



Three Essays on the influence of company Facebook and traditional channel activities on recruitment success

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Summary

The appearance of web and online media has created a substantial change in the manner by which employers and applicants interact. The development of web 1.0 applications with one-way communication and the advancement of web 2.0 technologies with interactive components have extended the spectrum of recruitment channels. The new recruitment media channels have led the selection and analysis of their impact out of interaction on each other to a new challenge within academical literature. This dissertation addresses these issues in three separate essays.

Study 1 focuses on the impact of Facebook as a social media recruitment channel on recruitment success. Many companies embed Facebook into their recruitment strategy as an additional recruitment channel for reaching potential applicants and motivating them to apply for available positions. Study 1 analyzes these activities and addresses the question of whether different Facebook activities influence recruitment success above and beyond other undertakings on traditional and online media channels. Study 1 concludes that on Facebook, company posts with a general focus and posts containing work or recruitment information both have a positive impact on recruitment success. The results of Study 1 are validated by company interviews with human resources (HR) managers who are responsible for the overall HR strategy of the company. Study 1 is the first academic work within HR and marketing research, which analyzes the impact of a company's Facebook activities.

Study 2 examines the impact of traditional media recruitment channels on recruitment success. Many companies employ traditional media channels for their recruitment marketing actions with the aim of achieving recruitment success. Study 2

uses media richness theory as a basis for analyzing the impact of a company's activities within traditional media channels on recruitment success. Study 2 concludes that exhibition fair and online marketing activities influence recruitment success. In connection with brand equity theory, Study 2 also verifies whether the addition of Facebook activities reinforces the impact of traditional media channels on recruitment success. The results indicate that general Facebook activities have a reinforcing impact on exhibition fair and print media recruitment practices.

Finally, Study 3 focuses on both the literature overview of traditional and social media recruitment practices and social media influence from the marketing literature. It also summarizes and categorizes previous research on the influence of traditional, online, and social media recruitment practices; the effect of a multichannel mix; and the influence of social media and social networking sites on different business outcomes from the marketing literature. Additionally, Study 3 identifies the research gaps and provides recommendations for future studies.

This dissertation uses vector autoregression modelling, including a validation with the help of company interviews and the employment of media richness, signaling, and brand equity theories, combined with a thorough analysis of the research need. The dissertation closes the research gap regarding the analysis of the impact of Facebook, online, and traditional media on recruitment success. It also adds new perspectives to the HR and marketing literature.

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List of Abbreviations

AIC	Akaike information criterion
eHRM	Electronic human resources marketing
eWOM	Electronic word of mouth
HR	Human resources
IRF	Impulse response function
SNS	Social networking sites
VAR	Vector autoregression
VEC	Vector error correction
WOM	Word of mouth

1. Introduction

1.1. Employer Branding

Increasing demand for a limited number of skilled and educated candidates (Verma & Ahmad, 2016) has led to the rise of *employer branding*. Ambler and Barrow (1996, p. 186) define employer branding as the “package of functional, economic and psychological benefits provided by employment and identified with the employing company.” Lloyd (2002) refers to employer branding as the sum of a company’s efforts to communicate to current and potential employees the message that the company is a desirable place to work.

The objective of employer branding is to attract candidates by cultivating compelling and unique perceptions of companies in the minds of potential employees (Mandhanya & Maitri, 2010). In their book, Michaelis et al. (2001, p. 1) pertain to the “war for talent,” in which companies battle to recruit skilled employees. This war is exacerbated by the fact that today’s employees are increasingly prone to switching jobs several times during their careers (Verma & Ahmad, 2016). This trend could lead to a situation in which the competition for best employees is expected to be as fierce as the competition for customers (Sehgal & Malati, 2013).

To meet the challenge of attracting a limited pool of talented candidates, organizations nowadays are conducting employment marketing activities in multichannel environments.

1.2. Employment in a Multichannel Environment

In the first phase of Barber’s recruitment process, which is called the generation of applicants (Barber, 1998), the stimulation of applicants’ interest is predicted by

job and organization characteristics (Allen et al., 2007). Companies strive to communicate this message using different employer branding channels.

Organizations communicate their recruitment messages through a variety of media, and the decision on how to allocate these messages via different media is an important one (Allen et al., 2004).

The main employer branding and recruitment channels nowadays are traditional and social media channels. Traditional channels include newspapers, exhibition fairs, and web pages. Kaplan and Haenlein (2010, p. 61) define social media as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content.” Social media belongs to the most effective channels for employment marketing (Kaur, Sharma, Kaur, & Sharma, 2015). Social networking sites (SNS) are among the most extensively used social media channels for employer branding and recruitment. However, the usage of Facebook as a recruitment channel is “underresearched in the recruitment field” (Frasca et al., 2017, p. 133). Moreover, the impact of traditional media channels on recruitment success remains underexplored. Previous studies are limited to the use of self-reported and survey-based regression analysis of broad effects such as the general impact of early recruitment practices (Collins & Han, 2004) and the overall influence of online recruitment tools (Parry & Tyson, 2008), as well as a comparison of the strengths of the impact of websites and print media channels (Baum & Kabst, 2014) and evaluation of the usage of unusual media such as post cards (Cromheecke et al., 2013).

1.3. Research Scope

This dissertation investigates the role of Facebook and its impact on recruitment success above and beyond all the other activities. It also analyzes the influence of traditional recruitment activities by investigating the reinforcing impact of social media activities on Facebook. An overview of the relevant HR literature and avenues for future research completes the trilogy of this dissertation consisting of three independent studies.

1.3.1. Study 1: Influence of company activities on Facebook on recruitment success

Social media channels have attained significant growth in both company and user activity in recent years (Laick & Dean, 2011). Social networking sites (e.g., Facebook), rating platforms (e.g., Kununu and Indeed), and microblogs (e.g., Twitter) have become acceptable means of promoting job vacancies and recruiting potential candidates (Laick & Dean, 2011). According to a study by the University of St. Gallen (Rossmann, 2012), 42% of German companies use social media to improve their employer branding and hire new people. Despite the importance of social media and SNS to human resource (HR) management, knowledge about the recruitment effectiveness of these channels is scant. Study 1 fills this gap by analyzing the impact of various company activities on recruitment success using the vector autoregression (VAR) model. Results demonstrate that on Facebook, company posts with a general focus and posts containing work or recruitment information both have a positive impact on recruitment success.

1.3.2. Study 2: Influence of traditional recruitment practices on hiring success with consideration of the reinforcing impact of Facebook

Companies use traditional recruitment channels to attract applicants and achieve recruitment success. However, the development of web 1.0 and web 2.0 technologies in the past two decades has affected the usage of recruitment channels, as many companies now employ a multichannel employment marketing mix consisting of traditional and social media channels. However, the question of how Facebook and traditional media activities “do (or do not) work well together” (Libai et al., 2010, p. 275) remains unaddressed. Study 2 delivers its contribution in this regard. As a first step, Study 2 answers the aforementioned question based on real activities and time-series data analysis with the help of the VAR model by verifying whether traditional media practices such as exhibition fair, online marketing, and print media activities influence recruitment success. As a second step, Study 2 examines whether the addition of Facebook activities by the same case company reinforces the impact of employment marketing activities on exhibition fair, online, and print media channels. Our results indicate that general Facebook activities have a reinforcing impact on exhibition fair and print media recruitment practices.

1.3.3. Study 3: State-of-the-art literature overview of the modern influence of traditional and social media recruitment practices on applicants’ attraction

Competitive pressure and changing workforce demographics have made the attraction of high potential talent a top management concern (Boswell et al., 2003). Moreover, the “war for talent” (Michaels et al., 2001) is a lingering phenomenon (Mandhanya & Shah, 2010). Therefore, the adoption of recruitment practices within a modern multichannel mix is important for attracting potential candidates.

Study 3 addresses this concern and summarizes previous research on the influence of traditional and social media recruitment practices. It also underlines the importance of recruitment activities and provides an overview of all the relevant studies on traditional recruitment practices with respect to their direct or indirect influence. Furthermore, Study 3 presents the current research status concerning the effects of web 1.0 and web 2.0 recruitment practices on hiring success. As web 2.0 applications refer to social media, this study also provides an overview of relevant research regarding the influence of social media on different business outcomes. The study concludes with a summary and the identification of research gaps. It also suggests recommendations for future research with regard to the analysis of the effectiveness and impact of a multichannel combination and further investigation into real company and user activities on various social media channels.

1.4. Structure of the Dissertation

This dissertation comprises several chapters. Chapter 1 presents an overview of employer branding and its relevance and a description of employment in a multichannel environment. Chapter 2 focuses on Study 1, specifically on how a company's activities on Facebook influence recruitment success. Chapter 3 deals with Study 2, particularly on how traditional media recruitment activities influence recruitment success. Chapter 4 includes Study 3, with a literature overview of the modern influence of traditional and social media recruitment practices on applicants' attraction. The next figure depicts the research triangle that is discussed within this dissertation. Figure 1 provides the overall structure of the dissertation.

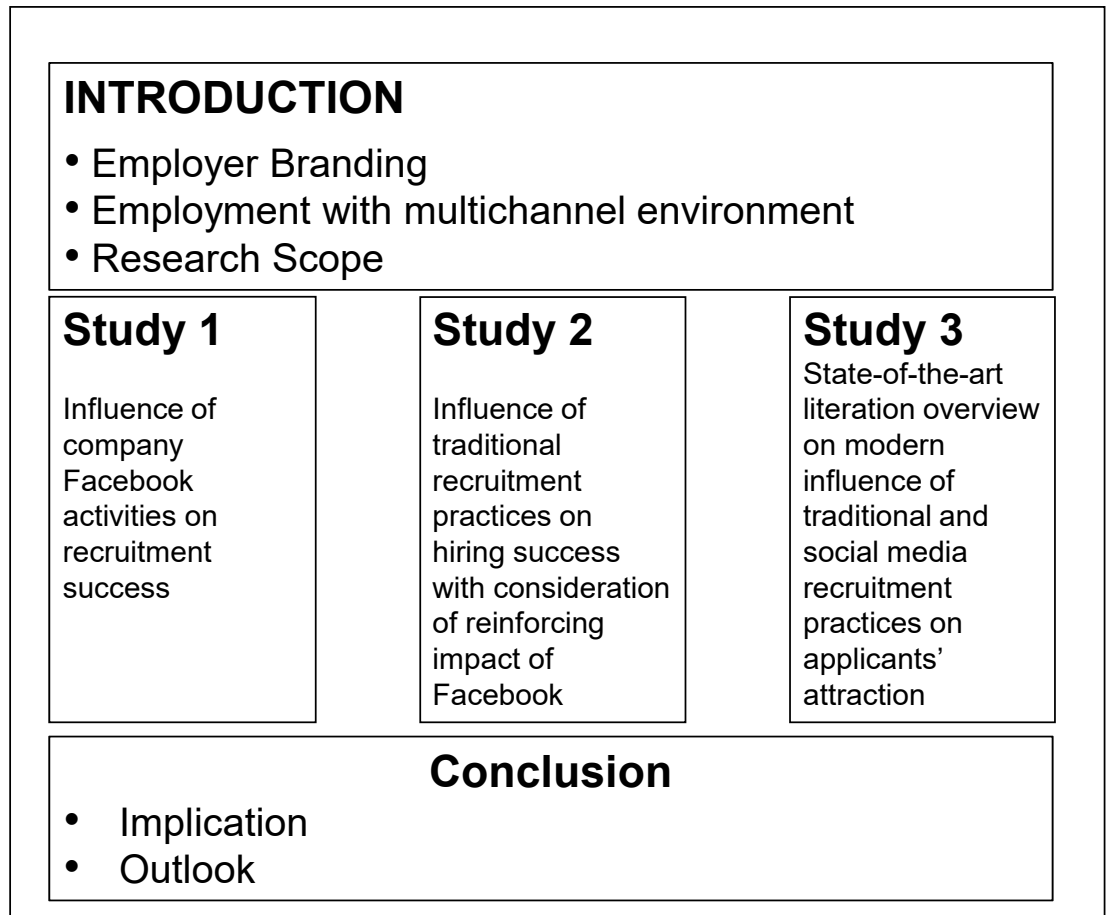


Figure 1: Structure of the dissertation

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2. Study 1: Influence of company Facebook activities on recruitment success

Dimitri Golovko und Jan Hendrik Schumann

Social networking sites (SNSs), such as Facebook, have become a significant part of the employee-recruitment process; many companies use SNSs to achieve their recruitment goals. However, studies on recruitment practices or social media influence have not examined the effect of recruitment activities using SNSs on recruitment success. This study fills this gap by analyzing the impact of various company activities on recruitment success using the vector autoregressive model (VAR). Results demonstrate that, on Facebook, company posts with a general focus, as well as posts containing work or recruitment information, have a positive impact on recruitment success. The authors provide human resources (HR) managers with recommendations on how to shape successful employment marketing campaigns using Facebook as an element of a modern HR multichannel strategy. The authors recommend proactive and permanent engagement on Facebook while simultaneously using traditional channels.

2.1. Introduction

For companies, the need to attract qualified staff has never been more pressing. Financial markets are increasingly recognizing the value of human capital to both firms and shareholders (Marokko & Uncles, 2008). To succeed in the “war for talent” (Michaels et al., 2001, p. 1), firms use various forms of employment marketing in the early phases of the recruitment process (Baum & Kabst, 2014). These include traditional channels such as print media advertising, job fairs, and

standard Web 1.0 recruitment websites. However, Web 2.0 social media channels have experienced phenomenal growth in both company and user activity in recent years (Laick & Dean, 2011). Social networking sites (SNSs; e.g., Facebook), rating platforms (e.g., Kununu and Indeed), and microblogs (e.g., Twitter) have become acceptable ways to promote job vacancies and recruit potential candidates (Laick & Dean, 2011). Job applicants use social media to obtain information about potential employers and to gauge companies' corporate cultures (Laick & Dean, 2011). According to a University of St. Gallen study (Rossmann, 2012), 42% of German companies use social media to improve their employer branding and to hire new people. Burke, Martin, and Cooper (2011) identify the impact of social media on employer branding effectiveness as an important direction for future research.

However, despite the importance of social media and SNSs to human resources (HR) management, there is a lack of knowledge regarding the recruitment effectiveness of these channels. Although the existing HR literature addresses the effects of traditional employee-recruitment practices (Boswell et al., 2003; Collins, 2007; Collins & Han, 2004; Collins & Stevens, 1999; Cromheecke et al., 2013; Han & Collins, 2002; Parry & Tyson, 2008), recruitment websites (Allen et al., 2007; Baum & Kabst, 2014; Cable & Yu, 2006; Williamson et al., 2010), media richness (Allen et al., 2004), and communication (Johnson & Roberts, 2006; Lievens & Highhouse, 2003), it does not assess the effect of social media in general—and SNSs in particular—on recruitment success.

Also, within social media marketing research, studies do not address the impact of social media or SNSs on recruitment success. Instead, analyses of the influence of companies' social media activities have focused on their positive effects on purchase behavior (Berger et al., 2012; Chevalier & Mayzlin, 2006; Lis & Berz, 2011; Onishi

& Manchanda, 2011), sales (Dellarocas et al., 2007; Dhar & Chang, 2009; Duan et al., 2005; Kumar et al., 2016; Stephen & Galak, 2012), contributions to firm value (Villanueva et al., 2008), and stock market performance (Tirunillai & Tellis, 2012). With respect to SNS influence research, which, according to Kaplan and Haenlein (2010), represents a singular type of social media, researchers have compared social media word-of-mouth (WOM) marketing with traditional marketing on new customer acquisition (Trusov et al., 2009), and have analyzed the impact of in-store visits and sales through customers' engagement on Facebook (Dholakia & Durham, 2010). They have also examined the influence of SNSs on customer brand loyalty (Jahn & Kunz, 2012) and researched Facebook as a recruiting medium that helps acquire potentially difficult target groups needed for healthcare studies (Kapp et al., 2013; Pedersen et al., 2016).

We argue that, although the results of social media studies hint at the effectiveness of social media in various business areas, they do not necessarily transfer directly to the employee-recruitment context because the marketing impact of social media differs between job applicants and customers. Applicants and customers are different target groups with different decision-making processes; for that reason, we suggest that the decision to buy goods from a company requires different incentives than the decision to work for a company, and, therefore, social media approaches that aim to increase sales will not necessarily work to recruit employees. In the same vein, we cannot transfer the results from healthcare participants to HR recruitment because these domains differ with regard to their target groups and respective motivations. Furthermore, the studies of social media and healthcare (Kapp et al., 2013; Pedersen et al., 2016) are often survey-based and deal with self-reported attitudes and the behavior of consumers, whereas few studies from social media (Dholakia & Durham,

2010; Kapp et al., 2013; Pedersen et al., 2016) assess the effect of firms' Facebook activities on relevant success metrics.

Given that previous academic literature does not offer social media or SNS analyses with respect to their impact on recruitment success, this study aims to fill this void by answering the following two research questions: Do social media activities have an added effect on HR recruitment success beyond activities in other channels? If so, which particular kinds of social media activities influence HR recruitment success?

In our study, we examine the impact of recruitment activities posted on a Facebook HR recruiting channel on recruitment success under the simultaneous consideration of marketing activities and expenditures on traditional channels. We focus on Facebook, as it is the SNS with the largest reach and allows firms to interact with potential job applicants in a casual and unobtrusive way (Kaplan & Hainlein, 2010). We use 28 months of HR marketing activity data from a well-known company in the aviation industry with about 100,000 employees. We define recruitment success as the number of employment applications received. We analyze the data with a vector autoregression (VAR) model while controlling for all HR activities on other channels and discover that posts with a general focus, work information, or recruitment details have a positive impact on the number of applications received.

Our study makes several contributions to the HR marketing literature, as well as to SNS research. First, we contribute to HR literature and, more specifically, to the limited electronic human resource management research (Frasca et al., 2017) by showing that general activities on Facebook have an impact on recruitment success

within a multichannel environment. With our findings, we extend Allen et al.'s (2004) conclusions with reference to the reported influence of different kinds of communication, such as face-to-face, video, audio, and text.

