

Let's Get Digital

Predictors of Employees' Resistance to Digital Change

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Management Summary

Background and Research Question

Detecon International GmbH is a consulting company specializing in digital change and facing a permanent need to adapt to frequent technological changes and enhanced market competition. In an effort to respond to environmental challenges, the company introduced a digital change initiative. However, employees refused to engage in change-oriented behaviour. A known factor challenging the success of organizational change is employees' resistance to change. This leads to the question which factors influence employees' resistance towards change. Consequently, the primary goal of this study was to investigate predictors of employee resistance towards the digital change initiative and to identify practical approaches to modify employees' perception of change. Predictors were clustered into three domains: change-related (i.e., perceived usefulness of digital communication and employees' change-specific self-efficacy), work-related (i.e., affective organizational commitment and trust in management) and personal characteristics (i.e., age and segmentation preference). Originally, it was aimed to also investigate BIG 5 personality dimensions, but due to logical implications it was excluded from the examination.

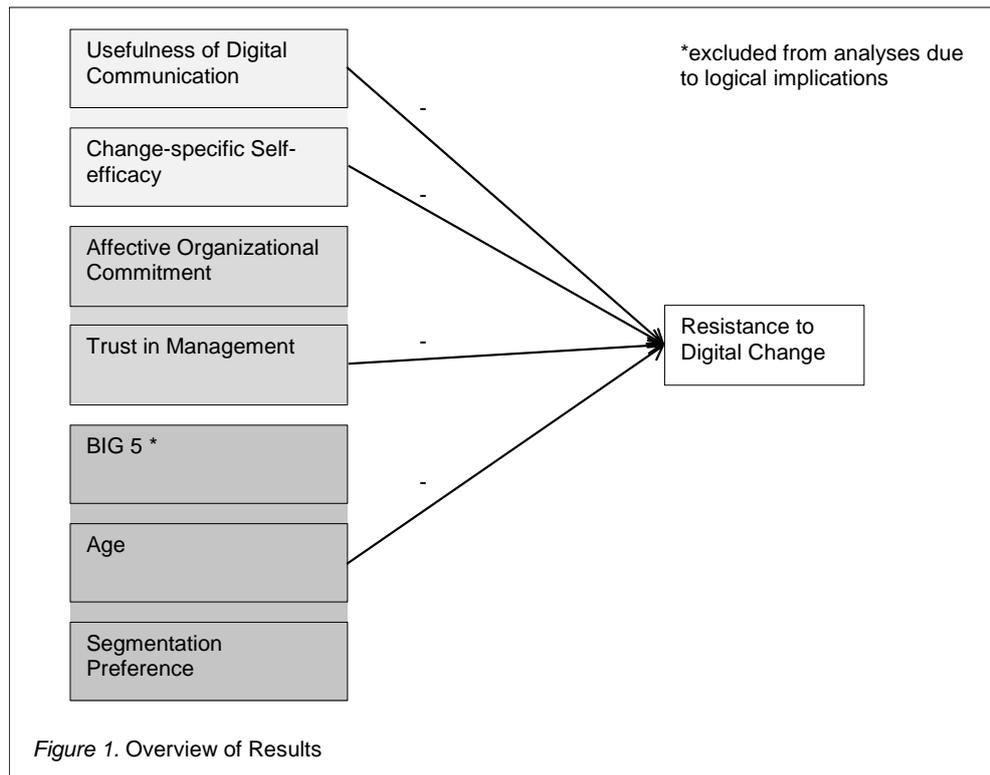
Method

An online questionnaire was used to collect data from employees of German offices. In total, 191 out of 711 employees participated in the study and completed a 45-items survey. The level of employees' resistance to digital change was assessed, predictors were examined and demographic data was checked.

Results

Results showed that employees' level of resistance towards digital change was relatively high. Four predictors could be identified as predictors of employees' resistance to change. In the change-related domain, levels of perceived usefulness of digital communication and change-specific self-efficacy were related to lower resistance. In the work-related domain, employees' amount of trust in management predicted lower resistance to change. In the personal characteristics domain, employees' age was negatively related to resistance to change. No statistical support could be provided for affective organizational commitment and segmentation preference of employees as predictors of resistance to change. Overall, the predictor-model was able to explain a large amount of employees' variance of resistance. An overview of the results is given in Figure 1.

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Conclusion and Recommendations

This study suggests that in addition to factors directly related to the change, factors in the domains of employees work environment and personal characteristics also relate to resistance to change. Consequently, there is a broader framework to be taken into consideration when attempting to prevent or lower resistance. Findings indicate that change-agents or managers of the digital change might reduce resistance by generating an atmosphere that improves employees' perceived usefulness of digital communication, as well as perceived change-specific self-efficacy. For example, employees' could be provided with appropriate training where new behaviours associated with digital change (e.g., working with digital tools) are trained in order to bolster employees' confidence. Since age was negatively related to resistance, differences in age should be taken into account in order to improve effectiveness of such trainings and support younger employees. On a continuous base, a broad encouragement of employees' trust in management is recommended. In order to establish valid conclusions, replication of findings and further investigation is needed. Future research could address determinants of employees' perceived self-efficacy, perceived usefulness of digital communication and trust in management in the company.

Abstract

Many organizational change initiatives are inhibited by employees' resistance to change. Although previous studies have identified various variables influencing resistance, a comprehensive model illustrating relations between predictors and resistance is missing. This study investigated potential predictors of employees' resistance to a digital change. The predictors examined were clustered into three domains: change-related (i.e., usefulness of digital communication and change-specific self-efficacy), work-related (i.e., affective organizational commitment and trust in management) and personal characteristics (i.e., age and segmentation preference). Cross sectional survey data were collected among employees of a consultancy company (N = 710). The final sample consisted of 191 employees. Data were analysed by means of hierarchical regression analysis. Results showed that employees' resistance to change was negatively related to employees' perceived usefulness of digital communication, to change-specific self-efficacy, to trust in management, and age. Employees' levels of affective organizational commitment and segmentation preference could not predict differences in resistance to change. Overall, the chosen predictors explained a large proportion of the variation in resistance to digital change by employees. The results suggest that not only factors directly related to the change, but also the work environment and personal characteristics mitigate the change perception of employees. Implications of the findings are discussed critically.

