interviews to collect on characteristics of ego-alter ties (e.g. closeness, frequency of contact) and their intensity. | 4. Conclusion.

For scope, the characteristics asked in step 3 would be based on the degree of proximity, connection, affiliation, etc. (von der Lippe & Gamper, 2016). As the “Shopping 4.0”'s research design sought to examine the patterns of connections among alters, the scope of the research was to uncover the intensity of the relationships from ego to alteri and between alteris. Therefore, students chose the category “degree of influence” to map the impact of network partners on the interviewees' digitalisation efforts. To ensure that the individual cases can be evaluated in a comparable manner within the scope of the study, the partially standardised procedure according to Kahn and Antonucci (1980) is used. The attribute “degree of influence” is set in the ordinal characteristics “low influence”, “medium influence”, and “strong influence” and embedded in concentric circles in the network map. As the distance from the ego increases, the degree of influence of the alter decreases (see the following figure).

To generate a more in-depth view of the interviewees' change of business models, students additionally chose to use an adaptation of the 9 components of the Business Models (Osterwalder *et al.*, 2015) as additional analysis sub-categories. The Business Model Canvas structures business models into nine different components in order to gain structured insight into which factors influence the business model (Osterwalder *et al.*, 2015).

Figure 2: Example of network map and name generator



(Source: Authors' calculations)

The following components have been used for further analysis: 1. Revenue sources 2. Key resources 3. Customer segments 4. Customer relationships/channels 5. Cost structure 6. Service/product offering 7. Key activities 8. Key partners. Narratives were gathered through the following initial and interview question: *What is the degree of influence of the (in step 2) mentioned network partner in terms of digitalisation regarding the components of the business model canvas?*

3. FINDINGS

Comparing the cases of retail entrepreneurs (RE) engaging in business experimentation had structurally comparable experiences found to be very marketing-oriented in introducing or expanding digital measures. Activities include setting up the shop software, maintaining data for the merchandise management system, creating online marketing campaigns and content, mostly images and blog posts, for social media, or providing digital customer advice and optimisation for search engines.

Data shows that digital business model development within our subsample is primarily influenced by knowledge in the areas of entrepreneurship, online marketing and communication as well as resource and time management and RE's willingness to communicate and collaborate. To keep up pace with these new demands of digital marketing RE needed individual attributes such as openness, persistence, flexibility, trust and an attitude geared towards networking (network orientation) as well as opportunity spotting, creative and decision-making skills.

All four cases showed a high level of individualism in RE businesses, reflecting the individual interests of their owners. Furthermore, digitalisation efforts are collectively described as time-consuming, demanding, and resource-intensive, as it is blurring the boundaries between work, core business, and digitalization activities. EL engaging in digital marketing found the follow-up costs extremely difficult to estimate, as financial and time resources and own competencies may not match the high expectations related to digitization. This may be explained by very high standards regarding ERs own businesses and the value of customer relations which may be mirrored in the expectations towards digital solutions (e.g. corporate design, product presentation, and customer communication).

However, we found that digitalisation is a task RE could not accomplish independently, but only in conjunction with various non-commercial/commercial network partners bringing in complementary expertise. ER, who already had network peers in digital marketing were more easily able to further intensify their digitalisation and customer communication efforts. Our cases also indicate that within the group of RE, there are a wide variety of qualification and consulting needs in order to implement digital customer communication in an economically and socially acceptable way.

Furthermore, our sample shows that collaboration in local innovation-driven networks and participation in supporting digitisation efforts may not produce resilience in ER as these networks did not offer the support, EL needed. The high level of expectations and individualism of challenges addressed by ER during data generation raises the question of what support regional entrepreneurship and business education programs can have for those already experimenting.

Learnings

Visualizing the individual's networks throughout the interview provides a reflexive instrument that develops narratively, i.e. creatively (Schönhut and Gamper, 2013). The use of ENA allowed students an easy and engaging entry point into the examination of how an individual's network interacts with their entrepreneurial behaviours, attitudes, and outcomes, but also other advantages in terms of applicability, engagement, integrability, and flexibility.