Second, we demonstrate that company communication of specific job attributes on a Facebook career page, such as posts about the work environment and recruitment processes, leads to increased recruitment success. These findings are in line with those of previous studies showing that an applicant's intention to apply for employment is higher for companies that communicate more detailed information (Robertson et al., 2005) and that the provision of specific kinds of information can influence applicant attraction (Allen et al., 2007). More specifically, our results agree with findings showing that detailed job information provided on recruitment websites impacts the number of applications received (Williamson et al., 2010). In comparison to previous studies, we enrich the existing research results (Allen et al., 2007; Williamson et al., 2010) regarding company activities. By using the employment marketing actions of a large employer, we add new insights to those of survey-based employment marketing research.

Third, we demonstrate, in contrast to previous findings (Allen et al., 2007; Chapman et al., 2005), that some company activities, such as supplying information about job offers and the organization, have no impact in the context of Facebook as a recruiting channel. Our approach, however, is different from previous studies: we use real company activities on a time series basis, instead of students' self-reported answers.

Fourth, this study heeds calls for research on recruitment channel combinations (Libai et al., 2010) by demonstrating the additional effects of communication via Facebook beyond other employer marketing sources.

Our study continues with a review of the theoretical background that explains employer branding objectives and the role of social media and SNSs, and we then formulate hypotheses based on the media richness theory and signaling theory. The following section provides a description of the research framework and methodology and presents the results. Finally, we discuss academic and managerial implications and acknowledge our research limitations.

2.2. Theoretical Background

2.2.1. Employer Branding, Social Media, and SNSs

For approximately two decades, increasing demand for a limited number of skilled and educated candidates (Verma & Ahmad, 2016) has led to the practice of *employer branding*, first defined by Ambler and Barrow (1996, p. 186) as the “package of functional, economic and psychological benefits provided by employment and identified with the employing company.” Lloyd (2002, p.153) refers to employer branding as “the sum of a company’s efforts to communicate to existing and prospective staff that it is a desirable place to work.”

The objective of employer branding is to attract candidates by cultivating compelling and unique perceptions of a company in the minds of potential employees (Mandhanya & Maitri, 2010). In their book, Michaelis et al. (2001, p. 1) refer to the “war for talent,” in which companies battle to recruit skilled employees. This war is exacerbated by the tendency of today’s employees to switch jobs several times during their careers (Verma & Ahmad, 2016). This trend could lead to a

situation in which competition for the best employees will be as fierce as that for customers (Sehgal & Malati, 2013).

To meet the challenge of attracting a limited pool of talented candidates, organizations conduct employment marketing activities in multichannel environments. One of the latest and most effective channels for employment marketing is social media (Kaur et al., 2015).

Kaplan and Haenlein (2010, p. 61) define social media as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user-generated content.” One social media channel—SNSs—is used by up to 90% of companies in their recruitment process (Foster & Breen, 2015). Although the use of social networking tools such as Facebook for HR purposes is growing, research on this practice is lacking (Davison et al., 2011). In the following, we formulate hypotheses regarding the impact of relevant Facebook recruiting activities with respect to media richness theory and signaling theory.

2.2.2. Impact of the Amount of Information

In general, media richness theory states that communication outcomes depend on the channel’s abilities to fulfill communication requirements (Daft & Lengel, 1986). One of its applications to HR research is the impact of media richness and information volume on attracting applicants. In this context, media richness theory states that the total amount of information can influence the hoped-for outcome; however, this impact depends on the source’s characteristics (Allen et al., 2007) and the ability of a company to direct employer marketing messages toward the target group. In their study, Rynes and Miller (1983) investigated whether the amount of

information provided to applicants positively affects a company's attractiveness. This has subsequently been demonstrated (Allen et al., 2004).

An explanation is that the relationship between the intensity of media use, which can be measured with proxy variables such as the amount of information with a general focus, and a wished outcome is positive when media's richness characteristics fit the task requirements (Rice, 1992), which lie in connection with the ability to transfer employer marketing messages to potential applicants. Summing up previous studies with respect to the influence of information amount and the explanation of that influence with the help of media richness theory, we argue that Facebook has the typical interactivity characteristics of a high level of participation (Kaur et al., 2015), an informal nature of communication (Hennig-Thurau et al., 2004), and electronic word-of-mouth via the sharing and co-creation of user-generated content (Kietzmann et al., 2011). We argue that these characteristics fit the requirement to transmit employer marketing messages to potential applicants, and, for that reason, we suggest with reference to media richness theory that offering more general information on Facebook recruiting pages leads to positive company attractiveness and thus result in increased applicant attraction, resulting in more applications received. We define information amount as *posts with a general focus* (the total number of Facebook posts that have a general focus that were generated by the focal company during the considered period of time). We therefore propose the first hypothesis:

Hypothesis 1: An increase in posts with a general focus provided by the focal company on its Facebook recruiting page will result in an increase in applications received.

2.2.3. Impact of Information About the Organization and its Job Offers

Along with the impact of Facebook posts with a general focus, it is important to consider the impact of information regarding a specific topic dispersed by the focal company on its Facebook career page. Chapman et al. (2005) showed that the communication of information with job and organizational characteristics is relevant in attracting applicants. In their study based on signaling theory, Allen et al. (2007) state that “recruitment messages and materials that provide more information about job and organizational characteristics should positively influence applicant attraction to an organization” (p. 1968). In line with this research, we argue that information about job and organizational characteristics provided by the focal company on its Facebook recruiting page will increase recruitment success. We define posts with organizational characteristics on a Facebook recruiting page as *posts with information about the organization*. We define posts with job characteristics (job offers including job descriptions) on a Facebook career page as *posts with job offers*. We thus propose hypotheses 2a and 2b:

Hypothesis 2a: An increase in posts with information about the organization provided via its Facebook recruiting page will result in more applications received.

Hypothesis 2b: An increase in posts with job offers from the organization provided via its Facebook recruiting page will result in more applications received.

2.2.4. Impact of Information About Work and Recruitment

With reference to the findings from signaling theory that state that the provision of specific kinds of information can influence applicant attraction (Allen et al., 2007), and that an applicant’s intention to apply for a company position is higher for companies that communicate more specific information (Robertson et al., 2005), we

propose that providing posts with detailed information about the working environment and recruitment process on Facebook is relevant for applicant attraction.

Our proposition is in line with Williamson et al. (2010), who state that information about the working environment provided on recruitment websites has an impact on the number of applications received. Information about the working environment is important because it helps “reduce uncertainty about particular job opportunities” (Williamson et al., 2010, p. 671), and applicants try to avoid ambiguity in connection with future job challenges in part by minimizing risks (Highhouse & Hause, 1995; Lievens & Highhouse, 2003).

We define posts on a Facebook career page that contain information about work and the working environment inside the considered company as *posts with information about the working environment*. We also identify posts with information about the recruitment process and events as *posts with information about recruitment*.

We argue that posts with information about the working environment on a company’s Facebook career page inform potential applicants about job details, and this reduces the risk of job opportunity rejection due to a lack of detailed information (Barber & Roehling, 1993; Maurer et al., 1992). The amount of information about the working environment may signal the quality of an employer to potential applicants (Yüce & Highhouse, 1998), leading to an increase in the number of applications received.

Posts about recruitment help reduce job seeker uncertainty (Williamson et al., 2010) and the risk of job rejection. We also argue that by providing an understanding

of the recruitment process, these posts motivate job seekers to apply for a position within the focal company.

Based on this information, we formulate the following hypotheses:

Hypothesis 3a: An increase in posts with information about a company's working environment provided via its Facebook recruiting page will result in an increase in applications received.

Hypothesis 3b: An increase in posts with information about a company's recruitment process provided via its Facebook recruiting page will result in an increase in applications received.

2.3. Methodology

2.3.1. Data Sample and Measures

To analyze the employee-recruitment effects of Facebook activities, we selected a German company from the aviation industry, which, for confidentiality, we refer to as the "focal company." We chose this company because it is a well-known employer (this is important because its popularity is responsible for its high number of employer marketing activities and applications received) with its own career-related Facebook account that features a high number of Facebook activities, which can be explained by applicants' interest in the aviation industry. During the period of our study, the focal company belonged to the top 25 employers in Germany with the most fans and activities on Facebook. The vast majority of available positions within the focal company were directed at high school graduates.

We retrieved data from the HR marketing department for a period of 28 months (July 2011–October 2013) in three blocks: company activities on Facebook,

company marketing spending on traditional communication channels, and recruiting data. The collected data refers to company activities only. Individual user activities on Facebook and individual data were not collected.

We processed the data with VAR methodology on a monthly basis. Due to the orientation of the selected company to high school graduates, our data was specific to applicants with high school diplomas. The data is in line with the required dynamic characteristics of frequency and reach for social media measurement (Wilcox & Kyungok, 2012). Table 1 represents the data categories.

Category	Explanation
(I) Posts with a general focus	The monthly total number of company posts with a general focus; This shows the intensity of company activities on Facebook.
(II) Posts with information about the organization	The monthly number of posts with general information about the company.
(III) Posts with job offers	The monthly number of posts with references to available vacancies.
(IV) Posts with information about the working environment	The monthly number of posts with information about working life.
(V) Posts with information about recruitment	The monthly number of posts with information about the recruitment process and recruitment events.

Table 1 – Study 1: Subcategories of the focal company’s Facebook activities

2.3.2. Company Activities on Facebook

The first block of data used pertains to the focal company’s activities on its Facebook career page, which we further subdivided into five categories (Table 1). Independent categorization performed by the author and three additional persons produced similar results.

2.3.3. Marketing Spending

The second block of data pertains to the selected company's marketing spending. This includes monthly expenses for job fairs, print communications, and standard online media specific to the high-school graduate target group.

2.3.4. Recruitment Data

The third block of data pertains to recruitment by the focal company measured as the total number of job applications. We also include data on the number of all available positions to control for the selected variables on total positions available. Due to the unavailability of data on application quality, the total number of applications received was used as an indicator for recruiting success.

2.4. Research Model Specification

2.4.1. VAR Model Justification

Our time series impact analysis required us to select an appropriate time series statistical methodology that could find an impact on performance variables while considering the interaction between both marketing and performance variables over time. The challenge was to show the pure impact resulting from Facebook activities while simultaneously considering traditional marketing channels activities.

We chose the VAR model approach, which considers both performance and marketing action variables as endogenous (i.e., they are explained by both their own past and by the past of other endogenous variables; Pauwels et al., 2004), based on the following characteristics. First, the VAR model is well suited for measuring the dynamic performance response and interaction between performance and marketing variables (Dekimpe & Hanssens, 1999). Second, it allows for the measurement of the isolated impact of the considered variable while simultaneously considering other

activities and has thus found increasing application in marketing research, especially when conducting time series analyses on single-firm data (Stephen & Galak, 2012; Trusov et al., 2009; Villanueva et al., 2008).

2.4.2. VAR Model Approach

Our analysis followed the usual VAR methodology steps. First, we selected the endogenous and exogenous variables. Second, employing the Akaike information criterion (AIC), we specified the optimal length of the model (number of periods). Third, we conducted the stationarity test to determine whether variables should be modeled in levels (stationary) or differences (evolving). If variables are stationary, the VAR method is used. For evolving variables, we chose the vector error correction (VEC) model and conducted the cointegration test. Fourth, for both the VAR and VEC model applications, we checked that the multicollinearity problem did not exist. Finally, we conducted the Granger causality test to determine which variables were endogenous (i.e., affected by their own lags and those of the other variables) and which were exogenous (i.e., affected only by their own lags; Stephen & Galak, 2012). This test determines whether one time series is useful in forecasting another (Trusov et al., 2009) and if one variable has an impact on the outcome. We determined the probability of error within the Granger causality test by calculating the significance level using the EViews VAR analysis software.

As an additional control step, we assessed time series correlations between our study variables but found no significant associations.

	Applications received	Posts with a general focus	Posts with information about organization	Post with job offers	Posts with information about work	Posts with information about recruitment
Applications received	1.000000	0.028161	-0.286229	0.209874	0.283103	0.212355
Posts with a general focus	0.028161	1.000000	0.808366	0.053993	0.515511	0.411877
Posts with information about organization	-0.286229	0.808366	1.000000	-0.148809	0.109705	0.094929
Post with job offers	0.209874	0.053993	-0.148809	1.000000	-0.223766	-0.165946
Posts with information about work	0.283103	0.515511	0.109705	-0.223766	1.000000	0.286291
Posts with information about recruitment	0.212355	0.411877	0.094929	-0.165946	0.286291	1.000000

Table 2 - Study 1: Time series correlation between considered variables

We fulfilled our objective of analyzing the impact of company Facebook activities on recruitment success by treating company activity and recruitment success variables as endogenous and marketing spending (print, fairs, and standard websites) and total number of positions available variables as exogenous. We also considered the trend effect by including an exogenous trend variable. Equation 1 shows the approach used for company activities:

$$\begin{pmatrix} rs_t \\ ca_t \end{pmatrix} = \begin{pmatrix} Cons_{rs} \\ Cons_{ca} \end{pmatrix} + \sum_{t=0}^{Lags} \begin{pmatrix} \delta_{rs,t} \\ \delta_{ca,t} \end{pmatrix} X \begin{vmatrix} aus_{t-1} \\ me_{t-1} \\ pr_{t-1} \\ on_{t-1} \end{vmatrix} + \begin{vmatrix} e_{ca} \\ e_{aus} \\ e_{me} \\ e_{pr} \\ e_{on} \end{vmatrix}$$

Equation 1: Analysis of the impact of company activity on recruitment success

where

rs = recruitment success; the number of applications received,

ca = company activity,

cons = constant

t = time period; the dataset consists of 28 months,

lags = number of lags; 1 lag corresponds to 1 month (the optimal number of lags is derived using the AIC test),

δ_{rs} = endogenous variable for recruiting success

δ_{ca} = endogenous variable for company activities

aus = total number of positions available,

me = amount spent on job fair marketing,

pr = amount spent on print media marketing,

on = amount spent on online marketing, and

e = error term.

2.5. Results

Our analysis using the VAR model and the typical steps of VAR analysis demonstrates that Facebook posts with a general focus, work information, and recruitment details have a positive impact on the number of applications received.

First, we conducted a descriptive analysis of the retrieved data. Table 3 contains the relevant descriptive statistics of the data used in conformity with the descriptive data analysis used by Stephan and Galak (2012) with respect to the VAR calculation.

Variable (28 observations)	Mean	Standard Deviation	Median
Posts with a general focus	8.821429	4.092030	8.000000
Posts with information about the organization	4.607143	3.269832	4.000000
Posts with job offers	1.035714	1.035737	1.000000
Posts with information about the working environment	2.214286	1.792105	6.000000
Posts with information about recruitment	0.785714	1.01258	0.000000
Number of applications received	524.6429	514.9594	288.0000
Number of total positions available	2.107143	5.546699	0.500000
Total amount spent on job fairs	166.0762	424.5024	0.000000
Total amount spent on online marketing	93.19354	407.0593	0.000000
Total amount spent on print media	1777.085	6038.371	0.000000

Table 3 – Study 1: Descriptive statistics

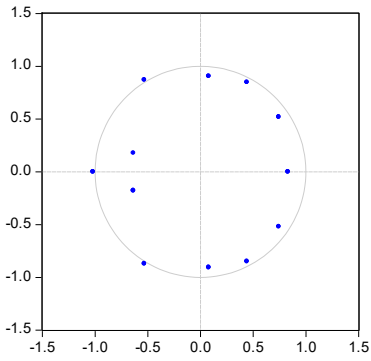
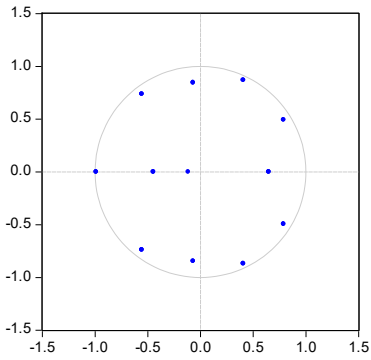
We then conducted a series of underlying tests. Table 4 presents the optimal number of lags, using the AIC. The number of lags indicates how many periods (i.e., how many months) were considered. The table shows the AIC value in dependence on the number of lags. The lowest AIC value represents the optimal number of lags. The test shows that the optimal number of lags for each Facebook activity is six. Therefore, the model can evaluate the impact of the company's activities for the first, second, third, fourth, fifth, and sixth months.

Activity		# of applications
Posts with a general focus	<u>Lag</u>	<u>AIC</u>
	0	21.24408
	1	21.38076
	2	21.29714
	3	20.93884
	4	20.63944
	5	20.52880
6	19.96821*	
Posts with information about the organization	<u>Lag</u>	<u>AIC</u>
	0	20.86253
	1	20.82309
	2	20.39967
	3	20.00771
	4	19.96089
	5	18.63579
6	18.61852*	
Posts with job offers	<u>Lag</u>	<u>AIC</u>
	0	18.20571
	1	18.14464
	2	18.37212
	3	18.36900
	4	18.28016
	5	18.48043
6	17.55517*	
Posts with information about the working environment	<u>Lag</u>	<u>AIC</u>
	0	19.65498
	1	19.38711
	2	19.38253
	3	19.13597
	4	19.24340
	5	18.63832
6	16.96531*	
Posts with information about recruitment	<u>Lag</u>	<u>AIC</u>
	0	18.12162
	1	18.17100
	2	18.04535
	3	17.57568
	4	17.49453
	5	16.71723
6	15.69865*	

Table 4 – Study 1: VAR model fit results

* indicates lag order selected by the criterion; AIC: Akaike information criterion

Table 5 presents the results of the unit root (i.e., stationarity) test that determines whether the VAR or VEC methodology should be selected. If variables are identified as stationary, all considered roots lie within the considered circle and the standard VAR model applies. If variables are identified as evolving (i.e., if one of the roots lies outside the circle), the correction model (VEC) applies. We determined that posts with information about the organization and those about recruitment required the VAR model, whereas posts with a general focus, as well as those with information about the working environment or job offers, required the VEC model.