Search words: Digitalization, Digitization, Digital change, Organizational Change, Resistance to change, consulting

"It is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change."

—attributed to Charles Darwin

Introduction

Organizational change is obligatory for companies in today's rapidly changing business environment (Fernandez & Rainey, 2006). In order to remain competitive, organizations are required to adapt to frequent technological changes and enhanced market competition (Wanberg & Banas, 2000). One crucial factor affecting the success of organizational change is employees' engagement (Miller, Johnson, & Grau, 1994).

Employees who are prepared and willing to cope with changing work roles as well as processes, strongly contribute to a successful implementation of organizational change (Hornung & Rousseau, 2007). However, employees' support is often missing (Erwin & Garman, 2009). A frequently cited reason for failure of change and problems in implementing change is employees' resistance to change (Erwin & Garman, 2009). Research has shown that change can constitute a critical life event for employees (Terry & Jimmieson, 2003) and that coping with change can be very stressful (Wanberg & Banas, 2000). Employees are likely to experience uncertainty about their task and roles (Allen, Jimmieson, Bordia, & Irmer, 2007). Moreover, the change initiative may be perceived as a major source of threat to employees' job security, career path and financial wellbeing (Callan, 1993), leading to a rather resistant attitude towards the change. Ultimate consequences can include feelings of anxiety, lower job satisfaction and turnover intention (Wanberg & Banas, 2000). Furthermore, the psychological difficulty to accept change might have detrimental effects for the organization, as it can cause delays, slow-downs or even a complete failure of planned changes (Eilam & Shamir, 2005). Therefore, employees' perception of change is a key aspect to be considered in change management (Cullen, Edwards, Casper, & Gue, 2013).

In an effort to prevent employees' resistance and to avoid subsequent negative organizational and individual consequences, more insight into antecedents of resistance is needed. Consequently, the purpose of this study is to examine potential predictors of employees' negative evaluations of organizational change. A field study was initiated in order to assess change-related variables, work-related variables and personal characteristics as predictors of employees' resistance occurring towards a digital change initiative.

Resistance to change (RTC)

If individuals do not adapt to changes but try to maintain the status quo, this is usually defined as resistance to change (Lewin, 1952; Zaltman & Duncan, 1977). Examples of RTC at work can include active responses like complaints, but also passive behaviours such as doing the minimum required (Miller et al., 1994). Besides these behavioural responses, RTC may also include negative attitudes like pessimism and anger regarding proposed modifications at work (Piderit, 2000). Recent research criticized the concept of RTC being too simplistic and proposes to define resistance as a tridimensional construct, combining affective, behavioural and cognitive responses (Piderit, 2000; Oreg, 2006). Accordingly, the definition of the concept of RTC is divergent and evolving (Erwin & Garman, 2010). The same applies for predictors of RTC, defined as factors influencing employees' resistance towards organizational change (Miller et al., 1994).

Until now, various relevant variables and their association with employees' RTC could be identified (Erwin & Garman, 2010). However, most studies examined a limited number of factors restricted to one domain (e.g., work- or change-related). A comprehensive framework linking various predictor-domains to RTC is missing. This gap makes synthesis of results difficult and consequently limits the variability of approaches to prevent employees from RTC. Insight into antecedents of resistance is essential in order to design approaches on how to lower RTC. Consequently, the current study attempted to answer the question: What are predictors of employees' resistance to digital change?

Not only change-related factors influence the attitude towards change, but also employees' work environment and personal characteristics. Accordingly, it was chosen to focus on three overarching predictor sets common to all organizational change efforts in the present study. It was aimed to assess two change-related variables (i.e., change-specific self-efficacy and perceived usefulness), two work-related variables (i.e., trust in management and organizational commitment) and three personal characteristics (i.e., BIG5, age, segmentation preference) as predictors of employees' resistance occurring towards a digital change initiative. The three sets will be introduced and discussed in more detail in the following paragraphs.

Change-related variables

The vast majority of empirical studies investigating antecedents of RTC focused on change-related factors. Results of Wanberg and Banas (2000) underline conditions of change predicting employees RTC. Accordingly, the first set of predictors to be considered comprises

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variables that are related to the change at hand. One of the major determinants of whether employees will accept or resist change is the extent to which it is perceived as being beneficial (Oreg, 2006). Therefore, the degree to which employees believe that using digital tools (e.g., online portal) would enhance their job performance is considered as potentially important. In a study of Bhattacharjee and Hikmet (2007) participants' RTC was negatively related to the perceived usefulness of a social-network and positively related to the intention to use this network. Hence, high perceived usefulness of digital communication should reduce resistance to a digital change. It is as variable included in this study, as it might lead to important insights about how to prevent negative evaluations of change and in turn, stimulate change-behaviours (e.g., intention to use).

The second change-related variable included in this study is change-specific self-efficacy. It is defined as employees' perceived confidence to cope successfully with the requirements of change (Wanberg & Banas, 2000). Coch and French (1948) proposed the idea that employees who doubt their ability to handle the changes might be resistant to integrate new tasks and technology into their work. In the same vein, Chreim (2006) found in an interview study that employees were resistant towards a technological change if they thought they lack the capabilities for success. Accordingly, change-specific self-efficacy is hypothesized to lower RTC in the present study.

Hypothesis 1a: Perceived usefulness of digital communication is negatively related to RTC

Hypothesis 1b: Change-specific self-efficacy is negatively related to RTC

Work-related variables

In addition to factors that are directly related to change, employees work context might also determine their attitude towards change. Research has shown that work-related factors, defined as conditions in an organization's environment, affect resistance (Armenakis & Bedeian, 1999). One work-related factor is employees' relationship with the management. Trust in the management's ability to navigate the organization was found to be the basis for successful change at work (Gomez & Rosen, 2001; Stanley, Meyer, & Topolnytski, 2005) and a major factor reducing employees' RTC (Oreg, 2006). Accordingly, trust in management is included in the present study and expected to lower employees' RTC.

