

# The Driving Forces of Individual Absorptive Capacity: The Role of Individual Characteristics and Organizational Mechanisms in Strategic Digital Change

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## Abstract

This study examines how organizations can promote the absorptive capacity of its organizational members throughout strategic digital change. The focus is on the micro-foundations perspective on AC: what drives the ability of individuals to absorb and apply new external knowledge in an environment characterized by strategic digital change. In this study it is argued that individual absorptive capacity is a direct as well as indirect product of individual characteristics and organizational mechanisms at various levels of the organization. In particular, it is assessed how the learning goal orientation of organizational members affects individual absorptive capacity, as individual characteristics are argued to play an important role in absorptive capacity. Furthermore, it is studied how team and organizational level mechanisms such as team psychological safety and normative integration moderate the effect of learning goal orientation on individual absorptive capacity. The analysis of digital strategy absorptions undertaken by 58 individuals show that LGO individuals have a higher individual absorptive capacity. The results show that this relationship is strengthened by environments characterized by normative integration, and weakened in contexts characterized by team psychological safety.

**Keywords:** digital strategy, digital transformation, strategic digital change, individual absorptive capacity, learning goal orientation, organizational mechanisms, team psychological safety, normative integration, strategic change, dynamic capability

## Preface and Acknowledgements

This report is the final product of my Master thesis project, which is part of the final phase of my Master's (Master Business Administration, specialization in the field of Strategic management). The two courses I found most interesting during the past year were Strategic Change and Strategic Human Resource Management. The topics we discussed during the lectures inspired me to choose a topic for my thesis that is related to a theme that I am passionate, such as change processes and people's behavior in these kinds of processes. It has definitely been a very interesting project in which I could both study scientific topics as well work in a business environment. I learnt a lot from both of them.

Even though the process has been valuable for my personal as well as my professional development, I perceived writing my Master thesis as challenging and difficult at times. Sometimes I really felt 'lost', especially at these moments when I had to match the requirements of Radboud University (and the requirements of doing a scientific study) with the divergent wishes of the organization I did my research for.

Fortunately I had two great supervisors/examiners who were very willing to help me at all times, dr. A. Marberg and dr. S. Khanagha. I would like to thank you both for all your support and suggestions. You taught me to work on this project in an independent way. Moreover, I want to express my appreciation on the fact that you both have a very positive and future-oriented approach.

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## 1 Introduction

Over the past years, organizational environments became increasingly turbulent and there has been a growing presence of digital technologies, which has led to an increase in the required speed for organizational change (Sawy, Malhotra, Park & Pavlou, 2010). These three aspects gave rise to organizations in many industries to undertake initiatives to explore new digital technologies and exploit their benefits, including the transformation of key business operations and their impact on products, processes, organizational structures and management concepts (Matt, Hess & Benlian, 2015). Companies should develop digital strategies, integrate digital assets and technology along with their strategic goals, and communicate them throughout the company (Mithas & Lucas, 2010).

By using digital technologies most companies aim to improve customer interactions and their competitive advantage (Kane, Palmer, Philips & Kiron, 2015). However, merely implementing digital strategies is not sufficient. Companies must be capable of analyzing, interpreting and responding to new information and technologies (Kane et al., 2015). The capability of organizations to “recognize the value of new external knowledge, assimilate it, and apply it to commercial ends” (Cohen & Levinthal, 1990, p. 128) is referred to as ‘learning’ or ‘**absorptive capacity**’ (AC).

Absorptive capacity is one of the most important constructs to emerge in organizational research over the past decades (Lane, Koka & Pathak, 2006). As organizations aim to be competitive and operate successfully in continuously changing environments, it is important to continuously seek for and explore the best new ways to improve their capability for strategic flexibility and organizational responsiveness (Berman, 2012). AC comprehends transformation capabilities that help organizations to develop strategic flexibility, which enables organizations to adapt to rapidly shifting market conditions and change existing processes (Zahra & George, 2002).

Zahra and George (2002) were the first to recognize AC as a dynamic capability. Dynamic capabilities such as absorptive capacity impact the nature and sustainability of an organization’s competitive advantage (Zahra & George, 2002). Over the past years, there has been an increased focus on knowledge as a dominant source of competitive advantage for multinational corporations (MNCs) (Jansen, Van den Bosch & Volberda, 2005; Minbaeva, Pedersen, Björkman, Fey & Park, 2003). To obtain this competitive advantage or ‘business advantage’, companies first have to succeed in implementing their digital transformation strategy and integrating a variety of digital technologies across employees and processes (Kane et al., 2015). Successfully implementing these strategies requires organizations to hire the right people with the right skills, in order to become successful in the recognition,

assimilation and application of external knowledge sources (Yao & Chang, 2017) and digital technologies (Berman, 2012).

Absorptive capacity is often studied as an organizational level construct. However, Cohen and Levinthal (1990) emphasized that “an organization’s absorptive capacity will depend on the absorptive capacities of its *individual members*” (p. 131). Accordingly, Lane & Lubatkin (1998) argue that absorptive capacity should be studied as a dyad-level construct (from one individual to another individual) rather than a firm-level construct, in order to understand AC in its context (Lane & Lubatkin, 1998). Other studies also describe the role of individuals in absorptive capacity, by stating that the capacity of a firm to explore (to search for, evaluate, and apply new opportunities and knowledge) is rooted in the behavior of its individual organizational members (Mom, Neerijnen, Reinmoeller & Verwaal, 2015; Yao & Chang, 2017). It has been suggested that absorptive capacity should be studied on the individual level, by exploring the micro-antecedents of absorptive capacity (Yao & Chang, 2017). In this study the call for exploration of individual AC is addressed, by exploring individual absorptive capacity in an environment characterized by strategic digital change.

Organizational culture is very important to effectively leveraging digital technologies in a business environment because it requires a certain mindset to leverage digital technologies (Kane et al., 2015). The willingness to experiment and take risks is one of the most important drivers to effectively leverage digital technologies (Kane et al., 2015). This argument is in line with other research findings on AC, such as the positive influence of individual characteristics such as an individual’s learning goal orientation on AC (Yao & Chang, 2017). Learning goal orientation (LGO) is defined as the tendency of individuals to “seek to increase their competence, to understand or master something new” (Dweck, 1986, p. 1040). Furthermore, LGO individuals are “willing to risk displays of ignorance in order to acquire skills and knowledge” (Dweck, 1996, p. 1042). To be successful, organizations have to continuously seek for and explore the best new ways to improve their organizational flexibility and responsiveness (Berman, 2012), in this study it is assumed that LGO individuals are more likely to contribute to this process because they tend to continuously seek for self-improvement. Their actions and behavior to increase their competence contribute to their ability to recognize, assimilate, and apply external knowledge. Yao and Chang (2017) showed that LGO positively influences AC. Accordingly, this research studies this phenomena in a different context and focuses on individual level AC.

It has been emphasized that an organization’s absorptive capacity is not simply the sum of the AC of its members (Cohen & Levinthal, 1990). There are other organizational mechanisms that influence absorptive capacity (Jansen et al, 2005; Schleimer & Pedersen, 2013). The micro-



level perspective on AC could be further explored by the inclusion of organizational mechanisms, to examine their effect on individual level mechanisms. Researchers frequently mentioned the importance of trust and openness in learning behaviors and absorptive capacity (Baer & Frese, 2013; Edmondson, 1999; Schleimer & Pedersen, 2013). It is argued that socialization capabilities, such as connectedness and socialization tactics, create broad and tacit rules for appropriate action that a group of people understand (Jansen et al., 2005). These types of environments generate a feeling of trust and openness, which positively influences learning processes (Edmondson, 1999; 2003). Furthermore, being confident about challenging the status quo has a positive influence on learning. Even though researchers expressed the need for more in-depth knowledge about organizational antecedents affecting AC (Jansen et al., 2005), the effect of organizational mechanisms on AC has been largely ignored (Schleimer & Pedersen, 2013). Therefore, this study focuses on two organizational, or socialization, mechanisms that could influence individual absorptive capacity: team psychological safety and normative integration.