Activity	# of applications	Model used
Posts with a general focus	<p>Inverse Roots of AR Characteristic Polynomial</p>  <p>At least one root lies outside the unit circle.</p>	VEC
Posts with information about the organization	<p>Inverse Roots of AR Characteristic Polynomial</p>  <p>No root lies outside the unit circle</p>	VAR

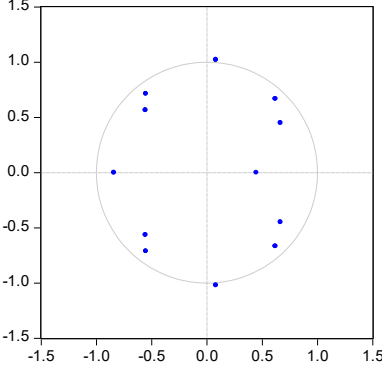
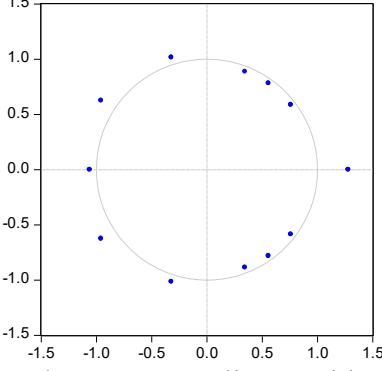
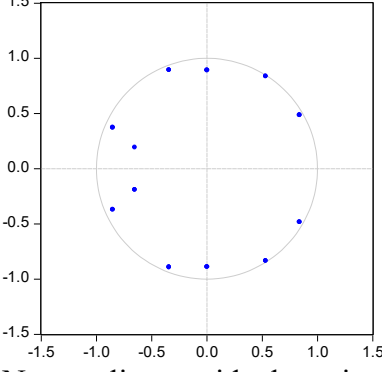
Activity	# of applications	Model used
Post with job offers	<p data-bbox="772 309 1145 331">Inverse Roots of AR Characteristic Polynomial</p>  <p data-bbox="756 712 1232 770">At least one root lies outside the unit circle</p>	VEC
Posts with information about the work environment	<p data-bbox="772 788 1145 810">Inverse Roots of AR Characteristic Polynomial</p>  <p data-bbox="756 1191 1232 1249">At least one root lies outside the unit circle</p>	VEC
Posts with information about recruitment	<p data-bbox="772 1267 1145 1290">Inverse Roots of AR Characteristic Polynomial</p>  <p data-bbox="756 1671 1193 1693">No root lies outside the unit circle</p>	VAR

Table 5 – Study 1: Results of the unit root tests

We conducted the test for the presence and direction of a causal relationship (Tirunillai & Tellis, 2012) between Facebook activities and recruitment success using the Granger causality test. Based on the AIC, we used (as previously

identified) six lags. The resulting coefficients, displayed in Table 6, indicate whether the impact of a selected variable on the considered outcome is significant. The table also displays the cumulative direction of the effect over the six lags.

Activity	Significance for # of applications			Direction
H1: Posts with a general focus	<u>Chi-sq</u>	<u>df</u>	<u>Prob.</u>	positive
	16.8422	8	6 0.0099	
H2a: Posts with information about organization	<u>Chi-sq</u>	<u>df</u>	<u>Prob.</u>	not significant
	5.31513	3	6 0.5041	
H2b: Post with job offers	<u>Chi-sq</u>	<u>df</u>	<u>Prob.</u>	not significant
	2.08702	2	6 0.9115	
H3a: Posts with information about work	<u>Chi-sq</u>	<u>df</u>	<u>Prob.</u>	positive
	12.4209	7	6 0.0532	
H3b: Posts with information about recruitment	<u>Chi-sq</u>	<u>df</u>	<u>Prob.</u>	positive
	93.7933	6	6 0.0000	

Table 6 – Study 1: Results of the Granger causality tests

The results show a positive influence of the following company activities on recruitment success (with corresponding significance levels): posts with a general focus (0.0099), posts with information about the working environment (0.0532), and posts with details about recruitment (0.0000). Based on these results, H1, H3a, and H3b were confirmed, whereas H2a and H2b were rejected.

2.6. Additional Analyses

Although our results demonstrate that Facebook posts are effective, as a second step, we enrich our findings by investigating the underlying motivations and

strategies that guide the management of a Facebook career page. Thus, we conducted qualitative interviews with two HR marketing managers from the focal firm, each of which lasted about 30 minutes.

Both HR managers stated that the main motivation for using a Facebook career page was to represent the company to potential candidates and capture their attention. This means that the focal company intended to improve its image as an attractive employer and therefore indirectly increase recruitment success. An additional motivation was to provide insight into the focal company and inform candidates about recruiting opportunities, which should also lead to an increase in recruitment success.

Regarding the company's Facebook strategy, the second HR manager stated that, at the time of implementation, Facebook was a new business channel for many companies in Germany, and, as with these other companies, the focal company wanted to evaluate if the use of this channel would increase applicants' attention. The focal company uses Facebook as one of many channels within its multichannel strategy. However, it considers Facebook unique in comparison to other channels due to its characteristics of direct communication, the viral reach of company posts to friends of the company's fans, personal environment, and the ability to limit the target group. Its fan community primarily consists of high school applicants.

To increase its fan community, the focal company invests significant time into selecting content and posts diverse types of information. The company traces how successful each post is and varies its content to garner more interest from its fan community. With time, the company's HR and corporate communication departments became stricter in selecting relevant content, the length of that content,

and the relevant time periods to meet the interests of their target group. As the first HR manager stated, “if we . . . ask users many times in a week to come to a recruiting event, it [makes] them nervous.” For this reason, the selected Facebook recruiting content was constantly varied and did not solely contain information about recruiting and job offers.

These interview findings indicate that the focal company’s Facebook strategy was thoroughly evaluated, continuously improved, and embedded into different departments. The expectation of the company was an indirect increase in recruitment success by improving its image as an employer. When we presented these results, both managers were particularly interested in the finding that not only information with specific content but also general Facebook activity leads to an increase in the total number of applications.

2.7. Discussion

2.7.1. Implications for Research

The aim of this study is to investigate the causal impact of company Facebook activities on employee-recruitment success. Previous HR, marketing, and Facebook studies (Dholakia & Durham, 2010; Kapp et al., 2013; Pedersen et al., 2016) have not analyzed the impact of a company’s activities on recruiting success. We analyze this impact by simultaneously controlling for marketing spend associated with print media, job fairs, and standard online presence; we also account for the total number of positions available. This approach allows us to measure the additional impact of Facebook activities within a multichannel environment.

Our study contributes to HR and SNS research in several ways. First, we show that general activities on Facebook have an impact on recruitment success within a

multichannel environment. This finding is consistent with those of Rynes and Miller (1983) and Allen et al. (2004), which both state that the amount of information made available by a company has a positive effect on that company's attractiveness, implying that general mechanisms and experiences from other HR channels can be transferred to social media. Our results enrich those of Allen et al. (2004) through analyzing real company activities by means of a time series analysis, rather than cross-sectional self-reported behavior. Moreover, we focus on Facebook as a communication channel, which extends Allen et al. (2004) findings with reference to the reported perception of different media, such as face-to-face, video, audio, and text. Our findings confirm H1 and show that, due to Facebook's special characteristics of interactivity, informal communication, and WOM—all of which classify this platform as a high-reach medium—general activity on Facebook may lead to more interest and therefore more employment applications received by our focal company. Based on our interview findings with HR managers of the focal company, who state that they thoroughly discuss and design each Facebook post, we suggest that the positive impact of posts with a general focus is due to the high quality and thorough selection process.

Second, we show that specific types of content (such as information about the working environment and the recruiting process) offered on a Facebook career page within a multichannel environment have an impact on recruitment success. This is consistent with findings that show that communication of more specific information (Allen et al., 2007; Robertson et al., 2005) and job details (Williamson et al., 2010) leads to a higher number of applications received. We contribute to these findings by delivering similar results in the context of Facebook through analyzing real company activities on a time series basis, rather than the survey-based self-reported answers of

students. We also contribute to marketing research on SNSs (Dholakia & Durham, 2010; Jahn & Kunz, 2012; Trusov et al., 2009) by showing that Facebook has a positive impact on recruiting outcomes but that not all posts are equally effective. Our findings imply that marketing researchers should analyze the effectiveness of SNSs, such as Facebook, for customer acquisition purposes and to determine which types of Facebook posts complement the marketing communication in other channels. The strong effect we observed implies that Facebook serves as a prime channel for the transmission of information about work and the working environment to potential candidates. The positive influence of information about recruitment shows that Facebook is also an important channel for informing and reminding people of upcoming recruitment deadlines and events. Thus, potential applicants who have already been informed about the working life within the company gain further interest in employment and apply for company positions, leading to an increase in the number of applications received.

Third, and more surprisingly, we demonstrate that not all Facebook content influences recruitment success. Posts with information about job offers and the organization have no impact on recruitment success. This is remarkable given that prior HR research has consistently shown that the provision of information with job and organizational characteristics positively influences applicant attraction (Allen et al., 2007; Chapman et al., 2005). We argue that our findings differ because Facebook does not offer additional value for this type of content within a multichannel environment when this information is already covered by other dedicated channels. Given that HR managers increasingly work in a multichannel environment, further research should build on our findings and explore these cannibalization effects and potential synergies among different HR channels.

Fourth, this study heeds calls for research on recruitment channel combinations (Libai et al., 2010) by demonstrating through an in-depth time series data analysis using the VAR methodology the additional effects of communication via Facebook beyond other employer marketing sources, such as print media advertising, job fairs, and standard (Web 1.0) recruitment websites.

2.7.2. Managerial Contributions

Our study examines the widespread practice of using Facebook as a recruiting channel within multichannel environments. By studying a focal company, we find that company Facebook activities have a positive impact on recruitment success. Recruitment activities on Facebook are an integral part of the modern employer-branding strategy. Results illustrate that to achieve a positive recruiting outcome, it is necessary to implement and maintain company activities on Facebook; this proactive and permanent engagement along with simultaneous use of traditional channels is crucial. Our findings should motivate HR managers to implement and maintain the Facebook activities that we demonstrate to be effective. Taken together, our recommendations that arise from this study describe how to shape successful employment marketing campaigns using Facebook as an element of a modern HR multichannel strategy.

2.8. Limitations and Avenues for Future Research

This study also has several limitations, which open avenues for further research. First, the data cover a selected 28-month period (July 2011–October 2013). Although we consider this sufficient to provide precise results, expansion of the study time period could further sharpen the findings. Second, our analysis uses marketing spending categories as proxies for recruitment activities in traditional channels. The

direct use of activity metrics in traditional channels may deliver more precise results. Third, we assess the effects for a very specific target group, namely German users with a high school degree, who apply for a position with an aviation company. Researchers might obtain different reactions to recruitment activities from different target groups, as previously shown for job seekers vs. non-job seekers (Überschaer et al., 2016, p. 1026) and the minority vs. majority population (Baum et al., 2016, p. 4140). Future studies should therefore investigate if any of our findings generalize across a broad range of populations, to what extent their strength varies according to certain contingency factors, and which effects disappear under certain boundary conditions.

Fourth, this study examines the data of one company that has a relatively high number of fans. A comparison of different companies and industries was not possible within the scope of the current study but would make the results more meaningful. It would therefore be reasonable to analyze start-up or lesser-known companies to determine whether the results differ. Fifth, previous studies regarding recruitment (e.g., Baum, Schaefer, & Kabst, 2016; Collins, 2007) and WOM (Stumpf & Baum, 2016) argue that recruitment and marketing activities interact with each other and thus congruity with the brand and among different activities are important for successful communication. Future studies should therefore look into how different messages fit together and whether they paint a coherent or conflicting image. Sixth, our study focuses on the recruiting firm's Facebook activities and their impact on recruiting success. Social media, such as Facebook, however, also allow third parties to reply to these activities and to contribute content themselves. Further studies should therefore address the role and relative impact not only of first-party content (such as from the organization itself, as in this study), but also third-party content,

such as online ratings, certifications, or other status-based awards (Dineen & Allen, 2016, p. 91) as a relevant recruitment information source (Baum & Überschaer, 2016; Dineen & Allen, 2016). Finally, the use of additional success metrics, such as the quality of applications, could offer useful insights.

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3. Study 2: Influence of traditional recruitment practices on recruitment success with consideration of the reinforcing impact of Facebook

Dimitri Golovko und Jan Hendrik Schumann

Today's employers adopt a multichannel recruitment approach that involves the use of traditional, online, and social media channels. However, two issues remain unexamined in the academic literature: the impact of a company's activities on traditional recruitment channels on hiring success, and the question whether the addition of social media to traditional media activities reinforces the desired effect on recruitment success. This research fills this gap in the literature by examining the impact of traditional recruitment activities on hiring success. The investigation of the reinforcing impact of Facebook activities on traditional marketing activities is expected to fill the research gap regarding the integrated use of traditional and social media channels. This research primarily uses a vector autoregression (VAR) model in the investigation. The results indicate that exhibition fairs and online activities have an impact on recruitment success. Furthermore, the addition of general Facebook activities has a reinforcing impact on exhibition fair and print media recruitment practices.

3.1. Introduction

The limited number of and high demand for educated employees have resulted in the phenomenon of “war for talent” (Michaels et al., 2001, p. 1). In this situation, firms use different recruitment activities or a combination of these practices to attract applicants (Baum & Kabst, 2014). These practices build modern employer branding with a broad multichannel environment. They are directed toward traditional or social media marketing activities, or a combination of these activities.

Previous studies have analyzed either the direct or indirect impact of traditional marketing activities on recruitment success. Direct impact refers to the effect of traditional recruitment channels, whereas indirect impact pertains to the influence of the characteristics of traditional recruitment practices. In their study on such direct impact, Collings and Han (2004) concluded that recruitment practices and corporate advertisements have an influence on the quantity and quality of applicants (Collins & Han, 2004). Other studies have assessed the indirect impact in connection with the characteristics of media richness and source credibility theories (Allen et al., 2004; Cable & Yu, 2006). The integration of previous research results suggests that the HR literature presents some studies on the general direct or indirect impact of traditional recruitment practices. However, the effectiveness of activities on traditional recruitment channels, especially the question of whether particular company activities on certain traditional recruitment channels influence hiring success, lacks an in-depth analysis. The evaluation of non-traditional recruitment practices is currently limited to the impact of recruitment websites (Allen & Mahto, 2007; Baum & Kabst, 2014; Cable & Yu, 2006; Williamson et al., 2010) or web-based recruitment (Allen et al., 2007; Cober et al., 2004; Dineen et al., 2002).

The analyses of social media recruitment practices and the combination of traditional and non-traditional recruitment practices remain sparse. In their investigation of the impact of the simultaneous use of printed advertisements and websites, Baum and Kabst (2014) concluded that both channels work on cooperation mediated by employer knowledge. The recent study of Golovko and Schumann (2019) indicated that a company's Facebook activities have an additional impact on recruitment success above and beyond other media or traditional media. Moreover, Golovko and Schumann (2019) revealed that with the help of real company activities

and usage of the time-series VAR methodology, company posts with a general focus and posts containing work and recruitment information both have a positive impact on hiring success.

With regard to a multichannel approach, the academic literature offers no analysis of the effectiveness of traditional media activities on recruitment success. The issue of whether the addition of Facebook to traditional media activities brings a reinforcing impact on traditional media activities to achieve recruitment success constitutes another unaddressed topic.

In our research, we consider the influence of traditional recruitment practices and answer the central question of whether Facebook and traditional media activities “do (or do not) work well together” (Libai et al., 2010, p. 275) and determine the impact of adding Facebook activities to traditional recruitment practices. More specifically, we investigate with our first research question whether company activities on traditional media channels (e.g., exhibition fair, print, and online media activities) have an impact on recruitment success. With our second research question, we investigate whether the addition of Facebook company activities to the above-mentioned practices on traditional recruitment channels brings a reinforcing impact for traditional media activities and helps to enhance the achievement of recruitment success. We conduct our research with the support of extensive data from a famous employer in the aviation industry. We collect data for both traditional and online media and for different types of Facebook activities on the Facebook career channel on a time-series basis. To answer our research questions, we examine the interaction effects between performance and marketing variables (Dekimpe & Hanssens, 1999) as well as the response strength with the help of the impulse response function. We select the VAR methodology as an appropriate statistical technique for our research.

Our results indicate that exhibition fairs and online activities have an impact on recruitment success; moreover, the addition of general Facebook activities have a reinforcing impact on exhibition fair and online media recruitment practices. The results also reveal the positive impact of the addition of Facebook activities with information about a company on exhibition fair recruitment undertakings.

Our research contributes to the literature in several aspects. First, we contribute to the literature by demonstrating the impact of traditional and online recruitment practices on recruitment success. With our findings, we extend previous conclusions (Baum & Kabst, 2014; Collins & Han, 2004; Cromheecke et al., 2013; Parry & Tyson, 2008; Williamson et al., 2010) about the reported influence of traditional and online media on recruitment success. However, our approach is different from previous studies. We use a wide range of real multichannel recruitment activities and analyze the impact of these real exhibition fair, online, and print media activities on recruitment success separately and on a time-series basis. Previous studies demonstrated their results on the impact of traditional media based on the self-reported and survey-based regression analysis of broad effects such as the general impact of early recruitment practices (Collins & Han, 2004) and the overall influence of online recruitment tools (Parry & Tyson, 2008), as well as the comparison of the strengths of the impact of websites and print media channels (Baum & Kabst, 2014) and the evaluation of unusual media such as post cards (Cromheecke et al., 2013) and the impact of a company's Facebook activities on recruitment success (Golovko & Schumann, 2019). With our approach based on real company activities, we enrich the previous results by analyzing the influence of such activities on traditional media channels instead of examining the general impact of those channels with the help of reported surveys.

Second, following the research call of Libai (2010), we suggest that traditional and social media can effectively work together. Onishi and Manchanda (2011) were the first and still the only authors within the marketing literature to investigate the issue of whether new media (referring to blog activity) and traditional media help or hurt each other; however, with reference to blog activities and market outcomes, which represent another target group with different decision processes, the results of Onishi and Manchanda's (2011) study cannot be transferred to a recruitment context. Meanwhile, Golovko and Schumann (2019) analyzed whether company Facebook activities positively influence recruitment success above and beyond undertakings on traditional media channels; nevertheless, the authors did not examine whether traditional and social media help or hurt each other. We enrich these findings from social media literature by analyzing the Facebook channel as a new media. To the best of our knowledge, no academic research has assessed the effect of the cooperation of traditional and social media within the HR marketing literature.

Third, previous research explained the expected general impact on recruitment success (Perloff, 2003; Allen et al., 2004; Cable & Yu, 2006; Collins, 2007; Walker et al, 2009; Baum & Kabst, 2014) of exhibition fair, online, and traditional media channels in dependence of the media richness characteristics of these channels. We enrich the previous general propositions by confirming or disconfirming the suggested positive impact on recruitment success of exhibition fair, online, and traditional media channels in dependence of the media richness characteristics of these practices. We add new insights to theoretical and survey-based research by using real employment marketing actions within the multichannel recruitment environment of a large employer.