Another work-related factor is employees' affective organizational commitment (OC), defined as emotional attachment to the organization. Individuals high in OC "strongly believe in the organization's goals, enjoy membership in the organization and are willing to exert

considerable effort on behalf of the organization” (Mowday, Porter, & Steers, 1982, p.27). Previous research showed that a high level of OC stimulates behaviour that contributes to organizational effectiveness (van Dick, 2004) and a positive evaluation of information about change (Miller et al., 1994). Results of Peccei, Giangreco and Sebastiano (2011) indicated that OC has a decreasing effect on RTC. Therefore, OC is considered an important predictor of employees' attitude and behaviour. It is included in the current study as a variable which might promote a positive evaluation of the change and consequently, prevent resistance to change.

Hypothesis 2a: Trust in management is related to RTC

Hypothesis 2b: Organizational commitment is negatively related to RTC

Personal characteristics

Besides environmental influences, individual differences can also affect employees' reactions to change (Oreg, 2003). Whereas some individuals interpret changes as an opportunity to benefit, others prefer routines and are concerned by the change (Judge, Thoresen, Pucik, & Welbourne, 1999). This difference in responses can be explained by individual characteristics such as personality traits (Judge et al., 1999). In addition, individuals have varying ability to adapt to new roles (Callan, 1993) and use individual defence mechanisms when dealing with change (Bovey & Hede, 2001). As such, the third predictor set focuses on personal characteristics of the employees influencing their attitude towards change. Few studies have tried to explore concepts that are related to RTC from an individual perspective (Wanberg & Banas, 2000). Oreg (2003) examined personality variables, which predisposed individuals towards RTC. He investigated the relationship between the personality dimensions openness and extraversion and RTC. In order to get a more comprehensive view, all BIG 5 dimensions (i.e. openness, conscientiousness, extraversion, agreeableness, and neuroticism) were included in the present study.

Further, a significant negative relationship of age and RTC has been reported (Oreg, 2006; Kunze, Boehm, & Bruch, 2013). This contradicts the common stereotype that older individuals tend to be less positive about change than younger ones (Kirton & Mulligan, 1973; Weiss & Maurer, 2004). Reviewing the research information, the research of Kunze et al. (2013) resembles the current study. Using a larger sample and investigating German firms, they found younger employees more resistant to change. As such, age is expected to be negatively related to RTC in this study.

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In order to focus on the specific challenges a digital change involves for the individual, the third variable included in this domain is employees' segmentation preference. Individuals differ in their desire to keep work and home domains separate (Kreiner, 2006). Employees with a high segmentation preference prefer to keep the two domains as separate as possible (Kreiner, 2006). This separation can be challenged by the digital change initiative, as digital communication usage is nothing strictly work-related (Barber & Jenkins, 2013). Building on research concerning the role of technology blurring work-home boundaries (Day, Scott, & Kelloway, 2010), the actions expected in this digital change may increase technology use at home and thus, may cause cross-role interruptions at home. Online profiles, blogs and message services can be used for private (e.g., to message friends and family), as well as for business purposes (e.g., to connect with colleagues). In addition, the services are available at any time, not only during working hours. Previous research has demonstrated that individuals vary in their preferences for segmenting or integrating aspects of work and home (Edwards & Rothbard, 1999). The extent to which employees perceive the integration of work and home domains as helpful or stressful (Kreiner, 2006), was considered to alter their evaluations of the digital change and included in this study as potential predictor of RTC. Employees with high segmentation preference were expected to have higher RTC.

Hypothesis 3a: BIG 5 personality dimensions are related to RTC

Hypothesis 3b: Age is negatively related to RTC

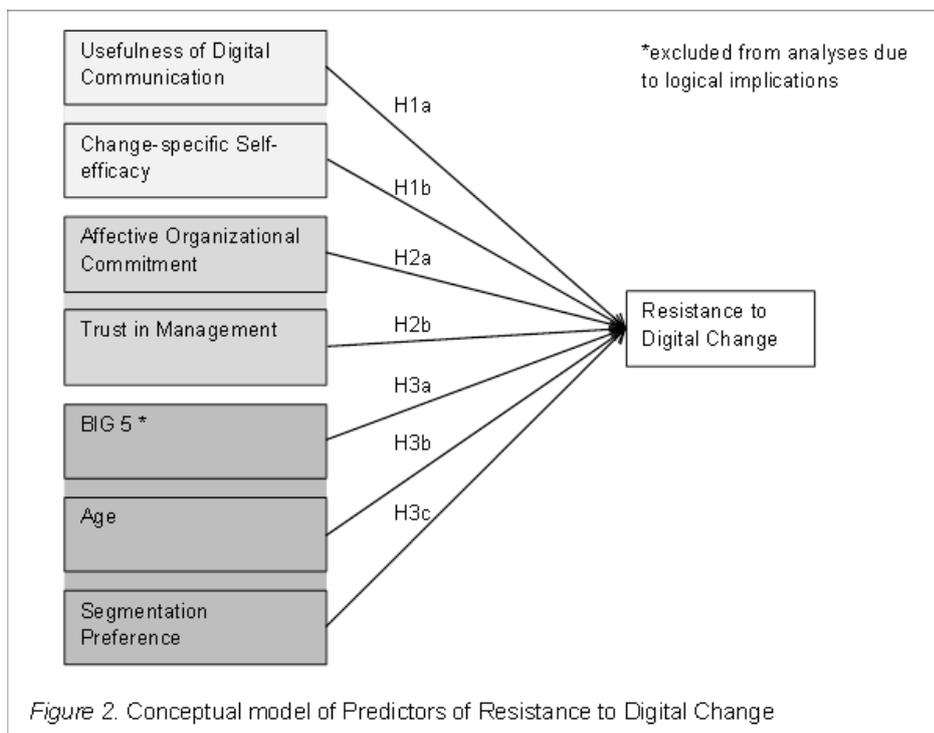
Hypothesis 3c: Segmentation preference is negatively related to RTC

The present study context

This study was carried out in a German management consulting company that had recently initiated a digital change initiative. As the company specializes in digital change, employees' adaption to technological changes and their digital expertise determine future performance and competitive advantage of the company. Although the company's mission statement is to be "leading digital", employees did not meet objectives regarding their digital competency and engagement. Consequently, the aim of the initiatives was to improve the company's digital communication. Employees were requested by their managers to increase their digital presence (e.g., by using apps, profiles on platforms, and publishing content on blogs or the company website) and to increase their use of the intranet and of social media platforms. The initiative was encountered with resistance. Employees refused to engage in digital communication and to represent themselves on online platforms. At the same time,

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they evaluated the change negatively in front of their colleagues and the management. In an attempt to proactively mitigate these reactions, the management offered support. Work-teams were provided with own websites to publish content, lectures were initiated to give insight into social media marketing, and the role of a digital community manager was introduced to monitor digital activities of teams. These steps did not seem to reduce employees RTC. In order to examine this resistant behaviour of the employees, the focus of this study was to identify and investigate predictors of employees' resistant reactions to digital change. Participants completed an online (self-administered) questionnaire assessing their levels of the examined predictors and RTC. An overview of the hypotheses is given in Figure 2. Results might allow the development of strategies that lower resistance and provide guidance to change managers on how successfully handle digital changes in companies successfully.