The concept of team psychological safety is defined as “a shared belief that the team is safe for interpersonal risk taking. For the most part, this belief tends to be tacit – taken for granted and not given direct attention either by individuals or by the team as a whole” (Edmondson, 1999, p. 354). Trust and feeling confident about challenging the status quo are important results of team psychological safety, which in turn influence learning (Edmondson, 1999; 2003). Baer and Frese (2003) defined psychological safety as: “a work environment where employees are safe to speak up without being rejected or punished”. Conflicts regarding policies, procedures, and the interpretation of facts can be beneficial to performance (Baer & Frese, 2003).

Normative integration involves the relationships between the parent organization and other parts of the organization. Additionally, it can be explained as the relationships among different organizational units (Schleimer & Pedersen, 2013). Absorptive capacity depends on knowledge transfer across and within different parts of the organization, which – in turn – is subject to relationships and integration between these organizational parts (Lane, Koka & Pathak, 2002). As firms grow, they tend to develop more complex organizational structures (Lane et al., 2006). To enable knowledge sharing it is important that organizations focus on the integration between and among different parts of the organization. The convergence of objective, values, and norms of behavior result in trust, openness of communication, and employee involvement (Minbaeva et al., 2003). These aspects are all positively related to learning and better use of knowledge within organizations (Jansen et al., 2005; Minbaeva et al., 2003; Zahra & George, 2002). Due to the proven impact of normative integration on the

absorption of marketing strategy, this study assesses the influence of normative integration in a strategic digital change context.

#### Research goal

The aim of this research is to provide better insights into AC at the individual level, and contribute to the existing literature in several ways. To capture the individual as well as the organizational perspective on AC, the focus will be on the development of broader knowledge of drivers on both levels. Previous research has not provided clear ideas about how these types of mechanisms influence individual AC. Even though it appears that these mechanisms have an impact on AC, the impact should be further explored. Moreover, the relations between these constructs can be examined as to whether and to what extent these multilevel aspects interact.

The central objective of this study is to gain insight into the micro foundations of AC by investigating the influence of LGO on individual AC, as well as the impact or organizational (or socialization) mechanisms. This latter is examined by assessing the influence of team psychological safety and normative integration (organizational level) on individual AC, and their moderating effects on the relationship between LGO and AC. Explained in more detail, these relations will be explored in an empirical context where employees, employed in managerial as well as non-managerial job functions within Technology Departments, are obliged to cope with strategic change by implementing a new *digital* strategy. Considering all the arguments above, the following two research questions are formulated:

***RQ1: To what extent does learning goal orientation influence the ability of an individual to recognize, assimilate and apply knowledge (absorptive capacity) during strategic digital change?***

***RQ2: To what extent is the relationship between learning goal orientation and individual absorptive capacity influenced by team psychological safety and normative integration?***

#### 1.2 Scientific and social relevance

Most theories about the antecedents of absorptive capacity have focused on AC's competitive benefits or environmental implications. Less attention has been given to the role of micro foundations of absorptive capacity (Tortoriello, 2014; Yao & Chang, 2017) in strategic transformations.

The aim of this paper is to address the influence of an individual characteristic such as learning goal orientation on individual absorptive capacity. This contributes to the existing literatures on AC in several ways. First, it sheds light on absorptive capacity from a micro-foundations

perspective. This is done by assessing how individual learning goal orientation impacts absorptive capacity. Secondly, this study deepens the understanding of the multilevel aspect of absorptive capacity, as it captures drivers of absorptive capacity on different levels, including the individual and organizational level. Previous research has not been able to clarify how these types of mechanisms on various levels influence AC. As it is clear that these mechanisms have an impact on AC, the impact should be further explored. Thirdly, the interaction of diverse multilevel constructs has been examined by assessing the moderating impacts of psychological safety and normative integration on the relationship between learning goal orientation and absorptive capacity. As Matt et al. (2015) suggest, firms need more information about how they can assess the existing capabilities of employees, as well as what capabilities their future hires need to be successful.

The study outcomes will be also relevant for practice, because the results can be used for policy makers in the development of digital strategies. Company leaders can use implications from theoretical research for the implementation and transformation process. Furthermore, it will make organizations aware of the fact that the presence or absence of certain (organizational) mechanisms on various level might have implications on their digital transformation processes. To summarize, information about the role of individuals and organizational mechanisms in the recognition, assimilation and application of external new knowledge will help organizations to strategically manage their digital resources and formulate their digital strategies.

### 1.3 Research outline

The thesis is structured as follows. First, key constructs and relationships of interest will be identified and defined. Next, the theoretical model which forms the foundation of this paper will be framed. Then the methods will be outlined. The methods section provides information about measurement of constructs and different procedures. Subsequently, the results will be presented based on the statistical findings in the analysis. Finally, the report concludes with a discussion, limitations, and suggestions for further research.

## 2 Theoretical framework

This chapter presents and explains existing theories. Based upon these theories, the hypotheses are formulated. At the end of this chapter the theoretical framework will be presented.

### 2.1 Digital transformation strategies

In the new digital marketplace, companies have to digitally transform and rethink what customers value most. Based upon that, they have to create business models that take advantage of new possibilities to differentiate themselves from competitors (Berman, 2012). Organizations have to operate in new ways to implement and integrate today's opportunities and digital technologies in their business and digital strategy successfully (Kane, et al., 2015; Mithas & Lucas, 2010).

A digital business strategy is defined as an “organizational strategy formulated and executed by leveraging digital sources to create differential value” (Bharadway, Sawy, Pavlou & Venkatraman, 2013, p. 472). It is important that digital strategy making goes beyond traditional strategy making, these strategies should be considered as a function within organizations, and the ubiquity of digital resources in other functional areas should be recognized (Bharadway et al., 2013).

Benefits of digital transformations are increases in sales or productivity, value creation innovations, as well as new forms of customer interactions (Matt et al., 2015). Additionally, Sawy et al. (2010) emphasize that IT systems are important in enabling companies to become highly efficient and flexible at the same time. Matt et al. (2015) argue ‘the use of technologies’ is an important factor in digital transformation strategies, which includes the attitude of an organization towards new technologies as well as the ability to exploit these technologies (Matt et al., 2015). This suggests that the assumption that absorptive capacity – the recognition, assimilation, and application of new external knowledge - is highly important in digital strategy implementation and transformation processes.

### 2.2 Absorptive capacity

Absorptive capacity, defined as “the capacity of organizational members to recognize the value of new, external information, assimilate it, and apply it to commercial ends” (Cohen & Levinthal, 1990, p. 128), is crucial to an organization's innovation ability and gaining competitive advantage (Cohen & Levinthal, 1990; Zahra & George, 2002). Furthermore, it is important for the absorption of new strategies, such as marketing strategies (Schleimer & Pedersen, 2013). It is argued by researchers that absorptive capacity should be treated as a dyad-level construct (from one individual to another individual) rather than a firm-level construct, in order to understand AC in its context (Lane & Lubatkin, 1998; Minbaeva et al, 2003). The concept of

AC has been reconceptualized several times (e.g. Zahra & George, 2002; Lane, Salk & Lyles, 2001, Lane et al., 2006; Minbaeva et al., 2003; Todorova & Durisin, 2007). Lane et al. (2001) propose that the first two components of absorptive capacity (the recognition and assimilation of external information) are interdependent yet different from the application or exploitation of external knowledge. In addition, Zahra and George (2002) argue that organizations should be capable to transform and exploit knowledge to be able to use knowledge and become profitable.