Fourth, we contribute to the previous findings on the proposed reinforced impact by adding company information to the recruitment process in connection with brand equity theory.

We enrich the prior findings by investigating the reinforcing impact of dispersing information about a company on Facebook and traditional marketing channels. In this case, we heed the research call for the analysis of the “additional interactive effects of various recruitment activities” (Baum & Kabst, p. 368) and demonstrate the positive impact of information about a company on applicants’ attraction (Collins & Han, 2004; Boswell et al., 2003).

Our analysis is structured as follows. In the next section, we describe the theoretical background of the study and formulate our hypotheses. We subsequently introduce the methodology used and explain the model specification. In further chapters, we present and discuss the achieved results. The final chapters detail the academic and managerial contributions, followed by the limitations of the study.

3.2. Case Description and Hypotheses Development

3.2.1. Effects of traditional and online recruitment practices

We analyze the multichannel recruitment activities of a large employer from the aviation industry, which we call within the scope of our study as the focal company. The focal company conducts its recruitment activities on exhibition fairs, online and print media, and Facebook recruitment channel. During many monthly company visits (for 28 months, from July 2011 to October 2013), we gathered data on the focal company’s activities on Facebook. The data included general and company

information and information about the company's expenditures on exhibition fairs and online and print media as proxies for activities on those channels.

Another distinct practice of the focal company involves focusing the recruitment efforts on applicants with a high school degree. Therefore, our study concentrates on the recruitment success of such applicants, which is expressed in the number of applications received from the considered target group. To measure the recruitment success, we gathered on a monthly basis the data on the number of applications available from applicants with a high school degree and, for control reasons, the number of total positions available.

In our study, we initially analyze the impact of activities on exhibition fair, online, and print media channels on recruitment success. Moreover, with the help of media richness theory, we discuss the type of standalone traditional recruitment practices (without consideration of Facebook activities) that can influence the applicants' attraction, given the media richness characteristics of these practices. Hence, we derive our hypotheses by considering the academic findings from media richness theory for recruitment activities such as exhibition fair, online, and print media hiring undertakings.

Media richness theory explains that communication outcomes depend on a channel's capacity to fulfill communication requirements (Daft & Lengel, 1986). One of the applications of this theory to HR research is the explanation of the possible impact of different recruitment channels dependent on the media richness characteristics of the considered channels. Previous findings from media richness theory also consider exhibition fair activities as face-to-face interaction, which belong to richer media compared to less rich media such as print advertisements

(Cable & Yu, 2006). Rich media is capable of communicating more personal (Allen et al., 2004) and persuasive (Walker et al., 2009) information and hence increasing recruitment success. Furthermore, applicants are generally more satisfied with richer media (Baum & Kabst, 2014), and satisfaction with media generally improves both the attitude toward the focal company (Perloff, 2003) and the attraction of applicants. Baum and Kabst (2014) also conclude that high-information recruitment practices, including exhibition fair visits, boost recruitment success. Based on previous findings, we assume that due to personal contact, exhibition fair expenditures influence applicant attraction in the form of the number of applications received. Based on this suggestion, we formulate the following hypothesis:

H1a: The more exhibition fair activities are provided by the focal company, the stronger is the applicants' attraction in the form of the quantity of applications received.

Online media represents high-information recruitment practice, which can communicate more persuasive messages (Walker et al., 2009) and thus positively influence the applicants' attraction for the focal company. Online media can also communicate a larger amount of information (Allen et al., 2004) and hence influence recruitment success. We argue that online marketing expenditures have as high information recruitment practice impact on the quantity of applications received. Hence, we propose the following hypothesis:

H1b: The more online marketing activities are provided by the focal company, the stronger is the applicants' attraction in the form of the quantity of applications received.

Print media activities are “in most cases... simple recruitment advertisements in printed media, which communicate schematic images of a company” (Baum & Kabst, 2014, p.356). Print media represents a low-information recruitment practice. Furthermore, in connection with the findings of Collins (2007), low-information practices as a rule do not influence the applicants’ attraction. However, we argue that the increasing number of print media recruitment marketing activities will boost hiring success. To confirm this relationship, we formulate the following hypothesis:

H1c: The more print media marketing activities are provided by the focal company, the stronger is the applicants’ attraction in the form of the quantity of applications received.

3.2.2. Interaction effects of traditional and online recruitment practices in connection with general Facebook activities

In the further process of our research, we analyze whether the addition of Facebook recruitment activities with general information to activities on exhibition fair, print media, and online marketing reinforces the impact of these traditional and online media activities on recruitment success.

First, we argue that exhibition fair activities in connection with general Facebook activities have a reinforcing impact on the number of applications received. We explain this connection using the highly interactive and personal characteristics of exhibition fair activities on the one hand, and the viral and interactive (Kaur et al., 2015) but less personal characteristics with respect to general activities on the other hand. We then discuss that due to the different characteristics of both media and their complementary impact on each other, the reinforcing impact of this combination can be derived. Hence, we assume that the simultaneous use of multiple recruitment

activities (Braun-Latour & Zaltman, 2006) such as exhibition fairs and Facebook recruitment channel undertakings will increase applicant attractiveness. Thus, we formulate the following hypothesis:

H2a: The more Facebook activities with general information are provided by the focal company in connection with exhibition fair activities, the stronger is the applicants' attraction in the form of the quantity of applications received via exhibition fair activities.

Moreover, the combination of online marketing activities that represent high-information recruitment practice and possibility to communicate more persuasive messages (Walker et al., 2009) and general information of the Facebook channel with its interactivity and high level of participation characteristics (Kaur et al., 2015) and informal nature of communication (Hennig-Thurau et al., 2004), and due to a missing media breach and complementation of that media on each other, we propose a stronger impact of the combination of these media on recruitment success.

To confirm the reinforcing impact of online marketing activities in connection with general Facebook activities, we derive the hypothesis below.

H2b: The more Facebook activities with general information are provided by the focal company in connection with online marketing activities, the stronger is the applicants' attraction in the form of the quantity of applications received via online marketing activities.

We argue that the combination of print media marketing activities in connection with general Facebook activities has a reinforcing impact on the quantity of applications received. The reason is that print media represents a low-information recruitment practice with the capacity to communicate general and schematic images

of a company (Baum & Kabst, 2014); Facebook activities with general information represent a high-information practice with a high level of participation and interaction (Kaur et al., 2015) and an informal type of communication (Hennig-Thurau et al., 2004). Furthermore, we argue that the combination of low- and high-information hiring practices with the provision of static and interactive recruitment information as well as the formal and informal nature of communication will emerge due to these different characters in a reinforced impact of print media activities on recruitment success. Our proposition is that general Facebook activities complement marketing activities on print media because a “hybrid approach combining low- and high-information practices was the most capable of attracting potential applicants” (Baum & Kabst, 2014, p. 368). Following these suggestions, we assume that Facebook activities with a general focus will boost the impact of activities on print media channels. Hence, we derive the following hypothesis:

H2c: The more Facebook activities with general information are provided by the focal company in connection with print media activities, the stronger is the applicants’ attraction in the form of the quantity of applications received via print media activities.

3.2.3. Interaction effects of traditional and online recruitment practices in connection with information about the organization on Facebook

In the next step of our research, we consider whether the addition of information about the organization on its Facebook recruitment channel to activities in exhibition fairs, print media, and online marketing reinforce the impact of these traditional and online media activities on recruitment success. To analyze this consideration, we refer to brand equity theory and argue that the information about the organization,

which is to be dispersed on Facebook, increases the familiarity and knowledge of the focal company as well as its brand equity and by that means have an enforcing impact on traditional and online media channels regarding their impact on recruitment success. The mechanism for brand equity impact is obtained from brand equity theory and is explained below.

Employer branding signifies an attempt to differentiate a company from its competitors (Aacker, 1991). The development of company-specific characteristics such as employer knowledge are essential for the success of the brand equity approach (Baum and Kabst, 2014). The applicant's decision to hire within a selected company depends on two parameters: recruitment activities and employer knowledge (Lawler, Kuleck, Rhode, & Sorensen, 1975). Familiarity with the employer (Cable & Turban, 2001) and the resulting employer knowledge (Collins & Stevens, 2002), and in connection with employer branding theory, have an impact on the applicants' decision to apply at a selected company (Baum & Kabst, 2014).

We define the level of familiarity with employer as the level of information about an organization, which our focal company disperses on its Facebook career channel. Collins and Han (2004) underscored that information about an organization can positively influence the applicants' attraction. Moreover, Boswell et al. (2003, p. 24) suggested that information about an organization "may influence applicant attraction." Williamson et al. (2010) proposed that the amount of information about a company has an impact on the applicants' attraction.

In connection with brand equity theory, we evaluate the influence of information about an organization on Facebook on traditional marketing actions. Furthermore, we assume that exhibition fair activities in connection with information about an

organization on Facebook will have a reinforcing impact on the quantity of applications received due to the “simultaneous use of multiple recruitment channels” (Baum & Kabst, 2014, p.355), information combination and improved information processing (Srull & Wyer, 1989), and complementation of Facebook and exhibition fairs media. In connection with this proposition, we formulate the following hypothesis:

H3a: The more Facebook activities with information about the organization are provided by the focal company in connection with recruitment activities on exhibition fairs, the stronger is the applicants’ attraction in the form of the quantity of applications received via exhibition fair activities.

Because of characteristics of online marketing activities as high-information recruitment activities with persuasive messages (Walker et al., 2009) on the one hand as well as because of the capacity of Facebook information about a company to positively influence the applicant’s attraction (Boswell et al., 2003) and the characteristics of high interaction and high level of participation (Kaur et al., 2015) on the other hand. Thus, we propose an increased impact of the combination of online marketing and Facebook activities with information about a company. We further argue that this impact can be derived from the complementation of these impact-influencing characteristics on each other. Additionally, given a missing media breach, we propose an increased impact of the combination of these media on recruitment success. Our hypothesis is stated below.

H3b: The more Facebook activities with information about the organization are provided by focal company in connection with online marketing activities, the

stronger is the applicants' attraction in the form of the quantity of applications received via online marketing activities.

We also posit that print media marketing activities in connection with the organization on Facebook has a reinforcing impact on the quantity of applications received. Print media represents a low-information recruitment practice (Collins, 2007), whereas Facebook communication denotes a high-information media, which does "contain a more detailed information" (Collins, 2007, p. 188). Previous academic findings reveal the unlikelihood for low-information recruitment practices to influence recruitment success (Collins & Han, 2004). However, we expect that the combination of low-information media (e.g., print media activities) and high-information media (e.g., information about the organization on Facebook) can effectively work together in connection with Facebook activities. We express our consideration in the following hypothesis:

H3c: The more Facebook activities with information about the organization are provided by the focal company in connection with print marketing activities, the stronger is the applicants' attraction in the form of the quantity of applications received via print marketing activities.

3.3. Methodology

3.3.1. Introduction

Our research is divided into two basic steps. In the first step, we analyze the standalone impact of traditional marketing activities on recruitment success using the VAR methodology. In the second step, with the help of the impulse response function (IRF), we evaluate the reinforcing impact of general Facebook activities in

general and information about the organization on Facebook in particular on traditional marketing activities in connection with the increase in the number of applications received.

3.3.2. Justification for the use of the VAR model

We collected our data from one of the most famous employers in the aviation industry over a 28-month period on a time-series basis. Our research aim is twofold. On the one hand, we seek to analyze the interaction between performance and marketing variables on a time-series basis, with the simultaneous consideration of all the marketing activities under study. On the other hand, we intend to evaluate the reinforcing impact of activities on the Facebook career channel on traditional practices. To achieve the two-fold aim, we use the VAR methodology based on some parameters. First, the VAR methodology allows for the analysis of the interaction between performance and marketing variables on a time-series basis (Dekimpe & Hanssens, 1999) and the simultaneous consideration of the effects of other marketing activities. Second, the VAR modelling approach facilitates the IRF analysis, which exhibits the impact of a shock of one variable on another variable. The examination of the standalone impact strength from traditional marketing activities on the quantity of applications received and its comparison with the impact in connection with Facebook activities enables us to confirm whether Facebook activities have a reinforcing impact on traditional marketing activities with respect to the increase in the number of applications received. The possibilities offered by the VAR methodology in connection with time-series data justify our usage of this approach for analysis.

3.3.2. Data sample and measures

For our analysis, we retrieved the time-series data on a monthly basis (for 28 months from July 2011 to October 2013) from the marketing department of a famous German employer from the aviation industry. For confidentiality purposes, we refer to this employer in this research as the “focal company.” The data were collected during several company visits and were compatible with the required dynamic characteristics of frequency and reach for social media measurement (Wilcox & Kyungok, 2012). The target group of the current research includes applicants with a high school degree, as the focal company seeks applicants within this target group. The data comprised the following blocks:

- (1) Activities on traditional media channels such as exhibition fairs, recruitment marketing activities on online channels, and recruitment activities on print media channels
- (2) Company’s general activities on the Facebook recruitment channel (categorization by the author and three additional individuals produced similar results)
- (3) Company activities on the Facebook recruitment channel with posts regarding information about the organization (categorization by the author and three additional individuals generated similar results)
- (4) Total number of applications received
- (5) Total number of positions available as a control variable

3.3.4. Definition of the VAR model

As a multichannel recruitment marketing environment, we considered a recruitment marketing mix consisting of traditional employer marketing activities on exhibition fairs and print media as well as online marketing and social media activities on Facebook. As proxies for activities on traditional media, we used expenditures for the aforementioned traditional media channels.

In the first step of our analysis (i.e., impact of traditional marketing activities on recruitment success), we followed the typical VAR steps. We initially defined the endogenous and exogenous variables with the help of the Akaike information criterion (AIC) for the optimal length (number of months) of the model. We subsequently conducted a stationarity test to determine the stationary variables that can be calculated with the VAR model and the evolving variables that can be calculated with the vector error correction (VEC) model. In either case, we applied the VAR or the VEC logic. No autocollinearity problem emerged after checking both models. Finally, with the help of the Granger causality test, we calculated the error term and significance level to verify whether traditional marketing has an impact on the applications received. We also used the number of applications received as an exogeneous (a type of control variable within the VAR/VEC scope) variable. We calculated our results using EViews VAR analysis software. The equation for the first step of our analysis is given below.

$$\begin{pmatrix} rs_t \\ tm_t \end{pmatrix} = \begin{pmatrix} Cons_{rs} \\ Cons_{ca} \end{pmatrix} + \sum_{t=0}^{Lags} \begin{pmatrix} d_{rs,t} \\ d_{tm,t} \end{pmatrix} X \begin{pmatrix} aus_{t-1} \\ me_{t-1} \\ pr_{t-1} \\ on_{t-1} \end{pmatrix} + \begin{pmatrix} e_{ca} \\ e_{aus} \\ e_{me} \\ e_{pr} \\ e_{on} \end{pmatrix}$$

Equation 2: Analysis of the impact of traditional company activities on recruitment success

The explanation of the variables is provided in Table 7.

Variable	Explanation
rs	Recruitment success variables. <i>The model considers the number of applications received as a recruitment success variable.</i>
ca	Company's activities (from the following equation)
tm	Traditional marketing activities. <i>The model considers exhibition fair, online, and print media activities as traditional marketing activities.</i>
Cons	Constant
d _{rs}	Endogenous variable for recruiting success
d _{ca}	Endogenous variable for company's activities
d _{ca}	Endogenous variable for traditional marketing activities (from the following equation)
ca	Company activities on the Facebook career channel <i>The model considers the general company activities on Facebook and company activities with information about the organization on Facebook.</i>
t	Period of time <i>The time-series data comprise 28 months</i>
aus	Total number of positions available
me	Amount spent on job fair marketing
pr	Amount spent on print media marketing,
on	Amount spent on online marketing
e	Error term

Table 7 – Study 2: Explanation of the variables

In the second step, we calculated the IRF factor (IRF factor 1) for Equation 2 for recruitment activities on traditional media, which used to be significant according to the Granger causality test. Impulse response functions are capable of measuring effect sizes (Trusov et al., 2009), and IRF factors state the number of digits by which

the quantity of application changes if one unit of relevant traditional marketing expenditures changes.

We consequently performed the same steps as in Equation 2, with the additional consideration of Facebook activities (general Facebook activities and information about the organization on Facebook) according to Equation 3 below.

$$\begin{pmatrix} rs_t \\ ca_t \end{pmatrix} = \begin{pmatrix} Cons_{rs} \\ Cons_{ca} \end{pmatrix} + \sum_{t=0}^{Lags} \begin{pmatrix} d_{rs,t} \\ d_{ca,t} \end{pmatrix} X \begin{pmatrix} aus_{t-1} \\ me_{t-1} \\ pr_{t-1} \\ on_{t-1} \end{pmatrix} + \begin{pmatrix} e_{ca} \\ e_{aus} \\ e_{me} \\ e_{pr} \\ e_{on} \end{pmatrix}$$

Equation 3: Analysis of the impact of traditional and Facebook recruitment marketing activities on hiring success

The definitions of the variables in Equation 3 are also presented in Table 7.

In the next step, we calculated the IRF factor (IRF factor 2) for Equation 3 (for significant findings according to the Granger causality test) and compared it with the IRF factor for Equation 2. If the IRF factor 2 was larger than IRF factor 1, we then stated the reinforced impact of the considered Facebook recruitment activity on traditional marketing activity.

3.4. Results

In the first step of our analysis, we represented the descriptive statistics for VAR. The representation is in line with the VAR model descriptive statistics representation used by Stephan and Galak (2012).

Variable (28 observations)	Mean	Standard Deviation	Median
Posts with a general focus	8.821429	4.092030	8.000000
Posts with information about the organization	4.607143	3.269832	4.000000
Number of applications received	524.6429	514.9594	288.0000
Number of total positions available	2.107143	5.546699	0.500000
Amount of total exhibition fair expenditures	166.0762	424.5024	0.000000
Amount of total online marketing expenditures	93.19354	407.0593	0.000000
Amount of print media expenditures	1777.085	6038.371	0.000000

Table 8 – Study 2: Descriptive statistics

In the next step of our analysis, we demonstrated with the help of AIC the number of lags (i.e., number of months) considered in our research. The Akaike information criterion with the smallest value is marked with an asterisk (*); it represents the optimal number of lags, which was considered in our research (see Table 9). The optimal lags analysis is separately represented for the standalone impact analysis of traditional impact and the combined analysis with the considered Facebook activities (i.e., activities with a general focus and information about the organization on Facebook).