Advantages of applying visual network maps

Easiness of use and engagement

The interactive nature of the network map visualisation process made the data collection process more engaging for both students and respondents engaging in the production of a visual network map supporting participants to keep an overview of their relationships throughout the data collection process (Hollstein et al. 2020).

Providing flexibility in data collection

The use of ENA allowed the students a more flexible approach to data collection, accommodating both structured and unstructured methods.

Providing integrability

The use of ENA allowed the students to be integrated into traditional survey methods and sampling techniques allowing for integration in sophisticated research designs aiming at triangulation (Flick, 2011).

Limitations of applying visual network maps

Although working with network map visualisation process, limitations to be found may apply from data quality as well as from a methodological perspective:

Incomplete network picture

Ego-centred networks only capture the connections from the perspective of a single individual (ego), which may not provide a complete picture of the broader social network. This limited view can lead to an incomplete understanding of the overall network structure and dynamics.

Bias in alter selection or recall

Egos may not accurately report all their connections, potentially leading to bias in the selection of alters. Also, Egos might be inclined to report connections that they perceive as socially desirable, potentially distorting the true nature of their network (Hollstein et al., 2020). Also to visualise changes in ego networks over time is challenging, as alterations in the network

composition may not be integrated in map design (Hollstein et al. 2020). This may result in a distorted representation of the network, as some important connections might be overlooked or underreported.

Boundary specification

Defining the boundaries of an ego network can be challenging, as it's not always clear where to draw the line in terms of positioning or including or excluding certain alters (Hollstein *et al.*, 2020).

However, as the use of ENA in our case followed a very structured approach while producing a decent amount of comparable data (name generator, visual network map, interview transcript) we found that ENA comparability evolves the more structured the approach is and the more datasets are included. By providing an easy but sophisticated research method that can capture rich data (both structured and semi-structured) we argue, that these characteristics contribute to both qualitative and mixed-method research projects, that aim for scalability and comparability, eventually in longitudinal studies aiming with the scope of capturing developments over time and/ or regions. Anyhow: As Ego networks may be of different sizes it can be difficult to compare directly, as network measures may be influenced by the number of alters reported.

LIMITATIONS

The qualitative data obtained using the method of ENA are to be understood as individual case studies, showcasing the situation in the city of Magdeburg. The sample primarily represents established retail entrepreneurs, who are keen to experiment. This means that the sample is not a reflection of the population, as a whole nor of Magdeburg itself, as most of the retailers did not participate in digitalisation activities. Using case comparisons (comparative analysis), similarities and differences, in the sense of structurally identical characteristics, could be identified on a qualitative level. The data material was subjected to intensive evaluation and discussion in a research workshop. Although the analytical depth of the case understanding can be classified at a high level, the present results are not representative. However, we argue that relevant assumptions of key characteristics as well as the first hypothesis can be derived from our research.

CONCLUSION AND OUTLOOK

By centering on the individual's perspective, ENA provides valuable insights into how people's immediate social environments shape their experiences and outcomes. As such, we encourage researchers, scholars, and educators to use this highly easy and flexible tool in their own research design as well as in teaching, as it provides potential and feasibility for studying large or undefined populations compared to whole network approaches. The use of ENA may have helped respondents recall relationships more accurately, potentially leading to more comprehensive network data (Hollstein et al., 2020). In cross-regional research and study settings, the method may enable students with a variety of backgrounds and academic skills to participate in collaborative research projects as it provides low-barrier entry. The scalability makes comparisons across multiple ego networks to identify patterns or differences based on ego characteristics, which makes it a potential method for cross-regional research aiming at ecosystem comparisons.

While ENA has shown to be a valuable tool for understanding personal networks and their impacts, researchers should carefully consider these potential pitfalls when designing studies and interpreting results. Combining ego-centred approaches with other network analysis

methods or complementary data sources can help mitigate some of these limitations and provide a more comprehensive understanding of social networks and their effects.

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