AC influences the ability of an organization to understand and exploit knowledge, and is necessary to build other organizational capabilities. As it is the first step in absorbing new knowledge, the *recognition* of the (potential) value of new knowledge is very valuable in absorbing new knowledge (Todorova & Durisin, 2007). Consequently, this component should be used as a first building block of the dynamic capability of absorptive capacity (Todorova & Durisin, 2007). In addressing organizational learning processes, Lichtenhaler (2009) states that exploratory and transformative learning are specifically important in changing environments.

The key argument that is developed in this paper is that individual AC is influenced by individual characteristics (LGO) and organizational mechanisms (team psychological safety and normative integration) (Tortoriello, 2014; Schleimer & Pedersen, 2013; Yao & Chang, 2017).

### 2.3 A dynamic capability and multilevel perspective on AC

AC has been defined as a multidimensional concept, as it operates dynamically on various levels (Tripsas, 1997; Zahra & George, 2002; Gebauer, Worch & Truffer, 2012). Zahra and George (2002) were the first researchers to recognize AC as “a dynamic capability that influences the nature and sustainability of a firm’s competitive advantage” (p. 185). Other theorists define dynamic capability as follows: *‘the capacity of a firm to renew, augment and adapt its core competencies over time’* (Tripsas, 1997, p. 34). The dynamic capability of the firm reflects a firm’s ability to develop new capabilities in response to external changes as an important condition in gaining competitive advantage. Tsai (2001) supports this by arguing that the ability to access knowledge and to integrate it effectively is truly a source of competitive advantage.

The multilevel perspective on AC means that AC should be considered as multidimensional as it takes place on various levels. These levels range from the individual level to the team, organization, MNC, industry or industries on a national level, or even on an international level (Van der Heiden et al., 2016). Minbaeva et al. (2003) found that individual characteristics, such as motivation, influence the extent of knowledge absorption within the MNCs. Additionally, Yao and Chang (2017) state that cognitive organizational structures underlie absorptive capacity.

AC has mainly been studied as a firm level capacity (Yao & Chang, 2017), however, the emergence of AC on other levels remains understudied (Tortoriello, 2014; Schleimer & Pedersen, 2013; Yao & Chang, 2017). Research indicates that the degree of firm AC differs due to certain organizational mechanisms (Schleimer & Pedersen, 2013), as well as variations in characteristics and behavior of individuals (Tortoriello, 2014; Yao & Chang, 2017).

Too little research has been conducted on the proposition that AC is rooted in the understanding of individuals and their cognition, motivation, action and interactions (Yao & Chang, 2017). The influence of organizational mechanisms remains largely understudied as well (Schleimer & Pedersen, 2013). Therefore, this study addresses both aspects.

Yao and Chang (2017) used the multilevel-theory to explain higher-level and lower-level concepts by referring to two different approaches, namely the 'top-down approach' and the 'bottom-up approach'. The first approach describes the influence of higher-level factors on phenomena at the lower level (e.g. influence of organizational factors on individual factors). The second approach describes phenomena that exist at a higher level, but have their origins at a lower level. In this study. This study focuses on the latter approach to investigate how absorptive capacity emerges from individual characteristics such as cognitive motivation and discretionary work behaviors.

### 2.4 The influence of learning goal orientation on absorptive capacity

Theories about goal orientation refer to two distinctive types of goals: learning goals and performance goals (Dweck, 1986; Yi & Hwang, 2003). Performance goal oriented (PGO) individuals are more focused on demonstrating their existing competence to gain positive judgments of their competence, and are more likely to compare their ability and performance relative to others. Learning goal oriented (LGO) individuals are more likely to work on tasks in attempt to increase their level of competence or to understand something new. Learning goals have been related to self-regulated learning, learning strategies and better performance (Pintrich, 2000). This study examines whether employee LGO influences AC, as indicated in previous research of Yao and Chang (2017).

LGO individuals believe that a person's ability or intelligence is incremental and can be continuously improved by knowledge acquisition and refining capabilities (Dweck, 1986; Yi & Hwang, 2003). Accordingly, they are more likely to seek challenges and master new knowledge (Pintrich, 2000; Yi & Hwang, 2003), which is in line with Dweck's (1986) argument that LGO individuals are more willing to risk being rejected or ignored, in attempt to learn. They are driven to seek ways to learn and get feedback (Yi & Hwang, 2003), and they interpret this as a way to grow and develop (Van de Walle et al., 1999). Challenges are interpreted as an opportunity to shape and increase their competencies (Yi & Hwang, 2003). Additionally, Payne,

Youngcourt and Beaubien (2007) argue that LGO is associated with specific adaptive thoughts and behaviors such as “viewing failure as a learning experience, persisting in the face of adversity, maintaining high levels of self-efficacy, and setting high goals” (p. 133). LGO individuals have higher motivation to learn to make choices and engage in behaviors leading to greater knowledge acquisition (Klein, Noe & Wang, 2006), which indicates that LGO can have important implications for the recognition, assimilation and application of knowledge.

Considering their focus on seeking challenges rather than being risk averse, LGO individuals are expected to enjoy the challenge of knowledge recognition, assimilation and application. Thus, it is hypothesized that:

**H1: Learning goal orientation enhances absorptive capacity at the individual level.**

## 2.5 The influence of team psychological safety on absorptive capacity

An individual's social environment at work is defined by his or her coworkers (Schneider, 1987; Chiaburu & Harrison, 2008). Edmondson (1999) defines team psychological safety as a “shared belief that the team is safe for interpersonal risk taking. For the most part, this belief tends to be tacit – taken for granted and not given direct attention either by individuals or by the team as a whole” (p. 354). Additionally, team members feel more safe working in an environment characterized by the feeling of confidence that other team members will not embarrass, reject, or penalize someone for expressing his or her opinion, which makes individuals feel as if they can be open to other team members (Bradley, Postlethwaite, Klotz, Hamdani & Brown, 2012). The latter stimulates discussions and the development of broad and creative ideas, suggestions, and divergent perspectives (Bradley et al., 2012). In addition, more time can be devoted to constructive problem solving if team members feel psychologically safe in their team because team members have to spend less time on regulating interpersonal relationships (Bradley et al., 2012). Thus, in this study a setting characterized by psychological safety is defined as “a work environment where employees are safe to speak up without being rejected or punished” (Baer & Frese, 2003, p. 50).

Climates characterized by psychological safety positively affect learning and performance, whereas a lack safety can have a negative impact (Edmondson, 2003). One important explanation for this negative relationship is that a lower degree of psychological safety can result in unwillingness to question team goals for fear of sanction by management (Edmondson, 1999; 2003). Additionally, psychological safety facilitates exploration-oriented learning activities (Edmondson, 1999), and it encourages team members to think in a way that challenges the status quo (Kostopoulos & Bozionelos, 2011).