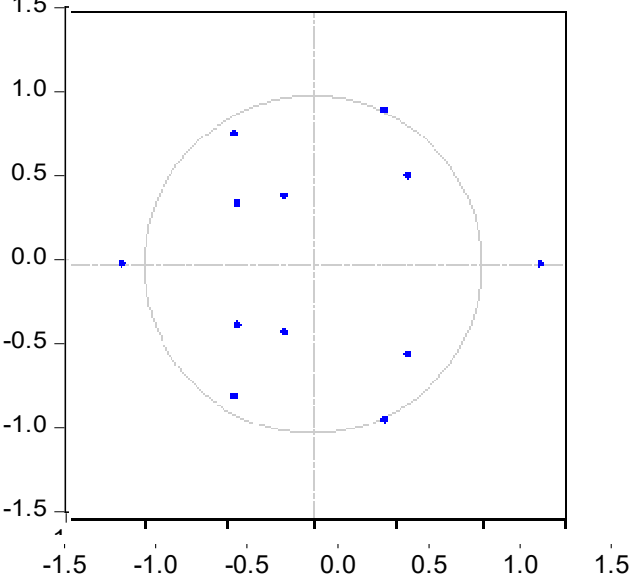
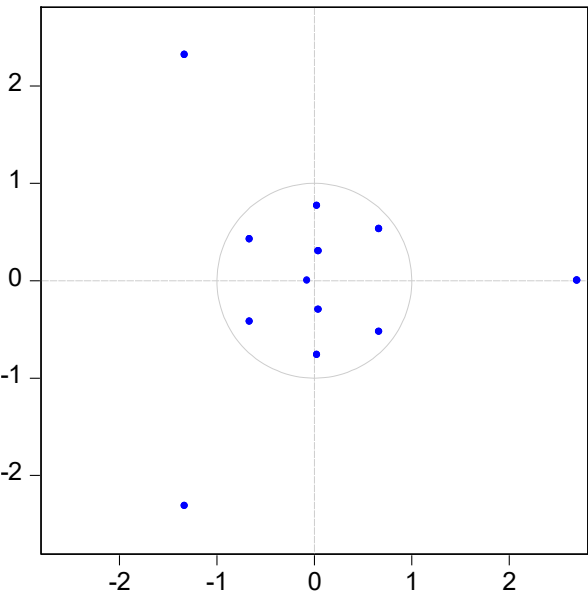
Activity		Number of applications
Exhibition fair activities	<u>Lag</u>	AIC
	0	29.04118
	1	28.98814
	2	29.12248
	3	27.88654
	4	28.02963
	5	27.46192
	6	26.41802*
Online media activities	<u>Lag</u>	AIC
	0	30.03253
	1	30.35591
	2	30.51762
	3	21.47985

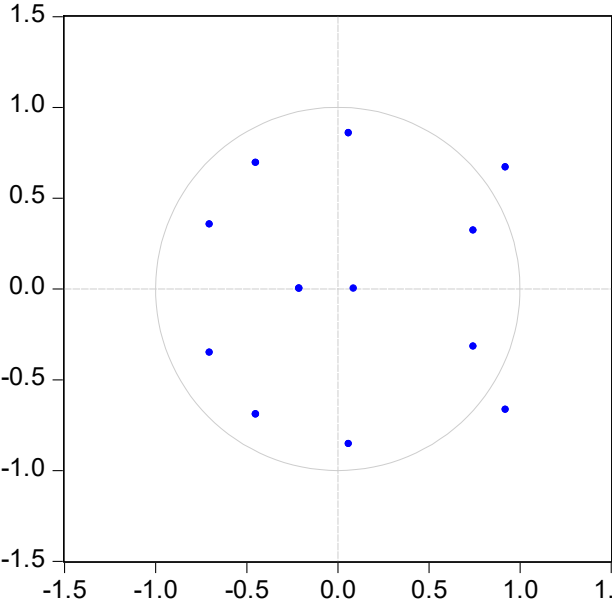
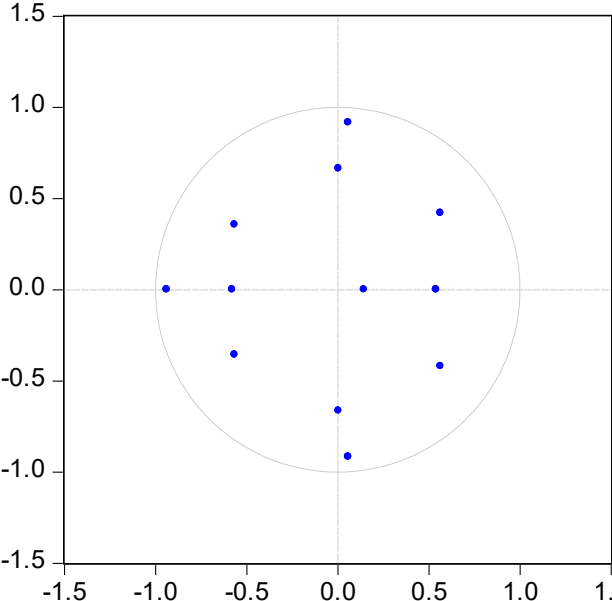
Activity		Number of applications
	4 5 6	21.23075 20.99986 18.96499*
Print media activities	<u>Lag</u> 0 1 2 3 4 5 6	AIC 33.37974 32.17012 31.78165 31.81463 32.03871 29.24389 29.08225*
Exhibition fair activities with general Facebook activities	<u>Lag</u> 0 1 2 3 4	AIC 35.32284 35.66903 35.88435 27.08785 26.96219*
Online media activities with general Facebook activities	<u>Lag</u> 0 1 2 3 4	AIC 35.32284 35.66903 35.88435 27.08785 26.96219*
Print media activities with general Facebook activities	<u>Lag</u> 0 1 2 3 4	AIC 38.67233 37.65547 36.93923 36.74760 35.49474*
Exhibition fair activities with information about companies on Facebook	<u>Lag</u> 0 1 2 3 4	AIC 34.15526 33.92133 34.05052 32.61009 31.68321*
Online media activities with information about companies on Facebook	<u>Lag</u> 0 1 2 3 4	AIC 35.14235 35.60899 35.87449 26.87199 26.57087*

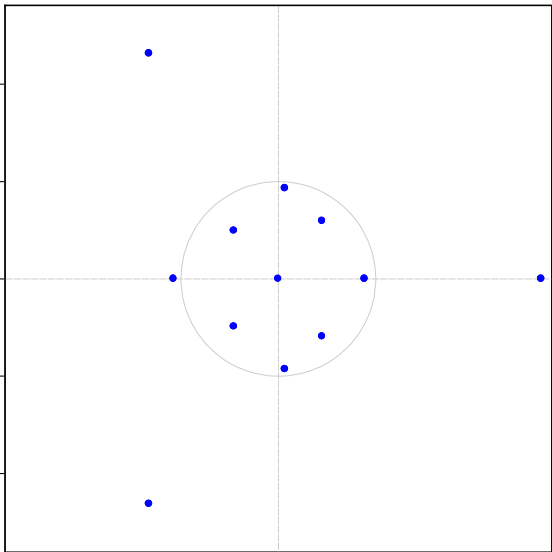
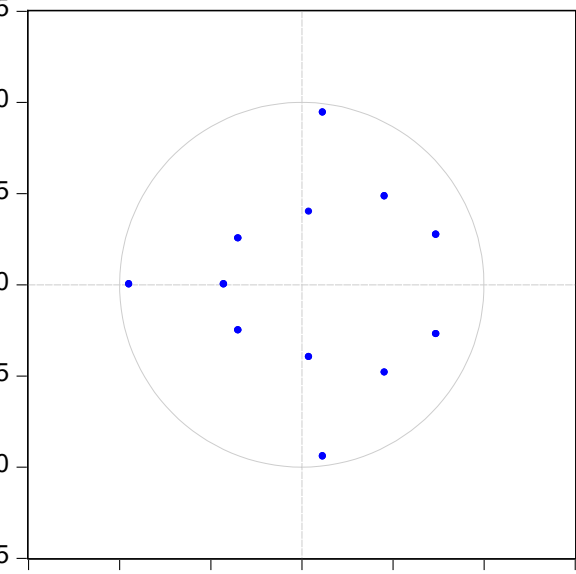
Activity		Number of applications
Print media activities with information about companies on Facebook	<u>Lag</u>	AIC
	0	38.49184
	1	37.58380
	2	36.88894
	3	36.59625
	4	35.00924*

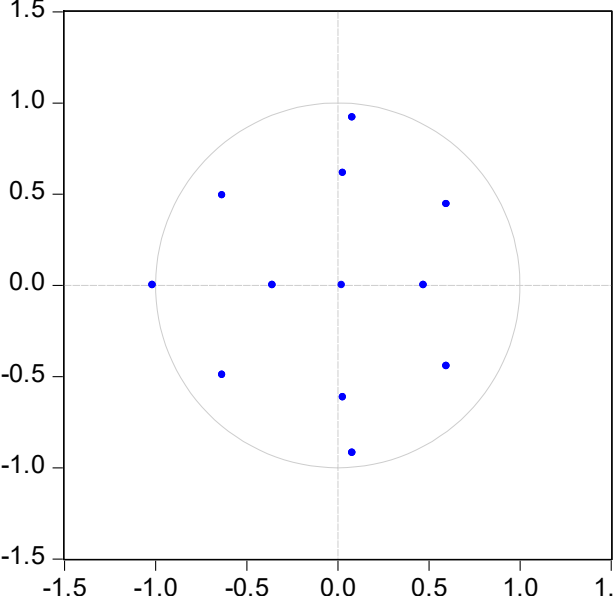
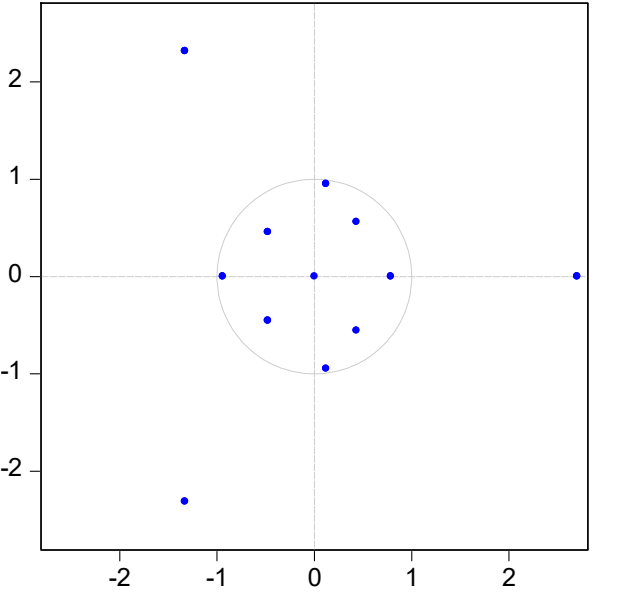
Table 9 – Study 2: VAR model fit results with optimal number of lags according to the Akaike information criterion

The next unit root test helped us to identify an optimal model. If the data used were stationary (i.e., if the roots displayed in Table 10 were within the circle), the VAR model was selected as the appropriate model. However, if the data used were evolving (this case is evident if some of the roots are located outside the circle), the VEC model was adopted as an appropriate model. The test was calculated for the standalone (i.e., only traditional media) and the combined impact (i.e., traditional media with Facebook activities) separately and displayed together in Table 10.

Activity	Roots Analysis	Model Selection
Exhibition fair activities	<p data-bbox="560 304 1166 338">Inverse Roots of AR Characteristic Polynomial</p>  <p data-bbox="560 927 1062 958">Some of the roots are outside the circle</p>	VEC
Online media activities	<p data-bbox="560 965 1166 999">Inverse Roots of AR Characteristic Polynomial</p>  <p data-bbox="560 1632 1062 1664">Some of the roots are outside the circle</p>	VEC

Activity	Roots Analysis	Model Selection
Print media activities	<p data-bbox="595 304 1203 338">Inverse Roots of AR Characteristic Polynomial</p>  <p data-bbox="560 965 1174 999">Some of the roots are outside the circle</p>	VEC
Exhibition fair activities with general Facebook activities	<p data-bbox="595 1005 1203 1039">Inverse Roots of AR Characteristic Polynomial</p>  <p data-bbox="560 1666 1174 1700">All roots are inside the circle</p>	VAR

Activity	Roots Analysis	Model Selection
<p>Online media activities with general Facebook activities</p>	<p>Inverse Roots of AR Characteristic Polynomial</p>  <p>Some of the roots are outside the circle</p>	<p>VEC</p>
<p>Print media activities with general Facebook activities</p>	<p>Inverse Roots of AR Characteristic Polynomial</p>  <p>All the roots are inside the circle</p>	<p>VAR</p>

Activity	Roots Analysis	Model Selection
<p>Exhibition fair activities with information about companies on Facebook</p>	<p>Inverse Roots of AR Characteristic Polynomial</p>  <p>Some of the roots are outside the circle</p>	<p>VEC</p>
<p>Online media activities with information about companies on Facebook</p>	<p>Inverse Roots of AR Characteristic Polynomial</p>  <p>Some of the roots are outside the circle</p>	<p>VEC</p>

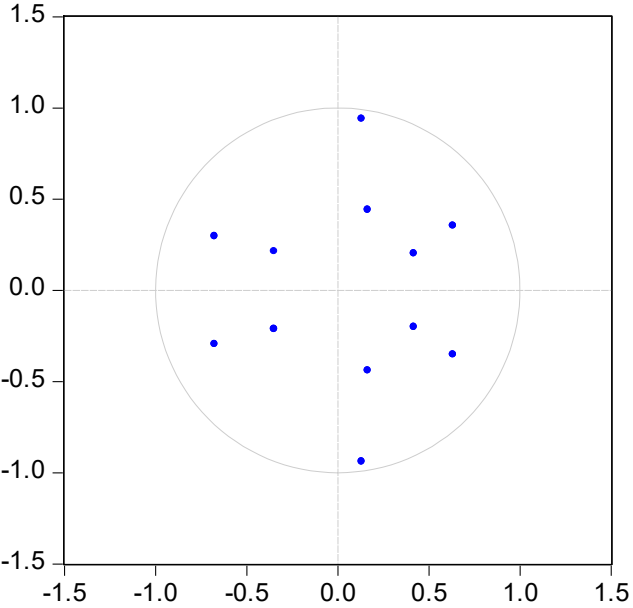
Activity	Roots Analysis	Model Selection
Print media activities with information about companies on Facebook	<p style="text-align: center;">Inverse Roots of AR Characteristic Polynomial</p>  <p style="text-align: center;">All the roots are inside the circle</p>	VAR

Table 10 – Study 2: Unit root test with the VAR/VEC model selection

The subsequent Granger causality test demonstrated the presence and direction of a causal relationship (Tirunillai & Tellis, 2012). The significance levels and effect direction were calculated for the standalone (i.e., only traditional media) and the combined impact (i.e., traditional media with Facebook activities) separately and displayed together in Table 11. We decided to consider 0.05 as the significance level threshold.

Activity	Significance Level			Direction
	Chi-sq	df	Prob.	
Exhibition fair activities	74.31371	6	0.0000	Positive
Online media activities	16.59865	6	0.0109	Positive
Print media activities	3.618742	6	0.7281	Not significant
Exhibition fair activities with general Facebook	30.10011	4	0.0000	Positive

Activity	Significance Level			Direction
	Chi-sq	df	Prob.	
activities				
Online media activities with general Facebook activities	17.61812	4	0.0015	Positive
Print media activities with general Facebook activities	1.419238	4	0.8408	Not significant
Exhibition fair activities with information about companies on Facebook	17.16125	4	0.0018	Positive
Online media activities with information about companies on Facebook	8.429617	4	0.0770	Not significant
Print media activities with information about companies on Facebook	1.742100	4	0.7831	Not significant

Table 11 – Study2: Granger causality test with a significance level

In the final step, we separately calculated the IRF factors for the fourth lag for the standalone traditional media impact on applications received and for the traditional media impact in combination with general Facebook activities as well as in combination with Facebook information about the organization. In our analysis, the IRF factors indicated the number of applications received that would change if one unit of the considered traditional marketing recruitment activity would change. We later compared the IRF factor for the standalone impact of exhibition fair, online, and print media marketing activities with the IRF factor under addition to these activities of general Facebook activities as well as with the IRF factor under addition of Facebook information about the organization. If the IRF factor in connection with general Facebook activities as well Facebook activities with reference to company information was larger than the reference factor for standalone exhibition fair, online, and print media marketing activities, then the reinforcing impact of the

corresponding Facebook activity was confirmed. The results of our IRF analysis are summarized in Table 12.

Activity	IRF Factor for the Considered Lag 4	Reinforcing Impact of Traditional Media on Facebook Activities
Exhibition fair activities	0.083294	-
Online media activities	0.973126	-
Print media activities	Not significant	-
Exhibition fair activities with general Facebook activities	0.36548	Yes (0.36548 > 0.083294)
Online media activities with general Facebook activities	4.267329	Yes (4.267329 > 0.973126)
Print media activities with general Facebook activities	Not significant	No, because the combination has no impact
Exhibition fair activities with information about companies on Facebook	0.403937	Yes (0.403937 > 0.083294)
Online media activities with information about companies on Facebook	Not significant	No, because the combination has no impact
Print media activities with information about companies on Facebook	Not significant	No, because the combination has no impact

Table 12 – Study 2: IRF function and analysis of the reinforcing impact of Facebook activities observed directly

3.5. Discussion

Our research aim was twofold. First, we aimed to determine whether traditional marketing activities (i.e., recruitment activities on exhibition fairs and print media) and online marketing activities have an impact on the number of applications

received. Second, we intended to verify whether the addition of general Facebook activities as well as Facebook activities with information about the organization reinforces the impact of the above-mentioned traditional media activities. We subsequently formulated our hypotheses based on the twofold aim.

Our results indicate the positive impact of traditional marketing activities such as exhibition fairs (significance level of 0.0000) and online marketing (significance level of 0.0109) on recruitment success. However, we find the lack of impact of traditional media activities such as print media recruitment practices.