Method

Procedure and Participants

The study was conducted approximately three months after the digital change initiative was first introduced in the organization (March 2016). It was designed as a follow up study after 11 preliminary semi structured interviews were conducted with company managers and employees on behalf of the management. This information was used in order to design survey items specific to this particular initiative. Data were collected by means of an online questionnaire, designed with Netigate Online Survey Software. All employees of the company's German offices (N = 710) were invited for participation via Email. Participation was voluntary. Respondents were provided with a short instruction and information about the survey topic, as well as the link to the survey and were assured of anonymity. The survey included general questions (age, gender, tenure in the company) and questions about RTC and the predictors being investigated. After completing the survey, participants were thanked for their collaboration and given the opportunity to enter their email address if they wanted to be informed about the results of the survey. The response rate was 29.7% (N = 211). Twenty cases had to be removed due to missing data. The final sample consisted of 191 employees (119 male, 72 female) of the consulting company. The majority of respondents were under the age of 40 years (41,4% under 31 years, 18,2% under 40 years, 25,3% between 41-50 years, 16% 51 and older) and worked in the company for over two years (59,1 % > 2 yrs., 17,2% < 6 months, 23,3% less than 2 years, 18,2% 2 - 5 years, 40,9% > 5 years). Thirty-one (16.2%) had managerial responsibility. These percentages were comparable with overall distributions in German offices of the company.

Measures

The questionnaire consisted of 45 questions assessing the research and control variables. The complete German questionnaire can be found in Appendix A. Participants responded to all items on a 5-point Likert Scales (1=fully disagree; 5= fully agree). In order to increase response rates, the number of items was reduced if possible. Where no German versions of the questionnaires were available, items were translated into German language using the back-translate technique (Brislin, 1970). This means that all items were first translated from English to German by a native German speaker and then translated back from German to English by a native English speaker (who was not familiar with the original English scale). In case of discrepancies between the original and the back-translated version,

the process was repeated. Completing the questionnaire took up to eighteen minutes.

Resistance to change (RTC). RTC was assessed using nine items of the change attitude scale (Oreg, 2006)¹. Items were adjusted by adding the word 'digital' to 'change'. An example item is "I am stressed by the digital change". Cronbach's alpha for this scale was .86, indicating a good internal consistency of the instrument.

Perceived usefulness. The scale used in this study was an adapted version from Davis (1989). The inventory consisted of three items ($\alpha = .91$). An example item is "Using digital communication increases my productivity at work".

Change specific self-efficacy. Change-specific self-efficacy was assessed via a four-item ($\alpha = .69$) measure from Ashford (1988), which asked employees to make general assessments of self-mastery about the change. Items were adjusted to the digital change in place. An example item is "Though I may need some training, I have little doubt that I can perform well following the digital change".

Affective Organizational commitment. Affective organizational Commitment was assessed using eight items of the German version of the OC questionnaire (one subscale of OCQ-G) by Maier and Woschée (2002). An example item is "I am proud to work for this company". Cronbach's alpha was determined to be .81.

Trust in management. Three items from Oreg (2006) were used to measure trust in management. An example item is "I have the feeling that I can count on the organizations management." Cronbach's alpha was .87.

Segmentation preference. This variable was assessed using the segmentation preference items of Kreiner's scale (2006). The inventory consisted of four items ($\alpha = .83$). An example items is: "I prefer to prevent work issues from creeping into my home life".

BIG 5. Personality dimensions (openness to experience, neuroticism, agreeableness, extraversion, and conscientiousness) were measured with the German version of the 10-item Big Five Inventory (BFI-10) by Rammstedt and John (2007). According to Rammstedt, Kemper, Klein, Beierlein and Kolaleva (2013) this scale has sufficient psychometric properties. However, as alphas ranged from .34-.55 it was decided to exclude personality dimensions from this study as no valid conclusions could be based on the measures.

Age. Age was assessed with one item. Participants could indicate their age by /four categories were used in the questionnaire (1 = under 31 years; 2 = 31-40 years; 3 = 41-50

¹ Several studies have suggested a three dimensional structure of RTC. However, the factor analysis revealed that just one construct was measured with the questions. Consequently, RTC is as one construct included in this study.

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years; 4 = over 51 years). Dummy variables were created in order to include the variables in the analyses.

Control variables. In order to avoid potential confounding, the study was controlled for factors that might be related to RTC as well as to the examined predictors. Tenure in the company (0 = under 2 years; 1 = over 2 years) was assessed as a result of the possibility that individuals who work longer may have more contacts and resources facilitating to adapting to change (Wanberg & Banas, 2000). Whether the respondent was a manager was also controlled (0 = no; 1 = yes), given that managers may have greater access to information influencing their commitment and have a different relation to management in general (Oreg, 2006). Gender (0 = female; 1 = male) was examined for its potential relevance.

Design and Analysis

Data were cleaned for subjects who did not answer or falsely answered a question or did not complete all of the items. Data were checked at all outcome variables for univariate outliers and it was examined whether the assumptions of normality and homoscedasticity, as well as non-existence of multicollinearity and autocorrelation were fulfilled (Backhaus, Erichson, & Weiber, 2013). Prior to the analyses, mean scores of organizational commitment, self-efficacy, perceived usefulness, and segmentation preference were computed and dummy variables created for age (the first category as reference category). Reliability analyses were used to determine Cronbach's alpha per scale.

To investigate which predictors are related to RTC, all main and control variables were analysed by means of correlation using SPSS. Regression analysis was used to examine whether change-related (i.e., self-efficacy, usefulness), work-related (i.e., affective commitment, managerial responsibility), and personal characteristics (i.e., age, segmentation preference) variables predicted the total value of employees' RTC. An alpha level of .05 for all statistical tests was used.