Learning behavior and the utilization of individuals' creative capabilities will be enhanced by an organizational climate for psychological safety (Baer & Frese, 2003). Team members tend to choose their actions based upon the risk level they attach to them (Edmondson, 2003), which indicates individual AC of team members may positively be affected by a higher degree of psychological safety (Kostopoulos & Bozionelos, 2011).

In line with the arguments above, it follows that:

**H2A: Team psychological safety enhances absorptive capacity at the individual level.**

**2.6 The influence of normative integration on absorptive capacity**

Research suggests that the ability to understand and apply knowledge is a key organizational capability in organizational success, growth, innovation, and survival (Zahra & George, 2002; Hurtado-Ayala & Gonzalez-Campo, 2015; Todorova & Durisin, 2007; Volberda, Foss & Lyles, 2010). However, the emergence of AC influenced by specific organizational mechanisms such as normative integration remains understudied (Schleimer & Pedersen, 2013). Zahra and George's (2002) oft-cited study addresses these organizational mechanisms throughout their paper as organizational activation triggers of absorptive capacity. Jansen et al. (2005) suggest these types of mechanisms integrate different sources of expertise and increase interaction between different parts of the organization.

At the center of successful implementation of new strategies lie characteristics as trust, openness (of communication), and employee involvement (Jones, Jimmieson & Griffiths, 2005). It is commonly believed that complementary units within organizations share such relations, which is generally referred to as normative integration (Schleimer & Pedersen, 2013). This is supported by arguments that congruent values and beliefs among functional units of an organization enhance the successful exchange and absorption of knowledge (Cohen & Levinthal, 1990; Jansen et al., 2005).

Normative integration also involves the convergence of values and beliefs between the MNC parent and the subsidiary operations (Schleimer & Pedersen, 2013), which consists of "the convergence of objective, values, and norms of behavior" (p. 7). The MNC parent sharing information with employees (such as information about strategy and company performance) shows employees that they are trusted (Minbaeva et al., 2003). In addition, informing employees results in a better use of knowledge within the firm. Exposing them to diverse knowledge stimulates knowledge acquisition and assimilation and improves the potential absorptive capacity of a subsidiary (Minbaeva et al., 2003; Jansen et al. 2005).

Normative integration (connectedness) between different parts of the organization improves communication and knowledge exchange efficiency throughout organizational units (Jansen



et al. 2005). Interlinkages across organizations results in the integration of various knowledge components, which will support organizational members to integrate sets of existing and newly acquired knowledge. Accordingly, it will support organizational members to rethink the systematic nature of existing products. Normative integration between different units is believed to stimulate the transfer of existing knowledge as well as the absorption of knowledge within an organization (Schleimer & Pedersen, 2013). Therefore, it is expected that:

**H2B: Normative integration enhances the level of absorptive capacity at the individual level.**

## 2.7 The moderating effect of TPS

As discussed, TPS can improve trust and openness among team members, which is important for knowledge sharing and application. However, LGO individuals like to be challenged in seeking for opportunities to grow and develop themselves. Moreover, they are less likely to need the feeling of safety because they are less vulnerable of negative feedback. In fact, as Jansen et al. (2005) argue: “dense networks constrain unit members to perform broad searches for a variety of external knowledge sources” (p. 12), meaning TPS could constrain LGO individuals in knowledge recognition. It is argued that solid networks can set boundaries for openness to information, and there is even the possibility to potentially create collective blindness (Nahapiet & Ghoshal, 1998). This could imply that LGO individuals might be less eager to receive feedback and develop themselves. Therefore it is expected that TPS possibly negatively moderates the relationship between LGO and AC. Thus, the following is hypothesized:

**H3A: Team psychological safety weakens the positive relationship between learning goal orientation and absorptive capacity at the individual level.**

## 2.8 The moderating effect of normative integration

The density of relations on the organizational level serves as a governance mechanism and eases the exchange of knowledge within the organization (Jansen et al. 2005). These types of organizational socialization mechanisms lead to strong social norms and beliefs (Adler & Kwon, 2002), which can increase commitment and compliance with exploitation processes of external knowledge. Moreover, socialization tactics can enhance the openness of communication among interacting parties (Gupta & Govindarajan, 2000). Thus, solid networks positively influence the development of trust and cooperation, which encourages individuals to share knowledge.

Trust exists of at least two dimensions influencing learning: 1) the willingness to risk vulnerability and 2) forbearance (Lane, et al., 2001). The willingness to risk vulnerability is a requisite for openness and the willingness to share information and tacit knowledge.

Forbearance involves the need for a feeling of confidence that another party, which is not under your control, does not intend to take advantage of your vulnerabilities. Both dimensions indicate that parties will be more eager to share and exchange information when they trust one another (Lane et al, 2001). In addition, the authors show that confidence plays an important role in learning. Accordingly, LGO individuals are considered to be less afraid of risking criticism of other individuals. This indicates that LGO individuals employed in an environment characterized by trust and openness between units will have an even greater ability to absorb and use knowledge compared to other individuals.

As mentioned in previous sections, both LGO and NI are expected to influence individual AC (Schleimer & Pedersen, 2013; Jansen et al. 2005; Yao & Chang, 2017). As recognition, assimilation and application are part of 'a new perspective on learning (Cohen & Levinthal, 1990), all arguments above imply it could be interesting to assess the interaction effect of LGO and NI in more detail. This provides more in-depth insight into the influence of normative integration on AC. Thus, the following is hypothesized:

**H3B: Normative integration strengthens the relationship between learning goal orientation and absorptive capacity at the individual level.**

## 2.9 Conceptual model

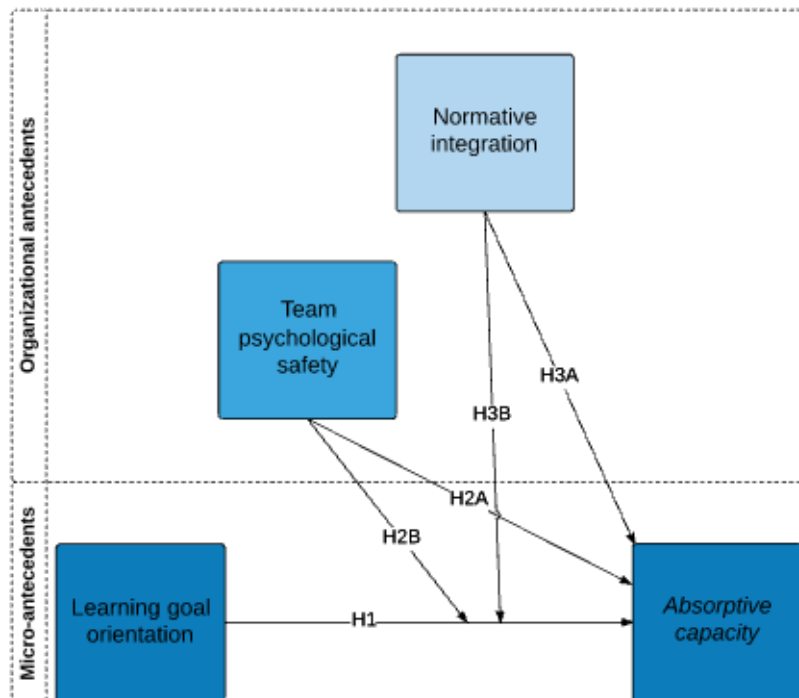


Figure 1 Conceptual model: hypothesized relationships

### 3 Methodology

Chapter 3 explains the research context, sample and procedure, different measures, data preparation, and assumptions that were tested before conducting the final analysis.