We consider these findings as well understandable and can explain them in reference to media richness theory. Although exhibition fairs represent richer media (Cable & Yu, 2006) with a high level of satisfaction, the anticipated impact of this traditional recruitment practice can be confirmed. This result is also in line with Baum and Kabst's (2014) finding on the positive impact of high-information recruitment practices. As online media also represents high-information recruitment practice, which is capable of transferring large amounts of information (Allen et al., 2004), our hypothesis regarding the influence of online media on applicants' attraction (expressed in the scope of our study as recruitment success) could be confirmed as well. However, the hypothesis regarding the impact of print media on applicants' attraction was not confirmed. During the hypothesis derivation, we proposed that despite the fact that print media (e.g., simple recruitment advertisements) (Baum and Kabst, 2015) represents low-information media (Collins, 2007), print media could have an impact on recruitment success with the increasing amount of recruitment marketing information. However, even the growing quantity of print media activities could not exhibit an impact on applicants' attraction. On the one hand, this outcome can be explained by the fact that print media only

communicates the general and schematic images of a company (Baum & Kabst, 2014). On the other hand, the missing impact can be explained by the target group of high school applicants. We consider that those young applicants are not interested in printed media, and they do not read this media at all, thereby clarifying the missing impact of print media recruitment activities.

Our research also indicated the reinforced influence on applicants' attraction by adding general Facebook activities to exhibition fair recruitment activities (increase from 0.083294 up to 0.36548 applications received). Furthermore, the hypothesis of the reinforcing impact of general Facebook activities on online marketing media could be confirmed, and a substantial reinforcing impact by adding general Facebook activities to online media recruitment activities (increase from 0.973126 up to 4.2673129 applications received) could be traced. The reinforcing impact can be explained by the fact that both Facebook and exhibition fair and online marketing channels effectively complement each other within the scope of multiple recruitment activities (Braun-Latour & Zaltman, 2006) and bring a stronger impact on the number of applications received as the standalone use of exhibition fairs or online marketing activities.

However, the addition of general Facebook activities to print media activities as a hybrid solution between low- and high-information practices (Baum & Kabst, 2014) could demonstrate neither the reinforcing impact nor any impact resulting from this combination. Thus, the hypothesis regarding the reinforcing impact of general Facebook activities on print media activities could not be confirmed. The explanation of this finding could be found in connection with the target group of young applicants with a high school degree. We argue that these types of applicants either use less or do not use print media at all, signifying their lack of attraction to print

media, even if this media is offered with general Facebook recruitment activities. The missing impact of print media recruitment activities should be extensively analyzed in future research with different target groups, as this topic remains an important question in the HR academic literature (i.e., whether print media still has an impact on multichannel recruitment strategy).

The addition of information about the organization on Facebook could demonstrate a reinforcing impact in connection with exhibition fair recruitment activities (a substantial increase from 0.083294 up to 0.403937 applications received). Thus, the hypothesis regarding the reinforcing impact of Facebook information about the organization on the impact of exhibition fair activities could be confirmed. In other words, information about the company on Facebook also brings a reinforcing impact on exhibition fair marketing activities because both activities complement each other on different channels. Moreover, we argue that both channels are rich and interactive media, which are extensively used by young applicants with a high school degree. Both channels are capable of transmitting specific information about the organization and facilitating information processing (Srull & Wyer, 1989), hence increasing the attraction of applicants.

However, we could find no reinforcing impact from the addition of information about the organization on Facebook to online or print media activities. The missing reinforcing impact of information about the organization on Facebook and online marketing can be explained by the fact that information about the organization transmitted via Facebook channel and information, which will be transmitted via the online marketing channel, represent two different types of information. The information about the organization represents a specific type of information transmitted via Facebook as a web 2.0 channel, whereas the information to be

transmitted via the online marketing channel denotes a general type of information. As Facebook and online channels are designed to transmit different types of information, specific information transmission such as information about the organization on Facebook (i.e., referred to as a specific type of information) does not help to achieve the intended increase in the number of applications received, which is triggered with the assistance of general information on online media. Hence, due to these incompatibilities with respect to information type (i.e., specific information on Facebook and general information online), we do not find the reinforced impact. Our proposition regarding information influence independent of the type of compatibilities is supported by previous findings in our work: when we spoke about the general type of information transmitted via Facebook (i.e., general information on Facebook and general information on online media), we could see a substantial reinforcing impact on online media (also with general information) activities toward the increase of applicant's attraction.

To reiterate, in connection with our last finding regarding the missing reinforcing impact of information about the company on Facebook and print media, the print media channel does not influence the attraction of the target group of applicants due to their reduced usage or non-use of this medium. This proposition is confirmed by interviews with HR managers. The results do not change even if we add general Facebook activities or information about the organization on Facebook; thus, neither a reinforcing impact nor any impact of print media recruitment activities is apparent. These findings are in line with the previous research of Collins and Han (2004), which indicates the unlikelihood for low-information recruitment practices to influence recruitment success.

3.6. Academic Contributions

Our study contributes to academic research in several ways. First, we contribute to the traditional HR research on recruitment practices (Collins & Han, 2004; Cromheecke et al., 2013; Parry & Tyson, 2008; Williamson et al., 2010) by demonstrating the impact of traditional recruitment practices. However, our approach is different from previous studies: we analyze real company activities and their real impact on a time-series basis instead of self-reported answers. Thus, this approach allows us to conclude not only the general impact of traditional media on early recruitment practices (Collins & Han, 2004), the general impact of online recruitment tools (Parry & Tyson, 2008), the comparison of the impact strengths of websites and print media channels (Baum & Kabst, 2014), and the analysis of unusual media such as post cards (Cromheecke et al., 2013) but also verify the impact of traditional recruitment practices such as exhibition fair, online, and print media marketing.

Second, we contribute to limited e-HRM research (Frasca et al., 2017) by answering the still unknown question on how effectively traditional and Facebook activities work together (Libai, 2010). In our research, we explain whether activities on the Facebook career channel reinforce the impact of traditional media recruitment marketing activities. To the best of our knowledge, our study is the first work to analyze the additional impact of Facebook activities on traditional recruitment marketing activities. Onishi and Machanda (2011) were among the first authors who performed an analysis of whether traditional media and blog activities help or hurt each other. However, the results of their research cannot simply be transferred to a recruitment context because applicants and customers are different target groups with diverse decision-making processes (Golovko and Schumann, 2019). Hence, we

suggest that the decision to buy goods from a company requires different incentives than the decision to work for a company. Therefore, social media approaches that aim to increase sales will not necessarily work when applied to the recruitment of employees. From this perspective, we enrich the results of Onishi and Machanda with our recruitment context analysis.

Third, we enrich the previous findings regarding the proposed general impact of exhibition fair, online, and print media company activities (Perloff, 2003; Allen et al., 2004; Cable & Yu, 2006; Collins, 2007; Walker et al., 2009; Baum & Kabst, 2014) by confirming or disconfirming the impact of traditional recruitment practices in dependence of the media richness characteristics of these practices and extend the current research by adding general activities on Facebook recruitment channel and analyzing the reinforcing impact of these activities. A further difference in our approach lies in our use of real employment marketing actions within the multichannel recruitment environment of a large employer and the addition of new insights to theoretical and survey-based studies.

Fourth, we contribute to previous propositions by heeding the call for research regarding the “additional interactive effects of various recruitment activities” (Baum and Kabst, p. 368) and by demonstrating that employer knowledge is a substantial part of the modern recruitment process. In connection with previous research (Collins & Han, 2004; Boswell et al., 2003), we suggest that information about the company on Facebook not only impacts applicant’s attraction but also increases the impact strength of traditional marketing channels. Moreover, we add these new insights to previous survey-based employment marketing research by using the employment marketing actions of a large employer.

3.7. Managerial Contributions

We also bring managerial contributions in several ways. In the modern digital age, the issue of whether traditional recruitment practices and specific types of such practices still influence applicant's attraction remains unknown. In our research, we argue that exhibition fair and online marketing activities play an important role in attracting potential applicants within the target group of young applicants with a high school degree. We simultaneously state that based on the findings of our study and in connection with this target group, print media employer marketing lacks any influence on the level of applicants' attraction. Even the addition of general and specific Facebook activities to print media marketing activities lack any impact of print media activities because the "spray and pray" strategy (Joos, 2008, p. 52) with print media within a complex multichannel world does not work anymore. By contrast, the addition of general and specific Facebook information to exhibition fair activities boosts their positive impact on applicants' attraction. Marketing managers should also note that a substantial increase in recruitment success results from a combination of online and general Facebook activities.

The discussed practical findings can be used for defining a multichannel recruitment strategy. The achievement of more precise recruitment success results requires managers to separately evaluate the effectiveness of different traditional, online, and social media activities as well as the combination of these activities. The differences in the effectiveness of different channels and their combination with respect to various target groups must be considered during this analysis. This differentiation is important because recruitment marketing activities on hiring channels can have diverse impacts on varied target groups such as high school, university, and professional applicants. Following our recommendation of the

implementation of a detailed multichannel recruitment strategy under consideration of different information needs dependently of target groups can result in a more efficient and better achievement of recruitment success.

3.8. Limitations and Avenues for Future Research

This study has several limitations. First, for the analysis of traditional media, our study uses categories of marketing spending as proxies for recruitment activities in traditional channels. The direct use of activity metrics in traditional channels could possibly deliver more precise results. Second, our data cover a selected period of 28 months (July 2011–October 2013). Although we deem that this period is sufficient for obtaining precise results, the expansion of the study period could further sharpen the results.

Third, our study considers only the marketing activities within one company. A comparison of different companies and industries with the scope of this study was not possible; however, a comparison of different companies could add interest to the results. In that scope, we recommend for future research to further analyze companies and execute a multi-company study, which are highly active on traditional and social media channels.

Fourth, a cross-country analysis could shed more light on behavioral patterns across different cultures and countries (we only evaluate the impact for Germany and German users). Therefore, we recommend a cross-county research on the impact of recruitment activities to determine the cross-cultural differences and generate more precise results based on cultural background.

Fifth, our analysis is limited to Facebook as the most widespread form of social media channel. The analysis could be further expanded by including other social media channels.

Sixth, the results are limited to the target group of applicants with a high school degree. With regard to the avenue of future research, we recommend the execution of a research based on real company recruitment activities targeted at different groups and the measurement of the impact strength of activities on traditional, online, and social media channels.

Seventh, the use of additional success metrics such as the number of quality of applications could offer useful insights.

Finally, as we measured in our paper the impact of traditional and online recruitment practices and examined the reinforcing impact by adding Facebook activities to those traditional or online activities, we did not provide statements about the impact strengths of different recruitment activities and the combination of these activities. The measurement of impact strengths and the corresponding elasticities, as Trusov et al. (2009) have fulfilled for WOM, signifies an important area for future research.

In addition, one of the most significant results of our study was the missing impact of print media marketing on recruitment success. This finding was in line with a proposition of Joos (2008) that the “spray and pray” strategy does not work anymore. Future research should analyze this subject more thoroughly by discussing the following questions: Do print media activities play or not play a role in the modern multichannel mix? Does print media play or not play a role in combination with different recruitment activities? What is the impact of print media in the modern

recruitment age? If print media still has an importance or an impact, then in combination with which media and for which target group is that impact given? We suggest that future research should shed light on these questions with respect to the modern role and impact of print media as a recruitment channel.

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4. Study 3: State of the art literature overview of the modern influence of traditional and social media recruitment practices on applicants' attraction

4.1. Introduction

Recruitment is a vital part of human resource management because it “performs the essential function of drawing an important resource – human capital – into the organization” (Barber, 1998, p. 1). Competitive pressure and changing workforce demographics have made the attraction of high potential talent a top management concern (Boswell et al., 2003). As “qualified employees still provide a competitive advantage in many industrial sectors” (Baum & Kabst, 2014, p. 353) and the “war for talent” (Michaels et al., 2001) is a lingering phenomenon (Mandhanya & Shah, 2010), the attraction of high potential candidates remains a heavily discussed issue with an intent to gain a competitive human resource (HR) advantage compared to other companies (Cromheecke et al., 2013). Hence, the issue of how different organizational employer marketing actions affect the recruitment outcome (Collins & Han, 2004) and which recruitment channels and in which combination play an influencing role is important to verify. One previous analysis of the top 100 graduate employers (Frasca et al., 2015) indicates that 100% of companies have a website containing recruitment content, 93% have a presence on Facebook, 58% have a recruitment-focused Facebook page, and 92% have a YouTube channel, with 71% containing recruitment-related videos. This literature overview denotes that within modern recruitment marketing, a broad mix of recruitment channels and a combination of these channels have gained relevance.

Previous research on the influence of traditional, online, and social media channels can be subdivided into two main categories: influence analysis within the HR literature and influence analysis within the marketing literature. The HR literature describes the direct or indirect impact of traditional or online recruitment practices on recruitment success, whereas the marketing literature concentrates on influence analysis of social media.

In the next chapters, we present these research streams, including the research findings from the HR and marketing literature and the description of research methodology used. In the beginning of each chapter, we further introduce the practical trends and developments that have initially led (or not led) to the existence of the corresponding academic research.

In the discussion section of the paper, we summarize our findings on the status of the existing research and highlight the research needs with respect to the current HR marketing usage patterns.

4.2. HR Literature

4.2.1. Influence of traditional recruitment practices

Similar to advertisements in newspapers or exhibition fair presentations, traditional recruitment practices have a long tradition. Employers have used these practices long before the emergence of the internet and the development of web 1.0 and web 2.0 applications. However, the development of a multichannel environment has changed the usage pattern and impact of traditional media. Previous academic HR research could explain the standalone impact of different recruitment practices. In our paper, we refer to this research as traditional HR research. Traditional research

has gained sufficient academic attention, but the role of traditional recruitment practices has remained underexplored.

In traditional HR studies, researchers have generally argued that recruiters can influence application outcomes with the help of hiring practices (Collins, 2007). Corresponding studies within traditional HR research have considered either the direct or the indirect (moderating) impact of recruitment practices on hiring success.

Collins and Han (2004) provided evidence that early recruitment practices and corporate advertisements have an impact on the quantity and quality of applicants. They further subdivided their analysis into low- and high-involvement recruitment practices and revealed that low-involvement recruitment practices are more effective for companies with low levels of corporate advertisement and reputation, whereas high-involvement recruitment practices are beneficial for companies with high levels of corporate advertisement and reputation. Their source of analysis were the data of 99 organizations from several sources at different points of time. The data were evaluated through regression analysis.

Cromheecke et al. (2013) also investigated the impact of unusual media within traditional recruitment practices, such as postcards. They concluded that “strange” recruitment media can influence the hiring outcome and can allow companies to differentiate themselves from competitors. They defined strange media as “an unusual and original way to recruit potential applicants” (Cromheecke et al., 2013, p. 411). The authors explained that unusual media such as postcards generated five times more applicants than commonly used media such as e-mail. From a practical viewpoint, their study was useful for managers by suggesting that “changing things up” can boost interest in both the company and the available positions. Cromheecke

et al. (2013) conducted their study as a field experiment with subsequent surveys and regression analysis.

Several studies have examined the indirect impact of recruitment practices on hiring success. For instance, Bretz and Judge (1998) analyzed the weight of negative information in relation to other variables on the applicants' attraction and addressed the question of whether the best applicants react differently to negative information than other applicants. They used the data from 83 surveys and processed the data using regression models. They concluded that applicants place a high negative weight on negative information relative to other vacancy characteristics. Moreover, they revealed that in contrast to low-quality applicants, high-quality applicants may be less willing to apply for a job for which negative information has been presented.

Breaugh et al. (2003) similarly explored the impact of five recruitment sources (i.e., namely college placement offices, newspaper advertisement, employee referrals, direct applicants, and job fairs) on pre-hire outcomes such as the percentage of qualified applicants generated and percentage of applicants who were subsequently hired. They used survey-based data and processed these data through correlation analysis. Breaugh et al. (2003) indicated that applicants who directly applied and were referred by current employees were more likely to receive job offers. They also concluded that recruitment sources were unrelated to the measures of applicant quality.

In their investigation of the indirect impact of recruitment practices on hiring success, Cable and Yu (2006) suggested that media richness and source credibility were responsible for the jobseekers' beliefs about the firm's images. Cable and Yu (2006) obtained their data from surveys of MBA students and used regression

analysis for evaluating the data. They further explained that beliefs about the firm's images increase the applicants' attraction.

In another study, Collins (2007) concluded that product awareness moderates the applicants' intention to apply. Collins (2007) collected the data from surveys of MBA students and used regression analysis for processing data. Similar to the aforementioned authors, Collins (2007) distinguished between low- and high-information recruitment practices. He indicated that low-information recruitment practices positively moderate the applicants' decision to apply when product awareness is low. On the contrary, high-information recruitment practices positively moderate the applicants' application decision when product awareness is high. Collins (2007) used data from 123 recruiting companies and 456 student surveys.

Meanwhile, Knox and Freeman (2006) explored whether employer brand has an impact on application intention and verified the congruency of employer brand image between potential recruits and their recruiters. Their empirical study involved a survey of 2,351 students in their final year, and their data were processed via correlation analysis. Their results revealed a correlation between an attractive employer brand image and the likelihood to apply for a job. Another result indicated a significant difference between the internal and external employer brand image.

4.2.2. Influence of online recruitment practices as web 1.0

The development of the internet has substantially influenced the field of HR marketing and revolutionized the manner by which people look for work (Birchfield, 2002). The beginning of this development is referred to as the advancement of web 1.0 applications. Web 1.0 applications are directed toward one-way communication and are responsible for the change in mindset regarding the use of traditional recruitment practices. Companies have adopted web 1.0 applications as their

websites or job search portals and have increasingly used these applications to supplement their traditional channels. Over the years, the usage and relevance of web 1.0 applications have become indispensable in the employer branding strategy of companies. Although research in this area has been scarce for many years (Parry & Tyson, 2008; Williamson et al., 2010), some academic studies on the usage and standalone impact of online recruitment practices have described the impact of web 1.0 applications.

Parry and Tyson (2008) investigated with the help of a longitudinal survey over a six-year period the usage and perceived success of corporate and commercial websites. Their results were based on the regression analysis of the data of 20 interviews with users and providers of online recruitment. Parry and Tyson (2008) also analyzed the question of whether the successful use of online recruitment media is limited to particular types of organizations or determined by employers' use of online recruitment systems. Their results indicated the increasing usage of online recruitment tools predicting their further distribution, which could be traced in subsequent years.