Results

Descriptive statistics and correlations among all examined variables are displayed in Table 1. Participants' mean scores of RTC were higher than the mean of the scale. The same holds for mean scores of perceived usefulness of digital communication. Change-specific self-efficacy was lower than the average of the scale. The sample had average scores of affective organizational commitment, trust in management and segmentation preference. There was a significant negative correlation between RTC and organizational commitment, trust in

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management, usefulness of digital communication, change-specific self-efficacy, age and tenure. Age, organizational commitment, tenure and usefulness of digital communication correlated positively with trust in management. Segmentation preference was negatively correlated with organizational commitment and positively related to gender and age. Managerial responsibility and segmentation preference were negatively correlated with OC.

Table 1
Descriptive Statistics and Correlations of all variables included in the analyses (n=191)

Measure	Range	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.RTC	1-5	3.83	.60	-									
<i>Change-related variables</i>													
2.Usefulness of digital communication	1-5	2.91	1.04	-.30**	-								
3.change-specific self-efficacy	1-4	2.05	.63	-.58**	.15*	-							
<i>Work-related variables</i>													
4.affective Organizational Commitment	1-4	2.35	.54	-.25**	.14	-.13	-						
5.Trust in management	1-5	2.68	.84	-.33**	.16*	.09	.48**	-					
<i>Personal characteristics</i>													
6.Segmentation preference	1-5	2.69	.93	.03	.00	.10	-.17*	.10	-				
7.Age category ^a	1-4			-.30**	-.04	.07	-.01	.20**	.19**	-			
<i>Control variables</i>													
8.Gender ^b	0-1			.08	-.04	-.08	-.13	.13	.22**	.18*	-		
9.managerial responsibility ^c	0-1			-.06	.03	-.11	-.21**	.06	.11	.21**	.17*	-	
10.tenure ^d	0-1			-.25**	.05	.09	.15*	.20**	.03	.69**	.07	.20**	-

* $p < .05$. ** $p < .01$.

^a This variable contained four categories: 1 = under 31 years; 2 = 31 – 40 years; 3 = 41 – 50 years; 4 = over 51 years.

^b 0 = male, 1 = female

^c 0 = no responsibility 1 = managerial responsibility

^d 0 = under 2 years, 1 = over 2 years

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To test hypotheses, a two-step hierarchical regression was conducted to determine the extent to which predictors and control variables explained variance in participants' RTC. The control variables (i.e., gender, managerial responsibility, and tenure) were entered in step one of the regression and the main variables (i.e., perceived usefulness, change-specific self-efficacy, affective organizational commitment, trust in management, age, and segmentation preference) were entered as predictors in step two. The results showed that the control variables (model 1) accounted for 4.8% of RTC. The predictors of RTC (model 2) explained additional 47.8%. This change in R^2 was significant ($F(8, 179) = 22.58, p < .001$). All results are depicted in Table 2. In the following, the separate results will be illustrated in detail.

In the change-related domain, perceived usefulness significantly predicted resistance ($\beta = -.20, t(179) = -3.64, p < .001$). High scores on perceived usefulness of digital media were related to lower resistance to change. In addition, change-specific self-efficacy also significantly predicted resistance ($\beta = -.52, t(179) = -9.46, p < .001$). High change-specific self-efficacy scores were related to lowered resistance to change.

With regard to the work-related factors, the analysis revealed that organizational commitment did not significantly predict resistance ($\beta = -.12, t(179) = -1.85, p = .065$). By contrast, trust in management was negatively related to resistance ($\beta = -.16, t(179) = -2.45, p = .015$).

Considering personal characteristics as predictors of RTC, hypotheses were partly supported. With regard to the effect of age, the resistance scores of the three older categories were significantly different to the RTC scores of young employees (reference category) (Age 1 $\beta = -.18, t(179) = -3.40, p = .007$; Age 2 $\beta = -.29, t(179) = -4.18, p < .001$; Age 3 $\beta = -.27, t(179) = -3.81, p < .001$). Higher age was related to lower RTC. Contrary to this, employees' level of segmentation preference did not significantly predict resistance ($\beta = -.00, t(179) = -.032, p = .975$).

In sum, in the hypotheses 1a and 1b were supported in the change-related domain. In the work-related domain, there was no support for hypothesis 2a, whereas hypothesis 2b was confirmed by the data. In the domain personal characteristics, only hypothesis 3b was supported. No statistical support could be provided for hypothesis 3c.

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Table 2

Summary of hierarchical regression predicting RTC

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Gender	.11	.09	-.09	.12	.07	-.10
Managerial responsibility	-.04	.12	-.03	-.16	.09	-.10
Tenure	-.24	.09	-.20*	.14	.09	.11
Use				-.11	.03	-.20***
Efficacy				-.49	.05	-.52***
OC				-.13	.07	-.12
Trust				-.11	.05	-.16*
SP				-.00	.04	-.00
Age 31-40 ^a				-.28	.10	-.18*
Age 41-50 ^a				-.40	.10	-.29***
Age >50 ^a				-.44	.11	-.27***
R ²	.048			.526		
Δ R ²	.048			.478		
F for change in R ²	3.168*			22.578***		

Note. Use = usefulness of digital communication; Efficacy = change-specific self-efficacy;

OC = organizational commitment; Trust = trust in management; SP = segmentation preference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

^a reference category: < 31 years.

Additional analysis

In order to compare the effect of age (under 31 years/31-40 years/41-50 years/over 50 years) and RTC, a one-way Anova was conducted. An overview of the RTC mean scores in different age groups is displayed in Table 3. There was a significant effect of age ($F(3, 187) = 9.82, p < .001$). This effect was medium ($\eta^2 = .13$). Posthoc comparisons using the Bonferroni test indicated that the mean score for young employees (under 31 years), and the second age group (31-40 years) were statistically significant ($p = .001$). Mean scores of young employees and the fourth age group (over 50 years) differed significantly as well ($p < .001$). However, no significant effect of age between young employees and the third age group (41-50 years) could be detected ($p = .212$). Complete results of Posthoc comparisons can be found in Appendix B. Taken together, these results suggest that age has an effect on RTC. Specifically, they imply that younger employees have higher levels of resistance.