#### 3.1 Empirical context

The empirical context used to conduct this study and test the hypotheses is the digital strategy implementation process within a large multinational company in the field of Supply Chain and Manufacturing. The multinational organization is a market leader in designing and producing juvenile products and refers to the implementation of the digital strategy as the 'digital transformation' of the Technology Department of the company. Explained in more detail, this transformation process includes the identification and development of promising digital services and technology. Finally, the company aims to build its customer services and innovation processes based upon the aforementioned digital services and technologies, in order to improve/optimize organizational performance. Since Yao & Chang (2017) argue that knowledge creation and absorptive capacity are presumed to be tremendously important in environments characterized by technology, this context perfectly fits the goal of this research.

The multinational company has 34 offices worldwide and employs over 7.000 people. At the time of data collection 113 individuals were employed in the Technology Department, these were dispersed over different locations in three different regions, including the United States (USA), Europe (EUR), and Asia/Pacific (APAC).

#### 3.2 Research Design

Quantitative research methods were used to conduct this study. In order to test the expectations hypothesized in chapter 2, quantitative data was gathered using a questionnaire based on existing theories and studies. Since the opinion of organizational members involved in the digital transformation is highly valuable, all Technology Department employees - including managers and non-managers, in each location worldwide, with different demographic characteristics (educational background, age, years of experience, years with the company) – were involved in the study.

The company provided all e-mail contact details of all the employees in the Technology Department to optimize the range of the study. Due to this, we can be confident that each of the individuals in the sample received an invitation for participation in the survey. The invitation-mail (See Appendix 1) was sent by the Chief Digital Officer of the MNC, which was done to encourage each individual to participate.

A brief explanation of the research details and goals, and instructions on how to complete the survey was written and included in the survey design. Moreover, it was explained that individual answers would be kept confidential. Individual results will not be presented to the company or

in the research report. Five days after the first invitation e-mail the team leaders were asked to remind their team members about the invitation. Additionally, two follow-up e-mails (reminders) were sent in the weeks following the initial mailing, one and two weeks after the initial mailing. The follow-up mails were sent to all technology employees, since we could not track down response and non-response for anonymity reasons. For the same anonymity reasons, no monetary incentives were given in this study. However, the CEO and team leaders did communicate to team members that they aim to improve the integration between the digital strategy and the daily working activities.

The final sample included 97 responses (out of the possible 113) from 9 different offices in the three different regions, namely: Brazil, Chile, China, France, The Netherlands, USA, Peru, Israel, and Portugal. After examination it appeared 58 questionnaires were completed, meaning 58 valid observations (response rate of 51,3%) were usable for analysis.

### 3.3 Research ethics

As imposed by regulations of Radboud University, continuous attention was given to the general principles of research ethics of the American Psychological Association while conducting this study. It was guaranteed to the participants that participation was voluntary and answers would be treated confidential. The research participants were told honestly that the goal of the research was to investigate the implementation/transformation process of their firm's new digital strategy. However, in the explanation the focus was on the survey as a part of an evaluation of the implementation and the different aspects of the research model were not explained in-depth, because this might influence their answers.

To get a very clear image of the different participants that would participate in the research, the researcher consulted with the CIO and the Global HR Director of the company. The information obtained could be used to create an honest and transparent research environment while still ensuring confidentiality to participants.

The data gathered as part of this study is processed confidential and cannot be shared with participants. The managers of the technology team will receive a concise summary of the results in the form of a presentation and a document with graphs and overviews to inform them about the most important results for practice. Individual answers will not be included, as well as questions with only a few responses, in attempt to guarantee the participant's anonymity as much as possible.

### 3.4 Measures

Measures used in prior empirical studies have been adopted for development of the questionnaire. A five-point Likert-type scale was used for each item, with 1=0%, meaning 'strongly disagree' and 5=100%, meaning 'strongly agree'. In Table 3.1 an overview with all

constructs, variables, items is presented. Appendix 2 presents an overview of the survey design. As recommended by Hair, Black, Babin and Anderson (2014) each construct was comprised of three or more items.

### 3.2.1 Absorptive capacity

Due to the context specificity in this study, which resulted from the specific company that was leading in the data gathering process, there were no existing scales for absorptive capacity that precisely matched this research. However, approaches used by Lichtenhaler (2009) and Schleimer and Pedersen (2013) could be adopted. These existing and tested scales were adjusted to individual level items, because this study specifically focuses on the role of individual AC as suggested by the founders of the AC construct (Cohen & Levinthal, 1990). Additionally, advice and remarks provided by the organizations' higher management were carefully considered for altering and developing scales and survey questions before they were applied and integrated.

Each individual employee within the Technology Department rated AC using an 11-item scale adopted from Schleimer & Pedersen (2013). The AC scale consists of three different subscales: *strategy recognition*, *strategy assimilation*, and *strategy application*. The first two concepts were measured using four items each, the latter was measured by using three items. The questions were transformed to items (questions) applicable at the individual level as much as possible.

### 3.2.2 Learning goal orientation influencing AC

The measurement of LGO as an individual level construct was conducted similarly to the approach of Yao and Chang (2017) in their study about microlevel AC, meaning the 5-item scale of Brett and VandeWalle (1999) was used at the individual level analysis (See Appendix 2). A 5-point response scale was used, ranging from 0% = strongly disagree to 100% = strongly agree.

### 3.2.3 Normative integration influencing AC

Prior research shows that MNC organizational mechanisms are drivers of absorptive capacity (Schleimer & Pedersen, 2013), which was the reason for including these concepts in order to investigate how these variables influence AC and the relationship between individual characteristics and AC in a technology-driven environment. The 4-item scale of Schleimer and Pedersen (2013) has been adopted to measure normative integration, which was defined as "the extent to which an organization values openness and a climate of trust" (Schleimer & Pedersen, 2013, p. 22). The construct was measured at the organizational level and a response a 5-point response scale was used (0% = strongly disagree to 100% = strongly agree)

#### 3.2.4 Team psychological safety

To assess the influence of values and beliefs shared by individuals part of a group, the concept Team Psychological Safety was adapted from Edmondson (1999). This is complementary in testing the influence of values and norms of individuals related to AC, since the normative integration of the overall organization was tested as well. By measuring the perception of individuals regarding norms and values these two can both be evaluated and compared. The 7-item scale of Edmondson (1999) was reduced to a 6-point scale with a 5-point response scale (0%-100%). Finally, these questions were formulated differently so that they were applicable at the individual level analysis and it would be possible to interpret an individual's perception of the team psychological safety in their team.

#### 3.2.5 Control variables

After extensive consideration of scientific articles and the information provided by the management of the company, it was decided to control for unit locations with a dummy variable. Since cultural norms and values influence human behavior, there should be checked whether the location of employment has an impact on the AC of individuals.

At the individual level the controls included individual demographics: *age* and *educational level* (individual demographics). Another control variable that was taken into account was *work experience* (in years) and *number of years with the company*. Finally, job position – managerial or non-managerial – was also controlled for.

### 3.3 Data analysis

To test the supposed relationships between the different constructs several models will be tested by applying regression analysis. Data analysis entails several steps before regression analysis can be conducted, such as data examination, reliability analysis, univariate data analysis and testing the assumptions for regression analysis. Since all the constructs and items have been tested in earlier research (See Appendix 1), the internal validity of the scales has already been demonstrated in the past. All statistical tests were performed with a statistical level (alpha) of .05.