Williamson et al. (2010) examined how a firm's attributes influence the effectiveness of recruitment websites in terms of applicants' attraction. They employed regression analysis in processing the data on the reaction of business students to the recruitment websites of 144 companies. Their results implied that the amount of company and job attribute information, the website's vividness, and the firm's employer reputation have an impact on applicants' attraction. Furthermore, some website attributes were found to be more effective for firms with a poor reputation and some for firms with a good reputation.

Meanwhile, Baum and Kabst (2014) compared the effect of printed advertisements with the impact of recruitment websites and demonstrated how these media work together. They concluded that recruitment websites have a stronger impact than print advertisements. However, employer knowledge was determined to mediate the impact of both recruitment websites and print advertisements. Moreover, the simultaneous use of multiple recruitment activities was found to influence the applicants' attraction. Baum and Kabst (2014) used data from surveys of students at German universities and performed regression analysis.

4.2.3. Influence of social media recruitment practices as web 2.0

Web 2.0 applications are directed toward multi-way communication. Their development allows companies and users to communicate with each other and exchange mutually relevant information. These applications have enabled companies to better “hear” the needs and wishes of applicants and have provided potential applicants with an opportunity to communicate with companies and learn the informal side of organizations. Due to rapid development of web 2.0 applications online communication, which was previously one way directed, has gained a new level of interactive communication quality. With the establishment of web 2.0 communication, traditional and web 1.0 recruitment practices have undergone a transformation and found their application within a multimedia channel mix.

Since their advancement a decade ago, web 2.0 applications have offered new perspectives to recruiters. The applications connected to these media help companies to develop employer branding and obtain new relationships with potential applicants (Girard & Fallery, 2010). However, research in these aspects remains sparse. To the best of our knowledge, not a single study has analyzed the impact of web 2.0 applications on HR recruitment success.

4.2.4. Influence of a multichannel mix

The development of web 1.0 and web 2.0 applications and the corresponding transformation process of traditional and web 1.0 applications has rendered the relevance of a multichannel mix and the companies' extensive use of this multichannel mix. Companies have discovered the advantages of traditional, web 1.0, and web 2.0 applications, independent of the channel characteristics and media richness. Organizations have consequently decided to simultaneously use these channels within a so-called multichannel mix. Nevertheless, academic research on the usage of a multichannel HR marketing mix lags behind the practitioner use. The issues of whether some channels work or do not work together (Libai et al., 2010), how these channels work together, and which combination within a particular context effectively works need to be thoroughly explored. With the exception of Golovko and Schumann's (2019) work, research in this area remains underexplored.

Table 15 provides a summary of the current HR marketing research on the influence of traditional and online recruitment practices and web 1.0 applications, as well as studies on web 2.0 applications.

Author(s)	Research Stream	Findings	Method
Collins and Han (2004)	HR literature: <i>direct impact of recruitment practices</i>	Early recruitment practices and corporate advertisements have an impact on the quantity and quality of applicants.	Regression analysis
Cromheecke et al. (2013)		Unusual media such as postcards generates five times more applicants than commonly used media such as e-mail.	Regression analysis
Bretz and Judge (1998)	HR literature:	Applicants place a high negative weight on negative information relative to other vacancy characteristics.	Regression analysis
Breaugh et al.		Applicants who have	Correlation

Author(s)	Research Stream	Findings	Method
(2003)	<i>indirect impact of recruitment practices</i>	applied directly and have been referred by current employees are more likely to receive job offers.	analysis
Cable and Yu (2006)		Media richness and source credibility are responsible for job seekers' beliefs about a firm's images.	Regression analysis
Knox and Freeman (2006)		A correlation exists between an attractive employer brand image and the likelihood of applying for a job. Moreover, product awareness moderates the applicants' intention to apply.	Correlation analysis
Collins (2007)		Product awareness moderates the applicants' intention to apply.	Correlation and regression analyses
Parry and Tyson (2008)	HR literature: <i>impact of online recruitment practices</i>	The increasing usage of online recruitment tools predicts their further distribution, which could be traced in subsequent years.	Regression analysis
Williamson et al. (2010)		The amount of company and job attribute information, the website's vividness, and the firm's employer reputation have an impact on the applicants' attraction.	Regression analysis
Baum and Kabst (2014)		Recruitment websites have a stronger impact than print advertisements. Furthermore, the simultaneous use of multiple recruitment activities influences the applicants' attraction.	Regression analysis
Golovko and Schumann (2019)	HR literature: <i>impact social media</i>	"Influence of Company Facebook Activities on Recruitment Success" (<i>Journal of Business Research</i>)	Time-series data analysis with the VAR modelling approach
HR literature: <i>impact of multichannel mix</i>		No research could be found	

Table 13 – Study 3: HR marketing research on recruitment practices

4.3. Marketing Literature

4.3.1. Introduction

As mentioned in the HR literature overview, academic research is lacking regarding the influence of either social media or a multichannel mix, including social media, on recruitment success. However, social media research is an unexplored field in the marketing literature. Nevertheless, some studies have examined the influence of social media on different outcomes, and they are presented in this chapter. The impact on recruitment success in the HR marketing literature can be considered as one type of the considered outcomes in the social media influence literature from marketing research.

4.3.2. Influence of social media

A major research area in the social media literature is the influence of social media on outcomes such as purchase behavior and sales. Duan and Whinston (2005) were among the first authors to analyze the impact of online user reviews on movie sales. Similar to many authors, Duan and Whinston (2005) utilized user and sales data and processed these data through the simultaneous equation system and regression analysis. Their research results indicated that online user review has little persuasive effect on consumer purchase decision, whereas the rating of the reviews has no impact on movie sales. Moreover, movie sales were found to be significantly influenced by the volume of online postings, thus highlighting the importance of the impact of company awareness.

Within this research stream, Chevalier and Mayzlin (2006) examined the effect of consumer reviews on relative sales. They concluded that reviews tend to be more positive and an improvement in reviews results in an increase in relative sales. They

utilized user review data from public websites and processed the data through regression analysis.

Dellarocas et al. (2007) explored the value of online reviews in forecasting sales. They demonstrated that the addition of online reviews to other well-known forecasting variables such as prerelease marketing, theater availability, and professional critic reviews substantially improve the forecasting accuracy of motion picture sales. In contrast to many other studies that used linear regression models, Dellarocas and Awad (2007) employed a model based on diffusion theory and delivered a high-quality forecast with help of this model. The data for reviews and sales for the study were collected from open sources.

Dhar and Chang (2009) measured the impact of user-generated content on music album sales. They used the data of 108 music albums in early 2007 and user-generated content from blogs and social networking sites and processed these data via linear regression analysis. Dhar and Chang (2009) indicated that future sales are positively correlated with the volume of posts and the chatter resulting from web 2.0 influences sales.

Zhu and Zhang (2010) investigated how online consumer reviews influence the sales of video games while simultaneously considering the moderating role of product and consumer characteristics. Their empirical results supported the view that product and consumer characteristics moderate the impact of online consumer reviews on product sales. Additionally, online reviews were found to be more influential for less popular games and that less popular products could benefit more from online consumer reviews. With regard to popular products, Zhu and Zhang (2010) suggested that even one negative review could be detrimental for sales. They

further explained that online reviews were more influential when consumers had a greater internet experience. The authors used review and sales data and adopted a multiple regression methodology.

In the same research stream, Lis and Berz (2011) combined branding and social media in their study and explored the issue of whether employing social media for branding in publishing significantly increases purchasing probability. Their data were based on 125 surveys of end consumers, which were evaluated via regression analysis. Lis and Berz (2011) concluded that social media strategies behind publishing products increase the purchase probability.

Mathur et al. (2012) explored the impact of social media usage on consumer buying behavior. They used survey-based data and conducted stepwise regression analysis for processing the data. The authors confirmed the presence of overall opportunities to use social media as a marketing tool for influencing customers' purchasing behavior. However, they argued that a stronger impact on purchase behavior is induced when social media usage is more frequent and when more opinions are shared. Additionally, the influence of social media is expected to be stronger when the product or service involved in a potential purchase is more expensive.

Stephan and Galak (2010) and Onishi and Manchanda (2011) were among the first authors to explore the impact of social media on sales by considering traditional and social media activities. Both authors have shown, if these two media bring an impact sales and can cooperate with each other.

Stephen and Galak (2009) analyzed the impact of so-called "earned" media on sales. They defined earned media as forms of publicity that companies do not

generate directly, such as “press mentions in traditional media and online community posts in consumer-generated social media” (Stephan & Galak, 2009, p. 624). However, Stephen and Galak (2009) categorized earned media into paid media (e.g., advertising) and owned media (e.g., activities in channels that a company owns). They evaluated both types of earned media based on their effects on sales. They used the 14-month data of daily sales and media activity and processed these data using a multivariate autoregressive time-series model. The results of their empirical analysis indicated that traditional and social-earned media affect sales, and the per-event sales impact of traditional earned media activity is stronger than that of social-earned media activity. They explained that “because of the greater frequency of social earned media activity, after adjusting for event frequency, social earned media’s sales elasticity is significantly greater than traditional earned media’s” (Stephan & Galak, 2009, p. 624). Stephan and Galak were the first authors to examine the impact of the combination of traditional and social media activities, and they employed in their analysis a multivariate autoregressive time-series model, including IRF and calculation of elasticities.

Onishi and Manchanda (2011) investigated the impact of traditional media activities (e.g., TV advertising) with social media activities (e.g., blogs) on the sales of movie products. They also replicated their findings on another product category: cellular phone services. The authors were among the first ones within the marketing literature to answer the question of “whether new and traditional media help or hurt each other in achieving market outcomes such as sales” (Onishi & Manchanda, 2011, p. 4.). As mentioned in the HR research overview, the impact of this combination remains unexplored in the HR marketing literature, and this topic is addressed in Study 2 of the current dissertation. Onishi and Manchanda (2011) collected

marketing and sales data and processed them using regression analysis with simultaneous equation models, thereby allowing for the capture of the effect of social media on market outcomes and the effect of market outcomes on social media, both in the presence of traditional media. The authors indicated that social media (referring to “blog activities” in this case) and traditional media “act synergistically vis-à-vis market outcomes” (Onishi & Manchanda, 2011, p. 23) and concluded that cumulative blogs are predictive of market outcomes. They also recommended the allocation of social media and traditional media resources to exploit the resulting “multiplier” impact.

Aside from the impact of social media on purchase behavior or sales as well as on other outcomes (e.g., contribution to long-term value), the impact on stock market performance or customer behavior was also analyzed. However, during the consideration of these types of output variables, the employment of linear regression analysis was insufficient, and more challenging multivariate autoregressive time-series models such as VAR were subsequently employed. However, Kumar et al. (2016) used the logistic regression method.

Villanueva and Hanssens (2008) demonstrated in their research that word of mouth (WOM), dispersed with the help of social media, adds nearly twice as much long-term value to the firm compared to traditional marketing. In contrast to previous research, Villanueva and Hanssens (2008) employed the VAR model that treats each variable as potentially endogenous. The application of the VAR model allowed the authors to measure “the long-term impact of customer acquisitions through different channels on customer equity growth” (Villanueva & Hanssens, 2008, p. 51). The measurement of a “present and future response of a variable to an unexpected shock in another variable” (Villanueva & Hanssens, 2008, p. 51) also implies an impulse

response function. The data considered within their analysis stemmed from an internet company.

Meanwhile, Tirunillai and Tellis (2010) examined the impact of social media on unusual outcome variables such as stock market performance. They discussed in their paper whether user-generated content (UGC) on consumer product reviews influences stock market performance and identified “which metric of UGC has the strongest relationship, and what the dynamics of the relationship are” (Tirunillai & Tellis, 2010, p. 198). The authors gathered data over a four-year period across six markets and 15 firms and processed these data with VAR as a multivariate time-series model for assessing the relationship between UGC and stock market performance. They concluded that UGC influences stock market performance and that the volume of UGC has the strongest impact on stock market returns of a few days. Furthermore, the authors indicated that positive and negative UGCs have an asymmetric impact on returns: when the positive UGC has no impact, the negative UGC has a significant negative impact. The authors also concluded that the volume of chatter and negative chatter positively influence the trading volume both in the short and long term.

In a later research, Kumar et al. (2016) explored the impact of firm-generated content (FGC) in social media on customer behavior. They extended their investigation by analyzing the “synergistic effects of FGC with television advertising and e-mail communication” (Kumar et al., 2016, p. 7). They used different sets of data comprising social media participation data, transactional data as output as well as attitudinal data obtained from surveys and processed these data through logistic regression. Their results revealed that FGC has a positive and significant impact on customer behavior, and FGC synergistically works with other forms of media such as

TV advertising and e-mail communication. Moreover, FGC was found to be “greater for more experienced, tech-savvy, and social media-prone customers” (Kumar et al., 2016, p. 7).

4.3.3. Influence of social networking sites

According to Kaplan and Haenlein (2010), social networking sites (SNS) represent one type of social media. Some academic studies in the marketing literature specifically focused on the influence of SNS on different marketing outcomes. For instance, Trusov et al. (2009) compared the effect of social media on WOM with the effect of traditional marketing on the acquisition of new customers. The authors collected the time-series data set of 36 weeks from one major SNS and processed the data because of the endogeneity among WOM with help of the VAR model. Their results indicated that WOM referrals “have substantially longer carryover effects than traditional marketing actions and produce substantially higher response elasticities” (Trusov et al., 2009, p. 90). The authors also calculated the monetary value of WOM and concluded that the long-term elasticity for WOM is approximately 20 to 30 times higher than the elasticity for traditional marketing.

In their survey-based analysis, Dholakia and Durham (2010) evaluated how customer engagement via Facebook increases store visits and influences sales. They based their analysis on survey data on store evaluation and shopping behavior before and after the launch of Facebook. The users’ answers before and after the Facebook launch were subsequently compared. The results of the analysis suggested that Facebook fans went to a store 20% more often than non-fans, and these fans spent more money, were more likely to recommend the store to their friends, and had a greater emotional attachment than non-fans. Nonetheless, this survey-based analysis

cannot be considered as academic research with the deduction of causalities; instead, it can be evaluated as “representative” of a possible correlation and a possible impact of Facebook activities. Despite the sparse academic analysis of Facebook activities, this survey-based analysis represents value for academic research and managerial implication.

Jahn and Kunz (2012) considered in their research the influence of SNS on customers’ loyalty to brands. To test their framework, the authors analyzed the user-generated posts for the fan pages of different automobile brands as well as survey data from users in terms of their motives, participation behavior, and potential changes toward their actual brand relationship. The data were tested using structural equation models. The results of the authors’ analysis revealed a significant impact from online service usage behavior on the customer brand relationship. Furthermore, the valuable content on SNS was found to be one of the important drivers to attract users to SNS. Interaction on social networking sites was also identified as a key factor of customers’ loyalty to brands.

With regard to Facebook availability to acquire potentially difficult target groups needed for healthcare studies, Kapp et al. (2013) analyzed in their survey-based research the process of acquiring women aged 35–49 and residing in the US into health-related research. The authors concluded that Facebook is an innovative venue for recruiting participants for healthcare studies, which can help with acquiring specific target groups.

In a similar survey-based paper, Pedersen et al. (2016) stated that Facebook has become an important tool for health-related research on recruitment. The authors also underscored that Facebook can help with the cost effective recruitment of

participants. They suggested that further studies are required in that area of healthcare recruitment research.

The current marketing research on the influence of social media and SNS is presented in Table 16.

Author(s)	Research Stream	Topic	Method
Duan and Whinston (2005)	Marketing literature: <i>influence of social media on purchase behavior and sales</i>	Online user review has little persuasive effect on consumer purchase decision, whereas the rating of reviews has no impact on movie sales.	Regression analysis
Chevalier and Mayzlin (2006)		Consumer reviews tend to be more positive, and an improvement in consumer reviews results in an increase in relative sales.	Regression analysis
Dellarocas and Awad (2007)		The addition of online reviews to other well-known forecasting variables such as prerelease marketing, theater availability, and professional critic reviews substantially increases the forecasting accuracy of motion picture sales.	Model based on diffusion theory
Dhar and Chang (2009)		Future sales are positively correlated with the volume of posts, and the chatter resulting from web 2.0 influences sales.	Regression analysis
Zhu and Zhang (2010)		Product and consumer characteristics moderate the impact of online consumer reviews on product sales, and online reviews are more influential when consumers have a greater internet experience.	Regression analysis
Lis and Berz (2011)		Social media strategies behind publishing products increase the purchase probability.	Regression analysis
Marthur et al.		A stronger impact on	regression

Author(s)	Research Stream	Topic	Method
(2012)		purchase behavior is induced when social media usage is more frequent and when more opinions are shared. Additionally, the influence of social media is expected to be higher when the product or service involved in a potential purchase is more expensive.	analysis
Stephan and Galak (2010)	Marketing literature: <i>influence of the combination of traditional and social media activities</i>	Traditional and social-earned media affect sales, and the per-event sales impact of traditional earned media activity is stronger than that of social-earned media activity. However, “because of the greater frequency of social earned media activity, after adjusting for event frequency, social earned media’s sales elasticity is significantly greater than traditional earned media’s.”	Multivariate vector autoregressive time-series model, including the impulse response function and the calculation of elasticities
Onishi and Manchanda (2011)		Social media (referring to blog activities) and traditional media “act synergistically vis-à-vis market outcomes” (Onishi & Manchanda, 2011, p. 23). Furthermore, cumulative blogs are predictive of market outcomes.	Regression analysis with simultaneous equation models
Villanueva and Hanssens (2008)	Marketing literature: <i>influence of social media on other variables</i>	Word of mouth, dispersed with the help of social media, adds nearly twice as much long-term value to the firm compared to traditional marketing.	Multivariate vector autoregressive time-series model, with the employment of IRF
Tirunillai and Tellis (2010)		User-generated content (UGC) influences stock market performance, and the volume of UGC has the strongest impact on stock	Multivariate vector autoregressive time-series model

Author(s)	Research Stream	Topic	Method
		market returns of a few days. Positive and negative UGCs have an asymmetric impact on returns: when the positive UGC has no impact, the negative UGC has a significant negative impact.	
Kumar et al. (2016)		Firm-generated content (FGC) has a positive and significant impact on customer behavior, and it synergistically works with other forms of media such as TV advertising and e-mail communication. Additionally, FGC is “greater for more experienced, tech-savvy, and social media-prone customers” (Kumar et al., 2016, p. 7).	Logistic regression
Trusov et al. (2009)	Marketing literature: <i>influence of social networking sites</i>	“WOM referrals have substantially longer carryover effects than traditional marketing actions and produce substantially higher response elasticities” (Trusov et al., 2009, p. 90). Furthermore, long-term elasticities for WOM are approximately 20 to 30 times higher than elasticities for traditional marketing.	Multivariate vector autoregressive time-series model
Dholakia and Durham (2010)		Facebook fans went to a store 20% more often than non-fans, and they spent more money, were more likely to recommend the store to their friends, and had a greater emotional attachment than non-fans.	Survey-based analysis
Jahn and Kunz (2012)		Online service usage behavior has an impact on the customer brand relationship. Additionally, the valuable content on	Survey data with tests using structural equation

Author(s)	Research Stream	Topic	Method
		social networking sites (SNS) is one of the important drivers to attract users to SNS.	models
Kapp et al. (2013)		Facebook can help to acquire women aged 35–49 and residing in the US into health-related research. Facebook is an innovative venue for recruiting participants for healthcare studies, which can help with the acquisition of specific target groups.	Survey-based research
Pedersen et al. (2016)		Facebook has become an important tool for health-related research on recruitment. It can help with the cost effective recruitment of participants. However, further research is needed in that area of healthcare recruitment research.	Description of state-of-the-art research

Table 14 – Study 3: Marketing research on social media influence

4.4. Discussion and Outlook

4.4.1. Differences and similarities of previous research

This paper subdivided the previous research on the influence of traditional, online, and social media channels into two main categories: influence analysis within the HR literature and influence analysis within the marketing literature.