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Table 3

Descriptive statistics of RTC between age groups

	Resistance to change (RTC)	
	N	M (SD)
Under 31 years	79	4.05 (.56)
31 – 40 years	34	3.61 (.53)
41 – 50 years	46	3.83 (.56)
Over 50 years	32	3.49 (.58)

Discussion

The purpose of this study was to identify predictors of employees' resistance towards a digital change initiative in a consultancy company. The predictors investigated were change-related (i.e., perceived usefulness of digital communication, change-specific self-efficacy), work-related (i.e., affective organizational commitment, trust in management) and personal characteristics (i.e., age, segmentation preference). Originally, it was aimed to also include BIG 5 personality dimensions, but due to insufficient reliability of the measures it was excluded from analyses.

In the change-related domain, high usefulness of digital communication and high change-specific self-efficacy were expected to lower RTC. Both hypotheses were supported. Firstly, the more employees believed that using digital communication enhances job performance the lower was their degree of resistance. This is in line with findings of Bhattacharjee and Hikem (2007), who found a negative relation between the perceived usefulness of a social network and RTC. Therefore, employees might refuse usage if they do not believe that they can derive benefit from digital communication.

Secondly, self-efficacy was negatively related to RTC. High self-efficacious employees displayed lower RTC. This supports Coch and French's (1948) results and suggests that employees who are confident about their ability to cope with the digital change are more open to integrate new tasks and technology into their work. Put differently, if an employee is lacking the confidence to cope with the challenges of the digital change, his/her resistance might increase. Accordingly, mitigating change-related factors might be essential in successful change management. How beneficial employees experience change-related actions or tools and how competent they feel towards using them is a major factor determining their attitude towards change.

Both predictors of the work-related domain, namely trust in management and affective organizational commitment were expected to be negatively related to RTC. These hypotheses

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were only partly supported. Employees with strong faith in the organization's leadership displayed lower levels of RTC. This result validates findings of previous studies (Oreg, 2006; Stanley et al., 2005). In how far an employee perceives his executives as trustworthy, is determining his attitude towards digital change. The degree of managers' capacity to build trustful relationships with their employees, might determine successful change management.

By contrast, no link between employees' affective organizational commitment (OC) and RTC could be proven by the data. Employees' who felt highly committed to their company did not display lower levels of RTC. This contradicts previous research, suggesting that high OC leads to positive evaluation of information about change (Miller et al., 1994) and therefore, decreases RTC (Peccei et al., 2011). Further, it does not support the idea that OC positively stimulates change-related behaviour (van Dick, 2014). Although no significant difference could be detected in the regression analysis, results show a significant negative correlation of OC and RTC. Accordingly, there may be a negative effect on RTC, but due to the moderate sample size in this study, no statistically significant effect could be shown in the regression analysis. Another explanation might be that the effect of OC diminishes if a comprehensive model for RTC is applied, that considers not only OC but also other predictors such as trust in management. This idea is supported by research pointing out trust to be a major determinant for affective commitment (Lewicka & Krot, 2015).

With regards to the personal characteristics investigated as predictors of RTC, hypotheses could only be partly confirmed. Firstly, Big 5 personality dimensions (i.e., openness, conscientiousness, extraversion, agreeableness, neuroticism) were expected to be related to RTC. Due to non-reliable measures of the BIG 5, these relationships were not tested. No propositions about employees' differences in personality dimensions and the relation with RTC could be made. Accordingly, the hypothesis could not be supported or rejected.

Secondly, in contrast to the common stereotype that older people are more resistant towards change (Kirton & Mulligan, 1973), age was negatively related to RTC in the present study. Older employees displayed lower RTC compared to younger ones, implying that overall, younger employees in the current sample were more resistant to change than their older colleagues. This result is in line with previous research, suggesting that older employees might have better strategies to cope with change and therefore, are more willing to adapt to changes (Kunze et al., 2013).

Thirdly, employees' degree of SP was not related to RTC in the study. This is different to what was expected basing on previous research (Kreiner, 2006). Whether

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employees perceive segmentation of work and home domains as helpful or stressful was not related to their level of RTC. A promoted increase in digital presence of employees is nothing strictly work-related. For example, no clear separation can be made between private and business use on online profiles. Also, digital services are available at any time and any place (e.g., via smartphone), which may increase work-related technology use at home and thus, may cause cross-role interruptions. With respect to that, it was hypothesized that employees with a high preference for the segmentation of work and home domains might be more resistant towards the digital change. However, no relationship was supported by the study results. Kreiner (2006) notes that the wordings of the items used to measure segmentation preference may not be appropriate. She argues that the items assess level of agreement with statements about work-home conditions rather than the amount of their preference. Therefore, it is possible that the questions in the study measured general consent with segmentation rather than real preferences. Furthermore, Nippert-Eng (1996) stated that individuals with high segmentation preference develop successful strategies to disconnect the two domains. As such, another possible explanation for the above mentioned finding is that segmentation preference may not be linked to RTC as individual strategies may still be effective with regard to digital change (e.g., smartphone use).

Taken together, in this study significant relations with RTC could be proven in all predictor domains chosen. All change-related variables included in this research revealed evident results. In the work-related and personal characteristics domain, one predictor of RTC could be identified. This suggests that resistance as a common phenomenon might be modified not only during the change in place, but also by continuous improvement of factors in employees' work environment and by considering personal characteristics.

Limitations and Suggestions for Future Research

While this research enhances our understanding of predictors of RTC, several limitations must be considered when interpreting the findings. Firstly, hypotheses were tested in a cross-sectional data set. Accordingly, no claims can be made regarding causality of the relationships found between the study variables. Although the aforementioned research supports the directionality suggested in the present study, other directions cannot be precluded. Future studies should aim to replicate these findings with longitudinal data or ideally, a randomized controlled trial.

Secondly, the study investigated resistance at only one point in time. As such, no data could be provided to cover different stages of the change. According to Piderit (2000),

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organizational change can take different stadia and can imply different stages of resistance. In addition, it was proposed that the starting phase of organizational changes may be especially prone to RTC. In the beginning of a change, perceived uncertainties may outweigh the possible future benefits (Prochaska, Prochaska, & Levesque, 2001). Future research in the field should include several measurements of predictors of RTC during the change process (e.g., before the change and 1 month, three months, six months and twelve months after the change) to examine employees attitudes during different stages of change.