#### 3.3.1 Data preparation

The questionnaire was open to respondents in the online environment of SurveyMonkey for about 14 working days. All the individual responses were downloaded as an Excel file and transferred manually to SPSS. This was followed by a visual inspection, which included the deletion of cases with over 50% of missing values (Hair, 2014). The total response amount consisted of 97 responses. 22 respondents had over 50% missing values, most of these respondents answered only the first set of questions linked to the control variables. Therefore, these responses were deleted from the dataset. The final dataset exists of 58 valid cases (N=58).

Before conducting multivariate analysis to examine the characteristics of the data or relationships of interest, it is important to clean the data and conduct the appropriate statistical tests to determine the type and potential impact of missing data. Furthermore, it is necessary to test the data for the assumptions underlying regression analysis.

### 3.3.2 Missing data analysis

A general rule for data analysis is that missing data can be ignored if the missing data is 15% or less (Hair, 2014). All variables had less than 15% missing data, except for the variable agecat. This was the last question asked in the survey design, so the lower response rate might be due to the fact that some of the respondents ended their participation before finishing the complete questionnaire, meaning that 21% of the respondents closed the questionnaire before completing it.

Little's MCAR test was conducted to determine whether the type and patterns (MAR or MCAR) of missing data (Hair, 2014). For these respondents, each individual case reported under 10 percent missing data, which means the missing data can be ignored if the data occurs in a specific nonrandom fashion (Hair, 2014). The hypotheses that apply for this method are:

- H0: Missing patterns do not deviate from the expected patterns for MCAR analyses; the missing data is MCAR.
- H1: Missing patterns do deviate from the expected patterns for MCAR analyses; the missing data is not MCAR

The EM Statistics table (See Appendix 3) shows that there is no significant difference between the actual and expected data. The test gave a significance level of .322, which indicates that  $p > .05$ . Based on this, the H0 hypothesis cannot be rejected. Thus, it can be concluded the missing patterns do not deviate from the expected patterns for MCAR analysis. As the value of  $\chi^2$  is not statistically significant, H0 cannot be rejected. This indicates the data is missing completely at random. This suggests the missing values are at random and imputation methods can be used.

According to the imputation techniques described by Hair (2014), the imputation technique that best fits our data is the 'all available data technique'. This is due to the fact one of the main advantages of this technique is that it maximizes use of valid data, which results in the largest sample size possible without replacing the values. As established in the Little MCAR's test (table 4.1) the variables will be imputed by using only valid data, in this case all available data since this maximizes the use of valid data (Hair, 2014). This is a method referred to as 'using all-available data' or 'pairwise' and it results in the largest sample size possible without replacing values. All statistical tests have been performed by using this method.



### 3.3.3 Recoding of variables

Most existing scales that were used to design the questionnaire did not contain reverse-coded questions, except for the scale measuring Team Psychological Safety (TPS). The TPS items were not all structured in the same way, the TPS2 and TPS4 had to be reverse-coded (See Appendix 4). This was done by using the function 'recode into different variables' in SPSS (TPS2\_RV and TPS4\_RV).

To establish whether all the variables were suitable for including them in regression analysis, the measurement level of each variables had to be assessed. The general rule for including variables in the regression analysis technique is that all variables have to be of metric measurement level (interval or scale). If any of the variables are of categorical measurement level, the variables were transformed to dummy variables so they can be included in regression analysis (Field, 2013; Hair et al., 2014). Since the research model did not contain variables with a categorical measurement level, it was not required to transform variables to dummy variables. The measurement level of the variables included in the research model will be discussed in more detail in paragraph 3.4 about testing the statistical assumptions.

### 3.3.4 Reliability analysis

The internal validity of each construct had to be tested in SPSS (See Appendix 5). Several important existing constructs were derived from existing theories and literature and the corresponding items were adopted in the questionnaire.

Each AC construct consisted of 3 items. The Cronbach's  $\alpha$  for AC (*strategy recognition*, *strategy assimilation*, and *strategy application*) was .880 respectively. The Cronbach's  $\alpha$  of the LGO construct was .914 respectively. For Normative Integration the Cronbach's  $\alpha$  was .846. As Field (2013) argues that a value of .7 to .8 is an acceptable value for Cronbach's  $\alpha$ , the outputs of the reliability analysis indicate reliable scales for each of the constructs. The internal consistency for each scale can be considered as highly consistent. The internal consistencies would not be improved by removing any items. For Team Psychological Safety some adjustments had to be made in the scale. Cronbach's  $\alpha$  for TPS reported a value of .476. The internal consistency could be improved to .541 by removing TPS2\_RV. Additionally, the Cronbach's  $\alpha$  could be increase to .665 by removing TPS4\_RV. After deletion of these items the internal validity could not be further increase by deleting any items. The value of .665 indicates a moderate internal consistency. Even though TPS becomes a 4-item scale as a result of the deletion of the two items, the criterion of a minimum of three items is still met. Therefore, it was decided to analyze TPS by using the 4 items left after the removing TPS2\_RV and TPS4\_RV, namely TPS1, TPS3, TPS5, and TPS6.



### 3.4 Testing the statistical assumptions

Several statistical assumptions have to be tested in order to examine whether the data fits the requirements of statistical theories underlying the multivariate techniques and the data. For regression analysis it is necessary to test the following assumptions: the normal distribution of the dependent variable, the measurement level of all the variables, homoscedasticity, linearity, and the absence of correlated errors. Regression analysis is allowed when all these assumptions are met.

#### 3.4.1 Normality of the distribution

The first assumption is about normality. To assess whether the shape of the data distribution for the dependent variable is normally distributed the univariate normality for variables has to be tested (Hair et al., 2014). A statistical test has been conducted to determine if the data is normally distributed (See Appendix 6). The hypotheses that apply for statistical test are:

- H0: The data is normally distributed.
- H1: The data is not normally distributed.

The non-significant value ( $p=.054$ ) is higher than the critical threshold of 0.05, which means the H0 hypothesis cannot be rejected. This indicates that the data is normally distributed. To be more specific, a variable is considered to be normally distributed when both values, skewness and kurtosis, are between 3.0 and -3.0 (absolute 3.0). The calculated skewness and kurtosis values in are presented in Table 1; neither exceeds the absolute value of 3.0 (Hair et al., 2014), which confirms the outcome of the Kolmogorov-Smirnov test for normality.

Table 1 Normality of the distribution

| Variable                     | Type      | Skewness<br>statistic/SE<br>Skewness | Skewness | Kurtosis<br>statistic/SE<br>Kurtosis | Kurtosis |
|------------------------------|-----------|--------------------------------------|----------|--------------------------------------|----------|
| Absorptive<br>Capacity Scale | Dependent | -.567/.314                           | 1,805    | .115/.618                            | 0,186    |

#### 3.4.2 Measurement level of the variables

The second assumption is about the measurement level of the variables. The required measurement of the independent variable(s) and dependent variable(s) depends on the type of multivariate analysis a researcher wants applies (Hair et al., 2014). In this study the focus is on the multiple regression analysis, which indicates that the measurement level of all variables included in the analysis should be of metric measurement level (interval or ratio). Table 2 presents the measurement level of each variable. It is not needed to recode any variables into dummy variables (dummy coding), since all the variables have a metric measurement level.