The HR literature describes the direct or indirect impact of traditional or online recruitment practices on recruitment success. By contrast, the marketing literature, including healthcare studies, focuses on the influence analysis of social media on different business outcomes as represented in Study 3. The common element of both research streams is their analysis of the impact of different channels on various

business outcomes. However, the difference between the analyses of these two research streams lies in the consideration of different target groups. On the one hand, the HR literature focuses on the direct or indirect effectiveness of traditional (Breugh et al., 2003; Cable & Yu, 2006; Collins & Han, 2004; Collins, 2007; Bretz & Judge, 2013; Cromheecke et al., 2013) or online recruitment practices (Parry & Tyson, 2008; Williamson et al., 2010; Baum & Kabst, 2014) with respect to applicants as a target group. On the other hand, the marketing literature is generally concentrated on online users as potential customers (Duan & Whinston, 2005; Zhu & Zhang, Villanueva & Hanssens, 2008; 2010; Marthur et al., 2012; Kumar et al., 2016), consumers (Chevalier & Mayzlin, 2006; Dholakia & Durham, 2010), or even investors (Tirunillai & Tellis, 2010).

However, the delivered results with respect to potential customers, consumers, or investors cannot be transferred to applicants or vice versa because the decision to buy goods from a company or invest funds in a company requires different incentives compared to the decision to work for a company. Therefore, social media approaches that aim to increase sales or investment volume will not necessarily work in the recruitment of employees. In the same vein, we cannot transfer the results from healthcare participants to HR recruitment because these domains differ in their target groups and respective motivations.

Furthermore, differences exist between HR and marketing research, including healthcare studies, in the methodology used and the effects analyzed. With the exception of Golovko and Schumann's (2019) work, previous research examined the general impact on recruitment success with regard to survey-based activities and applied simple regression analysis for traditional (Collins & Han, 2004; Cromheecke et al., 2013; Bretz & Judge, 1998; Cable & Yu, 2006) and online recruitment

practices (Parry & Tyson, 2008; Williamson et al., 2010; Baum & Kabst, 2014), or the correlation analysis of the indirect impact of traditional media recruitment practices (Breugh et al. 2003; Knox & Freeman, 2006; Collins, 2007). The work of Golovko and Schumann (2019) was the first study from the HR literature stream, which used time-series analysis based on real multichannel recruitment activities.

The studies from the marketing literature, including healthcare (Kapp et al., 2013; Pedersen et al., 2016), are also often survey-based and deal with the self-reported attitudes and behaviors of consumers. However, the marketing research stream has a broader and deeper focus in terms of the considered activities and the used methodology. Stephan and Galak (2010) performed an analysis of real traditional and social media activities using the VAR approach. Villanueva and Hanssens (2008) and Trusov et al. (2008) similarly analyzed the impact of WOM with the appropriate VAR methodology using real user activities. Tirunillai and Tellis (2010) demonstrated via the application of a multivariate VAR model the impact of real user activities on stock market performance. The aforementioned papers used real company activities and adopted a thorough and sophisticated statistical approach, and they were published in top-tier academic journals.

Human resource research requires a sophisticated analysis of real company activities using a thorough statistical approach similar to academic findings in the marketing literature published in top-tier journals (Stephan & Galak, 2010; Villanueva & Hanssens, 2008; Trusov et al., 2008; Tirunillai & Tellis, 2010). The work of Golovko and Schumann (2019), which also represents Study 1 of the current dissertation, as well as Study 2 of this project laid the foundation for this research with an appeal to further explore in this direction.

4.4.2. HR literature research stream

We suggest some recommendations with regard to the previous HR literature research stream. The research on the impact of traditional recruitment practices is currently limited to the impact of both early recruitment practices (Collins & Han, 2004) and unusual media such as postcards (Cromheecke et al., 2013). Independent of the methodology recommendation mentioned in the previous chapter and to expand the research on the direct impact of traditional recruitment practices, we recommend an examination of real activities behind the considered recruitment practices instead of a general analysis of channel impact based on reported and survey-based findings.

The previous research on the evaluation of the indirect impact of recruitment practices referred to the types of information (Bretz & Judge, 1998), manner by which applicants apply for available positions (Breaugh et al., 2003), media richness characteristics (Cable & Yu, 2006), brand image (Knox & Freeman, 2006), and product awareness (Collins, 2007). Future research should also analyze how marketing activities influence recruitment success (Golovko & Schumann, 2019). Furthermore, future research should examine the indirect impact of the different characteristics of the considered activities with respect to real company activities instead of the survey-based answers of applicants. For the analysis of those characteristics within the scope of real company activities, various research theories can be applied, such as media richness, signaling, and brand equity theories.

Concerning the impact of online recruitment practices, this research is limited to the following aspects: proposal for further distribution on online recruitment tools (Parry & Tyson, 2008), analysis of the amount of job attribute information

(Williamson et al., 2010), and impact comparison of recruitment websites and print advertisements (Baum & Kabst, 2014). Further research should likewise analyze how online and traditional HR recruitment media work together and ascertain whether these media help or hurt the attainment of recruitment success. Additionally, future research should investigate the impact of a company's real online recruitment activities on recruitment success.

The study of Golovko and Schumann (2019) is the sole work to explore the influence of social media on recruitment success. Further research is needed in this area, specifically in the aspect of analyzing how both company and user activities on different social media channels influence recruitment success. Another future research direction is the investigation of how activities on different social media channels cooperate with activities on traditional and online recruitment channels (e.g., within a multichannel recruitment mix).

From a methodological viewpoint, the studies in the HR research stream are limited to regression and correlation analyses, with the exception of the work of Golovko and Schumann (2019). To achieve more robust and more valid results over time, the usage of time-series analysis (e.g., with the VAR model) and the validation of the achieved results with other suitable methodologies are advisable.

4.4.3. Social media marketing research stream

Research on the influence of social media in the marketing literature is broader than the studies in the HR literature. Thus, marketing literature offers an ample quantity of research on the impact of social media on purchase behavior and sales (Duan & Whinston, 2005; Chevalier & Mayzlin, 2006; Dellarocas & Awad, 2007; Dhar & Chang, 2009; Zhu & Zhang, 2010; Lis & Berz, 2011; Marthur et al. 2012)

and other business outcomes (Villanueva & Hanssens, 2008; Tirunillai & Tellis, 2010; Kumar et al., 2016). Studies in the marketing literature also provide sophisticated analyses of the combination of traditional and social media activities (Stephan & Galak, 2010; Onishi & Manchanda, 2011) as well as the influence of SNS on various business outcomes. These analyses include the WOM impact evaluation of carryover effects (Trusov et al., 2009), survey-based analysis of Facebook influence (Dholakia & Durham, 2010), examination of the impact of online service usage behavior on customer brand relationship (Jan & Kunz, 2010), and analysis of Facebook help on acquisition for healthcare studies (Kapp et al., 2013; Pedersen et al., 2016).

In addition to the analyses of the above-mentioned influencing parameters on different recruitment outcomes, the marketing literature also assessed real company and user activities via a sophisticated time-series methodology used in top-tier academic journals (Stephan & Galak, 2010; Villanueva & Hanssens, 2008; Trusov et al., 2008; Tirunillai & Tellis, 2010). However, a research gap exists in the academic literature regarding Facebook activities and their influence on various business outcomes, which needs to be closed with future research.

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5. Conclusion

This dissertation addresses three major marketing challenges within the HR discipline, with a focus on the influence of traditional and social media recruitment practices on recruitment success. First, Study 1 evaluates the impact of a company's Facebook activities on recruitment success. Second, Study 2 investigates the influence of activities on traditional media channels, such as exhibition fairs, online, and print media activities, on recruitment success. It also examines the issue of whether the addition of Facebook activities to activities on traditional and online recruitment media enhances or diminishes the impact of traditional and online media on recruitment success. Finally, Study 3 summarizes and categorizes previous research from the marketing literature regarding the influence of traditional, online, and social media recruitment practices, the influence of a multichannel mix, and the influence of social media and social networking sites on different business outcomes. It also identifies the research gaps and offers recommendations for future research.

5.1. Implications

The three studies presented in this dissertation contribute to the HR and marketing literature and practice in several aspects.

Study 1 investigates the impact of a company's recruitment activities on Facebook on recruitment success. First, its findings contribute to the HR literature and, more specifically, to the limited electronic HRM research (Frasca et al., 2017) by demonstrating that general activities on Facebook have an impact on recruitment success within a multichannel environment. The evaluation of company activities in Study 1 is performed via time-series analysis, rather than through an exploration of cross-sectional self-reported behavior. In this regard, the findings from Study 1

extend the research of Allen et al. (2004) in terms of the reported perceptions of different media, such as face-to-face, video, audio, and text.

Second, we demonstrate in Study 1 that specific types of content (e.g., information about the working environment and the recruitment process) offered on a Facebook career page within a multichannel environment have an impact on recruitment success. These findings are in line with previous studies, suggesting that an applicant's intention to apply for employment is higher for companies that communicate more detailed information (Robertson et al., 2005) and that the provision of specific types of information can influence applicant attraction (Allen et al., 2007). More specifically, our results agree with findings indicating that the detailed job information provided on recruitment websites influences the number of applications received (Williamson et al., 2010). In comparison to previous studies, we enrich the existing research results (Allen et al., 2007; Williamson et al., 2010) concerning company activities. We add new insights to survey-based employment marketing research by using the employment marketing actions of a large employer. We also contribute to marketing research on SNS (Dholakia & Durham, 2010; Jahn & Kunz, 2012; Trusov et al., 2009) by underscoring that Facebook has a positive impact on recruitment outcomes, even as all posts are not equally effective. Our findings imply the need for marketing researchers to analyze the effectiveness of SNS such as Facebook for customer acquisition purposes and determine the specific types of Facebook posts that complement the marketing communication in other channels.

Third, in contrast to previous findings (Allen et al., 2007; Chapman et al., 2005), we demonstrate that some company activities (e.g., supplying information about job offers and the organization) have no impact in the context of Facebook as a

recruitment channel. Our findings vary because Facebook does not offer additional value for this type of content within a multichannel environment when this information is already covered by other dedicated channels. As HR managers increasingly work in a multichannel environment, further research should build on our findings and explore these cannibalization effects and potential synergies among different HR channels. Additionally, our approach is different from previous studies: we use real company activities on a time-series basis, instead of students' self-reported answers.

Fourth, Study 1 heeds the call for research on recruitment channel combinations (Libai et al., 2010) by demonstrating through an in-depth time-series data analysis using the VAR methodology the additional effects of communication via Facebook beyond other employer marketing sources such as print media advertising, job fairs, and internet standards (i.e., web 1.0).

This study also offers a managerial contribution by exhibiting the need for recruitment activities on Facebook and motivating managers to implement and maintain the Facebook activities that we demonstrate to be effective. Taken together, our recommendations for managers describe the process of shaping successful employment marketing campaigns using Facebook as an element of a modern HR multichannel strategy.

In Study 2, we analyze the impact of traditional media channels on recruitment success. We also investigate whether the addition of Facebook activities to traditional recruitment activities increases the impact of traditional media activities on recruitment success. We contribute to academic literature in several aspects.

First, we contribute to traditional recruitment practices research by demonstrating the impact of traditional recruitment practices on recruitment success. With our findings, we extend the previous conclusions (Baum & Kabst, 2014; Collins & Han, 2004; Cromheecke et al., 2013; Parry & Tyson, 2008; Williamson et al., 2010) about the reported influence of traditional and online media on recruitment success. However, our approach in Study 2 is different from previous studies: instead of self-reported answers, we examine real company activities and their real impact on a time-series basis. Thus, this approach allows us to conclude not only the general impact of traditional media on early recruitment practices (Collins & Han, 2004), the general impact of online recruitment tools (Parry & Tyson, 2008), the comparison of the impact strengths of websites and print media channels (Baum & Kabst, 2014), and the analysis of unusual media such as post cards (Cromheecke et al., 2013) but also verify the impact of traditional recruitment practices such as exhibition fair, online, and print media marketing.

Second, following the research call of Libai (2010), we demonstrate that traditional and social media can effectively work together. In our study, we explain whether the activities on the Facebook career channel reinforce the impact of traditional media recruitment marketing activities. Onishi and Manchanda (2011) are the first and only authors in the marketing literature to verify whether new media (referring to blog activity) and traditional media help or hurt each other. We enrich these findings from the social media literature by analyzing the Facebook channel as a new media. To the best of our knowledge, our study is the first work to examine the additional impact of Facebook activities on traditional recruitment marketing activities.

Third, previous research explained the expected general impact on recruitment success (Perloff, 2003; Allen et al., 2004; Cable & Yu, 2006; Collins, 2007; Walker et al., 2009; Baum & Kabst, 2014) of exhibition fairs and online and traditional media channels in dependence of the media richness characteristics of these channels. We enrich the previous general propositions by confirming or disconfirming the suggested positive impact on recruitment success of exhibition fair, online, and traditional media channels in dependence of the media richness characteristics of these practices. We add new insights to these theoretical and survey-based studies by using real employment marketing actions within the multichannel recruitment environment of a large employer.

Fourth, we make a contribution by heeding the call for research on the “additional interactive effects of various recruitment activities” (Baum & Kabst, p. 368) and highlighting that employer knowledge is a substantial part of the modern recruitment process. In connection with previous research (Collins & Han, 2004; Boswell et al., 2003), we reveal that information about a company not only influences applicants’ attraction but also increases the impact strength of traditional marketing channels. We add these new insights to previous survey-based employment marketing research by using the employment marketing actions of a large employer.

Finally, Study 2 offers a managerial contribution by underlining that exhibition fair and online marketing activities play an important role in attracting potential applicants within the target group of high school degree holders. We also demonstrate that for the considered target group, print media shows no impact on recruitment success, and a substantial increase in recruitment success results from the combination of online and general Facebook activities. Managers can use our practical findings for defining a multichannel recruitment strategy.

Study 3 summarizes the current research from the HR literature concerning the influence of traditional and social media on recruitment success. It also presents an overview of the marketing literature regarding the influence of social media on different media outcomes. We derive from Study 3 the conclusion that several research gaps exist within the HR literature and some research gaps within the marketing literature. Our findings contribute to the academic literature by providing a literature overview of the state of the art HR research on the influence of traditional, online, and social media channels on recruitment success. Moreover, Study 3 presents a literature overview of the marketing literature regarding the influence of social media on various business outcomes. Study 3 contributes to academic research by identifying some avenues for future research in the area of traditional and social media influence.

The literature and findings summary of Study 3 should also help practitioners to identify a relevant area of research and use these findings for management purposes.

5.2. Outlook

This dissertation explains the importance of traditional, online, and social media recruitment practices and the combination of these practices in the achievement of recruitment success. Nevertheless, some limitations exist within the three studies of this dissertation, which also offer a more detailed and specific discussion of the direction of future research opportunities.

Study 1 and Study 2 cover a period of 28 months (July 2011–October 2013). Although we consider this period to be sufficient for providing precise results, we encourage the expansion of the study period to obtain more detailed results.

Second, in our analyses in Study 1 and Study 2, we use marketing expenditures as proxies for recruitment activities in traditional channels. The direct use of activity metrics in traditional channels may deliver more precise results.

Third, we assess in Study 1 and Study 2 the effects for a specific target group, namely German users with a high school degree, who apply for a position at an aviation company. New research is necessary in this area to obtain diverse reactions to recruitment activities from different target groups, as previously demonstrated for job seekers versus non-job seekers (Überschaer et al., 2016, p. 1026) and the minority versus the majority population (Baum et al., 2016, p. 4140).

Fourth, Study 1 and Study 2 examine the data of one company that has a relatively large number of fans. Thus, we encourage a new research across different companies, industries, and even countries to increase the significance of the results. The analysis of start-up or lesser-known companies to determine whether the results differ would be a reasonable research direction.

Fifth, previous studies regarding recruitment (e.g., Baum & Kabst, 2016; Collins, 2007) and WOM (Stumpf & Baum, 2016) argue that recruitment and marketing activities interact with each other; thus, congruity with the brand and among different activities is important for successful communication. Future research should therefore explore how different messages fit together and verify whether they paint either a coherent or a conflicting image.

Sixth, Study 1 and Study 2 focus on the recruiting firm's traditional and Facebook activities and their impact on recruitment success. However, social and traditional media also allow third parties to reply to these activities and contribute content themselves. Further studies should therefore address the role and relative impact not

only of first-party content (i.e., from the organization itself, as in this study) but also third-party content (i.e., online ratings, certifications, and other status-based awards (Dineen & Allen, 2016, p. 91) as a relevant recruitment information source (Baum & Überschaer, 2016; Dineen & Allen, 2016).

Finally, the use of additional success metrics such as the quality of applications could offer useful insights within the scope of new research.

5.3. References

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