Thirdly, the low response rate (29.7 %) raises the concern for sample bias. It is possible that employees with high RTC refused to participate in the study and were thereby underrepresented in the current sample. As such, employees more likely to participate in online surveys may also be more positive about digital change. This undermines the generalizability of results. It remains unclear how representative the sample was and how this might have impacted the results. It is therefore suggested that future research includes a larger and random sample.

Fourthly, data for predictors and resistance were collected in the same survey, thus raising the concern for common method variance. However, according to Spector (2006) study results are not automatically biased if one method is used for both assessments. Furthermore, not all relationships tested were significant. This would have been expected if results were found only because the same method was used. Multiple sources of data collection, as for example ratings by colleagues and supervisors, should be included in future research.

Fifthly, measures of BIG 5 dimensions were excluded from analysis due to insufficient reliability. The questionnaire used two items per dimension, making it prone to reliability difficulties. Additionally, the short BFI-10 uses two extreme items per dimension (e.g., "I am lazy"). Perhaps participants were not feeling comfortable filling in such questions in a work-context, leading to response bias. Future studies should take into consideration that BIG5 personality dimensions are sensitive to measure in the work context and that more items should be included in the inventory in an effort to obtain reliable results. Examples of longer personality inventories may include Big Five inventory with more items (e.g., BFI; John, Donahue, & Kentle, 1991; 44 items).

A final limitation concerns the assessment of self-reports from a single source at one point in time. Such measures are prone to social desirability bias that can influence relationships and cause high intercorrelations (Bagozzi & Yi, 1993). Future studies should

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aim to include multiple sources of data collection such as resistance-evaluations by colleagues and supervisors.

Practical Implications

In the present study, employees displayed relatively high resistance levels. This stresses the need for the company to understand resistance and the factors causing it. With regard to the limitations of the current study, further research is needed before valid conclusions can be made. A follow up study design could include examinations of determinants of high resistance by using a controlled sample and assessment of longitudinal data, as well as various data collection methods. However, based on the current findings, a number of practical implications for the company's management can be proposed.

Firstly, change agents should generate an atmosphere in the change context that improves employees' perceived usefulness of digital communication, as well as perceived self-efficacy, since both were related to lower resistance. Research has shown that work conditions characterized by participation in change-related decisions, feedback and support contribute to perceived competence (Ashford, 1988). Special trainings for employees can improve change-specific self-efficacy (Wanberg & Banas, 2000), especially if they focus on technical information and expertise (Vardaman, Amis, Dyson, Wright, & van de Graaff Randolph, 2012). Consequently, employees should be provided with training where new behaviours associated with digital change (e.g., working with digital tools) are explained and trained with a focus on subjective benefits. The effect of training could be supported by the implementation of "change promoters". Being identified as persons with low or no resistance in all affected departments they can get involved in the digital change initiative. These "change-promoters" can act as role-models in their teams with the capacity to respond precisely to their colleagues' individual work situation and give feedback. Functioning as continuous contact people, they can teach best-practices and use-cases of digital applications to their colleagues.

In addition to actions during change, resistance should be prevented on a continuous base by modifying work-related factors. According to the study results, it is advisable to increase employees' trust in management not only in times of change, but on a continuous base. There is a negative association between RTC and trust in management. The manager's behaviour is a key factor in creating an atmosphere that prepares employees for changes. Consistent with several researchers' claims (Oreg, 2006) it is therefore advisable to establish a valuable employee-manager relationship and to maintain efforts in building and maintaining

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employees' trust in management. An important implication would be to investigate determinants of experienced trust or distrust of the company's management. Based on the results, it should be aimed to educate managers and to monitor the relationships with their teams (360° feedback). To support managers' personal development, pre-change workshops might be promoted where appropriate managing-strategies are addressed (e.g., emphasizing behavioural consistency and integrity, allow employees participation, as well as communication that is accurate and contains explanations and concerns; Whitener, Brodt, Korsgaard, & Werner, 1998).

Finally, the results from this study imply that age groups differ in their amount of RTC. It is recommended to get more insight into individual differences in RTC by designing another examination using a controlled sample and longitudinal data. With that information, individual strategies in order to prevent resistance could be designed. One example is the implementation of pre-change planning workshops, where special needs and coping strategies of different age groups are addressed. This can assist the planning and implementation phase (Callan, 1993). In these workshops, young and old can be assigned into pairs to become "digital buddies" in order to exchange information, bolster their confidence and profit from each other's experiences. The widespread stereotype of older people that react to change with more resistance seems to be inaccurate in the current work setting. These results should be the subject of age awareness seminars offered by the company, especially for executives (Rynes and Rosen, 1995). Ideally, all these activities are monitored and supported by the HR department.

These implications may help to decrease or prevent resistance. Also, they might lead to an increase of motivated reactions towards changes, and ultimately influence important outcomes such as turnover and absenteeism and thereby reduce change related costs for the company.

Conclusion

The present study aimed to provide insight into predictors of employees' RTC. Results confirm the relevance of a multi-faceted perspective on factors influencing employees' evaluation of organizational changes. In addition, results expand research which strives for an overarching model by adding work environment and individual differences as important factors in a change process. As this is the first study investigating this set of relationships, this is a key asset of this investigation. In addition, a large part of the variance in RTC could be explained by the examined predictors. Future research is needed before conclusions can be

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generalized. More insight into the factors that cause resistance might lead to appropriate management strategies in order to reduce resistance, stimulate more positive attitudes towards digital change and motivate change-behaviour.

In today's business environment, the success of a company strongly depends on its ability to successfully initiate and manage changes. Taking into account the crucial role of employees in the change process, effective strategies to improve their perception of changes in the workplace are essential. As such, it is important to keep in mind the psychological challenges, being able to identify individuals that may need enhanced support during change and focus on a re-design of change-practices in order to reduce stress and uncertainty (Cullen et.al, 2013). A positive perception of change at work might prevent detrimental consequences of resistance and increase employee satisfaction.

In summary, although the present study faced several limitations, it provides a useful guide for applied research. It indicates more insight into RTC, adds cues on how to improve change management strategies and supports the design of sustainable approaches aiming to increase employees' readiness for change. Considering the social dimension of companies' success, as well as employees' satisfaction and health, this stresses the value of the study results.