Table 2 Measurement level of the variables

| Variable                  | Type of variable | Measurement level |
|---------------------------|------------------|-------------------|
| LGO                       | Independent      | Metric            |
| Normative Integration     | Independent      | Metric            |
| Team Psychological Safety | Independent      | Metric            |
| Absorptive Capacity       | Dependent        | Metric            |
| Work experience           | Control          | Metric            |
| Years at current company  | Control          | Metric            |

### 3.4.3 Homoscedasticity

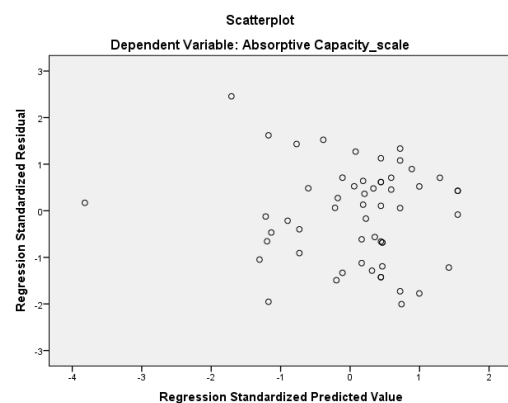
The third assumption is about homoscedasticity, which refers to need for equal levels of variance across the values of the independent variable (Hair et al., 2014). Heteroscedasticity refers to an unequal variance across the range of predictor variables. Regression analysis requires the dependent variable variance to be equally spread across the range of independent variable values. The scatterplot shows no particular patterns variance, which indicates homoscedasticity. To gain better insights, Levene's test of equal variance was conducted for each control variable (See appendix 7). This was done by using the following hypothesis:

- H0: The data patterns show there are equal levels of variance across the values of the independent variable; this suggests homogeneity.
- H1: The data patterns show there are unequal levels of variance across the values of the independent variable; this suggests heterogeneity.

Table 3 Levene's Test

| Variable             | Test of homogeneity of variances |
|----------------------|----------------------------------|
| LGO                  | .113                             |
| NI                   | .062                             |
| TPS                  | .127                             |
| Years at the company | .231                             |
| Work experience      | .678                             |

Figure 2 Homoscedasticity



The various individual statistical Levene's tests that were conducted confirm there are equal levels of variance across the values of the independent variable in for each independent variable, since all the values are higher than the critical value of .05. The significance values of all tests are higher than the critical threshold of .05, which means that it is not allowed to

reject the null hypothesis. The scatterplot confirms these observations. The assumption of homoscedasticity is met.

### 3.4.4 Linearity

The fourth assumption is about linearity. Before conducting regression analysis, it is important to ensure that the relationship between the independent and dependent variables are linear. To define the linearity of the relationships, scatterplots can be used (See Appendix 8). Since the scatterplots were not easily interpretable, polynomials based on the mean centered variables were included in the analysis. No significant polynomials were found for the variables included in the research model (See appendix 9). This confirmed the expectation that the relationships between the independent variables and the dependent variable are linear, meaning the assumption of linearity is met.

### 3.4.5 Multicollinearity

The last assumption involves multicollinearity, which is linked to the correlation of independent variables. Highly correlated independent variables make it difficult to interpret the individual relationships and effects between an independent variable and the dependent variable, since these effects can be caused by the correlation between two or more predictor variables. The VIF value and the tolerance value can be checked to determine whether there is multicollinearity or not. The VIF value should be 1.0 or higher and the tolerance value should be higher than .20 to meet this assumption. Since all the values meet this criterion (See Appendix 10), we can assume there is no multicollinearity and the assumption is met.

## 4 Results

The results of the quantitative data analysis are reported in this chapter. This includes the bivariate analysis outcomes of the regression analysis and an overview of the results regarding the hypotheses. The bivariate analysis includes examination of the number of observations, variable averages, and correlations. The latter is required in order to test whether the analyzed variables are related. Additionally, the hypotheses are tested in order to determine whether or not the expectations based on existing research can be confirmed. Finally, the final results will be presented and addressed.

### 4.1 Bivariate analysis

The table below presents the number of observations and mean for each variable (See Appendix 11). It also represents the correlation coefficients between all variables (See Appendix 12). The correlation coefficient is the value (standardized measure) that indicates the strength of a relationship between two variables (Field, 2013). Spearman's Rank Test was used to measure correlations between ordinal and metric variables. Since Pearson's correlation coefficient is performed when the analysis includes variables that were measured by using ranked scores (Field, 2013), this test was used to examine the correlations between the other (metrically scaled) variables. Table 4 presents an overview of the observed correlations. Several significant correlations were observed from the SPSS output (See Appendix 12), only these will be reported in more detail in the section below.

First of all, there was a significant relationship between learning goal orientation and absorptive capacity ( $r=.499, p<.01$ ). The correlation coefficient indicates a positive relationship, meaning individuals with a higher learning goal orientation are more capable of recognizing, assimilating, and applying knowledge. Secondly, normative integration was significantly and positively related to an individual's absorptive capacity ( $r=.547, p<.01$ ) and learning goal orientation ( $r=.474, p<.01$ ). This suggests a higher score on normative integration leads to a higher score on absorptive capacity or learning goal orientation. Thirdly, team psychological safety reported significant correlations with absorptive capacity ( $r=.376, p<.01$ ), learning goal orientation ( $r=.489, p<.01$ ), and normative integration ( $r=.607, p<.01$ ).

The moderation term between normative integration and learning goal orientation correlates with absorptive capacity ( $r=-.320, p<.01$ ), learning goal orientation ( $r=-.676, p<.05$ ), normative integration ( $r=-.382, p<.01$ ), and team psychological safety ( $r=-.413, p<.01$ ). All of these correlation coefficients report a negative value, which indicates negative relationships. This suggests team psychological safety has a negative impact the dependent variable (LGO) and the independent variables (LGO, NI, TPS). The other moderation term, between team psychological safety and learning goal orientation, is significantly and positively related to

learning goal orientation ( $r=-.572$ ,  $p<.01$ ) and to NlxLGO ( $r=-.386$ ,  $p<.01$ ). The other relationships between TPSxLGO and learning goal orientation ( $r=-.441$ ,  $p<.01$ ), normative integration ( $r=.488$ ,  $p<.01$ ), and team psychological safety ( $r=.488$ ,  $p<.01$ ) were also found to be significant, but negatively related. This indicates the moderation term of team psychological safety has a negative influence on these variables.

Finally, only one significant correlation was shown in the correlation table for the control variables. There was a significant correlation between the number of years at the company and the number of years a person has in a specific field.

Table 4 Descriptive statistics and correlations

| Bivariate Analysis              |    |       |           |        |         |         |         |        |       |       |   |
|---------------------------------|----|-------|-----------|--------|---------|---------|---------|--------|-------|-------|---|
|                                 | N  | Mean  | Std. Dev. | 1      | 2       | 3       | 4       | 5      | 6     | 7     | 8 |
| 1. Absorptive capacity          | 58 | 4.11  | .613      |        |         |         |         |        |       |       |   |
| 2. Learning goal orientation    | 71 | 4.45  | .681      | .499** |         |         |         |        |       |       |   |
| 3. Normative integration        | 68 | 3.72  | .757      | .547** | .474**  |         |         |        |       |       |   |
| 4. Team Psychological Safety    | 66 | 4.03  | .693      | .376** | .489**  | .607**  |         |        |       |       |   |
| 5. NlxLGO                       | 66 | .2491 | .2491     | -.320* | -.676** | -.382** | -.413** |        |       |       |   |
| 6. TPSxLGO                      | 63 | .2370 | .2370     | .422** | -.572** | -.386** | -.441** | .901** |       |       |   |
| 7. Work experience in the field | 75 | 4.39  | 1.077     | .161   | .027    | .045    | .168    | .080   | -.116 | .     |   |
| 8. Years at current company     | 75 | 2.67  | 1.571     | .056   | -.073   | .029    | .199    | .244   | .057  | .273* |   |

\*Correlation is significant at the 0.05 level

\*\*Correlation is significant at the 0.01 level

#### 4.2 The influence of learning goal orientation on AC

Multiple regression analysis is performed with IBM SPSS Statistics 24 software (See Appendix 12). The results of all five models tested are reported in table 5. In the first model Hypothesis 1 is tested, which includes the expectation that an individual's learning goal orientation influences his/her absorptive capacity. The expectation is that individuals with a high score on LGO score higher on individual AC than individuals with a low score on LGO. To test the hypotheses, an alpha of .05 is chosen as a threshold. This means any value below the critical value of .05 is considered to be significant. In all our hypothesized relationships, the null-hypothesis states that the independent variable (or moderator) *does not affect* the dependent variable. The alternative hypothesis states that the independent variable (or moderator) *does*

affect the dependent variable. If alpha is below .05, the null hypothesis can be rejected and the alternative hypothesis can be confirmed.