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Appendices

Appendix A: German Questionnaire

Zunächst allgemeine Fragen:

Dein Geschlecht:	männlich / weiblich
Dein Alter:	20-30/ 31-40/ 41-50/ 51-60
Deine Funktion im Unternehmen:	Berater/ Service
Führungsverantwortung	ja/nein
Wie lange du bei Detecon beschäftigt:	0-2 Jahre/ über 3 Jahre/ über 5 Jahre

Segmentation Preference

1. Ich mag es nicht, wenn ich Zuhause bin und an die Arbeit denken muss.
2. Mit Problemen, die ich auf der Arbeit habe, möchte ich mich Zuhause nicht beschäftigen.
3. Ich trenne mein Arbeitsleben strikt von meinem Privatleben.
4. Ich mag es, auf dem Heimweg den Arbeitstag hinter mir zu lassen zu können.

Einige Fragen zu digitaler Kommunikation auf Netzwerken (Intranet, Xing, LinkedIn, Facebook, Twitter,...)

Perceived Usefulness

5. Die Nutzung digitaler Kommunikation ermöglicht es mir, meine berufliche Leistung zu verbessern.
6. Ich finde digitale Netzwerke nützlich für meine Arbeit.
7. Die Nutzung digitaler Netzwerke erhöht meine Produktivität.

Wie stehst du zum Unternehmen „Detecon-leading digital“?

Organizational commitment

8. Freunden gegenüber lobe ich dieses Unternehmen als besonders guten Arbeitgeber.
9. Ich fühle mich diesem Unternehmen nur wenig verbunden. (R)
10. Ich bin der Meinung, dass meine Wertvorstellungen und die des Unternehmens sehr ähnlich sind.
11. Dieses Unternehmen spornt mich zu Höchstleistungen in meiner Tätigkeit an.
12. Schon kleine Veränderungen in meiner gegenwärtigen Situation würden mich zum Verlassen des Unternehmens bewegen. (R)
13. Ich habe oft Schwierigkeiten, mit der Unternehmenspolitik in Bezug auf wichtige Arbeitnehmerfragen übereinzustimmen. (R)
14. Ich bin bereit, mich mehr als nötig zu engagieren, um zum Erfolg des Unternehmens

beizutragen.

15. Die Zukunft dieses Unternehmens liegt mir sehr am Herzen.

Der Wandel zur digitalen Welt bringt auch im Beruf immer mehr Veränderungen mit sich. Zum Beispiel wird es immer wichtiger werden, dass der Berater digitale Kommunikation nutzt. Zukünftig können GKC Inhalte digital publiziert werden, jeder Mitarbeiter kann Inhalte in externen Netzwerken teilen und sich als Experte in seinem Fachgebiet positionieren. Auch das Detecon Management unterstützt 2016 das Jahr des digitalen Wandels mit Initiative „let's get really digital“.

Wie stehst Du zu diesem Wandel:

Resistance to change

16. Ich habe Angst vor diesem Wandel
17. Ich bin begeistert von diesem Wandel (R)
18. Dieser Wandel stresst mich
19. Ich suche nach Möglichkeiten, diesen Wandel zu verhindern.
20. Kollegen gegenüber äußere ich mich kritisch über den Wandel.
21. Ich habe meine Einwände gegenüber diesem Wandel an das Management weitergegeben
22. Ich denke, durch diesen Wandel wird meine Arbeit anstrengender.
23. Ich glaube, dass ich persönlich von diesem Wandel profitieren kann (R)
24. Ich glaube, dass Detecon von diesem Wandel profitieren kann (R)

Change-specific self-efficacy

25. Welche Änderungen der digitale Wandel auch mit sich bringt, ich bin mir sicher dass ich sie bewältigen kann.
26. Es macht mich nervös, dass ich vielleicht nicht alle Erwartungen erfüllen kann die im Zuge des digitalen Wandels an mich gestellt werden.
27. Ich habe guten Grund zu glauben, dass ich die Anforderungen, die im Zuge des digitalen Wandels an mich gestellt werden, nicht gut bewältigen kann.
28. Obwohl ich vielleicht etwas Training bräuchte, habe ich keine Zweifel dass ich die Anforderungen, die im Zuge des digitalen Wandels an mich gestellt werden, gut bewältigen kann.

BFI-10

29. Ich bin eher zurückhaltend, reserviert.
30. Ich schenke anderen leicht Vertrauen, glaube an das Gute im Menschen.
31. Ich bin bequem, neige zur Faulheit.
32. Ich bin entspannt, lasse mich durch Stress nicht aus der Ruhe bringen.
33. Ich habe wenig künstlerisches Interesse.
34. Ich gehe aus mir heraus, bin gesellig.
35. Ich neige dazu, andere zu kritisieren.
36. Ich erledige Aufgaben gründlich.
37. Ich werde leicht nervös und unsicher.
38. Ich habe eine aktive Vorstellungskraft, bin fantasievoll.

Trust in management

39. Insgesamt habe ich das Gefühl, dass die Detecons Manager wissen, was sie tun.
40. Ich habe das Gefühl, dass ich mich auf das Management von Detecon verlassen kann.
41. Wenn das Management Dinge unterstützt, sind sie gut informiert und haben gute Gründe dafür.

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Appendix B: Results of Posthoc Comparisons

Posthoc comparisons between age categories

(I) Age	(J) Age	Mean Difference (I-J)	SD	p
1: < 31 years	2: 31-40 years	.44*	.12	.001
	3: 41-50 years	.22	.10	.212
	4: > 50 years	.56*	.12	.000
2: 31-40 years	1: < 31 years	-.44*	.12	.001
	3: 41-50 years	-.22	.13	.512
	4: > 50 years	.13	.14	1.000
3: 41-50 years	1: < 31 years	-.22	.10	.212
	2: 31-40 years	.22	.13	.512
	4: > 50 years	.34*	.13	.050
4: > 50 years	1: < 31 years	-.56*	.12	.000
	2: 31-40 years	-.13	.14	1.000
	3: 41-50 years	-.34*	.13	.050

* $p < .05$. ** $p < .01$. *** $p < .001$.

b. Adjustment for multiple comparisons: Bonferroni.