It is important to start with determination of the overall model fit, to assure that the ability of the model to predict the outcome variables (Field, 2013). For each test about model fit, the null hypothesis states the model is suitable, meaning there is a good model fit. The alternative hypothesis involves that there is not a good model fit. The model statistics for Model 1 imply there is a good overall model fit ( $F(3,44) = 6.552, p < .01, \text{Adj. } R^2 = .262$ ), which makes the model suitable for explaining the impact of LGO on AC. In the model is controlled for work experience (in years) and experience at current company (in years).

The scores of the first model (table 3) show that the main effect of LGO on AC is highly significant and positive ( $B = .545, p = .000$ ). The result thus lends support to Hypothesis 1, meaning that learning goal orientation has a positive impact on individual AC. This suggests that individuals with a high learning goal orientation are more capable of recognizing, assimilating and applying knowledge. Individuals with a low learning goal orientation will have a lower individual AC.

Table 5 Regression analysis results: one moderation term included: TPS\*LGO

| Regression Analysis             |                   |            |         |                    |            |         |                    |            |         |
|---------------------------------|-------------------|------------|---------|--------------------|------------|---------|--------------------|------------|---------|
|                                 | Model 1           |            |         | Model 2            |            |         | Model 3            |            |         |
|                                 | B                 | Std. Error | $\beta$ | B                  | Std. Error | $\beta$ | B                  | Std. Error | $\beta$ |
| Intercept                       | 2.294             | .629       |         | 1.931              | .613       |         | 2.180              | .754       |         |
| Independent variables           |                   |            |         |                    |            |         |                    |            |         |
| Learning goal orientation (LGO) | .545**            | .128       | .551**  | .391**             | .143       | .395**  | .448*              | .178       | .453*   |
| Normative integration (NI)      |                   |            |         | .340**             | .123       | .433**  | .333*              | .125       | -.075*  |
| Team psychological safety (TPS) |                   |            |         | -.084              | .148       | -.094   | -.067              | .153       | .092    |
| NI*LGO                          |                   |            |         |                    |            |         | .063               | .113       | .092    |
| TPS*LGO                         |                   |            |         |                    |            |         |                    |            |         |
| Control variables               |                   |            |         |                    |            |         |                    |            |         |
| Work experience in the field    | -.144             | .085       | -.260   | -.117              | .080       | -.181   | -.108              | .082       | -.166   |
| Years at current company        | -.013             | .055       | .132    | -.007              | .051       | -.017   | -.002              | .052       | -.004   |
| Model statistics                |                   |            |         |                    |            |         |                    |            |         |
| Adjusted $R^2$                  | .262              |            |         | .361               |            |         | .350               |            |         |
| F-Value (DF)                    | $F(3,44) = 6.552$ |            |         | $F(5, 42) = 6.307$ |            |         | $F(6, 41) = 5.222$ |            |         |
| p-value                         | .001              |            |         | .000               |            |         | .000               |            |         |

\*Correlation is significant at the 0.05 level

\*\*Correlation is significant at the 0.01 level

| Regression Analysis             |                 |            |         |                  |            |         |
|---------------------------------|-----------------|------------|---------|------------------|------------|---------|
|                                 | Model 4         |            |         | Model 5          |            |         |
|                                 | B               | Std. Error | $\beta$ | B                | Std. Error | $\beta$ |
| Intercept                       | 1.672           | .773       |         | 1.770            | .731       |         |
| Independent variables           |                 |            |         |                  |            |         |
| Learning goal orientation (LGO) | .339            | .170       | .343    | .461**           | .168       | .466**  |
| Normative integration (NI)      | .341**          | .124       | .434**  | .282*            | .120       | .359*   |
| Team psychological safety (TPS) | -.100           | .152       | -.112   | -.068            | .144       | -.076   |
| NI*LGO                          |                 |            |         | .565*            | .230       | .826*   |
| TPS*LGO                         | -.058           | .100       | -.092   | -.502*           | .204       | -.800*  |
| Control variables               |                 |            |         |                  |            |         |
| Work experience in the field    | -.126           | .082       | -.194   | -.114            | .077       | -.175   |
| Years at current company        | -.014           | .053       | .033    | -.019            | .050       | -.045   |
| Model statistics                |                 |            |         |                  |            |         |
| Adjusted $R^2$                  | .351            |            |         | .422             |            |         |
| F-Value (DF)                    | F(6,41) = 5.228 |            |         | F(7, 40) = 5.893 |            |         |
| p-value                         | .000            |            |         | .000             |            |         |

\*Correlation is significant at the 0.05 level

\*\*Correlation is significant at the 0.01 level

#### 4.3 The influence of NI and TPS on AC

In H2A is about the expectation that TPS has a positive influence on AC, meaning that it is expected that individuals working in a psychological safe climate will have a higher absorptive capacity. In H2B is hypothesized that normative integration has a positive impact on individual AC. The expectation is that the score on absorptive capacity will be higher for individuals that work in an environment characterized by normative integration.

Similar to the first model, the second model is controlled for work experience and in-company years. The model statistics of Model 2 (See Table 5) indicate a good predictive power and model fit ( $F(5, 42) = 6.307$ ,  $p < .001$ , Adj.  $R^2 = .361$ ). The adjusted  $R^2$  is .361, suggesting the independent variables included in this model explain 36,1% of the total variance of absorptive capacity.

Model 2 shows the effect of TPS on AC is non-significant ( $B = -.084$ ,  $p = .573$ ), meaning Hypothesis 2A cannot be confirmed and has to be rejected. The impact of NI on AC is significant and positive ( $B = .340$ ,  $p = .009$ ), meaning Hypothesis 2B is confirmed by these results. Therefore, it can be concluded that the analysis suggests that normative integration within an organization results into a higher capacity of individuals to recognize, assimilate and apply knowledge. Yet, the outcomes also suggest that team psychological safety does not have a direct impact on AC.

#### 4.4 The interaction effect of normative integration and team psychological safety

The first interaction tested was the interaction term between NI and individual AC, the second interaction tested was the interaction term between PTS and individual AC. After examining the two interaction effects independently, the joint effect was examined by adding the interaction terms to the model simultaneously. To create the interaction terms, all three independent variables had to be mean-centered first. After mean-centering the variables, the interaction terms were created by using the 'compute variable' function in IBM SPSS Statistics (TPS\_mean\_centered\*LGO\_mean\_centered and NI\_mean\_centered\*LGO\_mean\_centered).

The interaction term of normative integration was added in the third model. In the model is controlled for work experience and in-company experience. Model 3 statistics show the model has a good fit ( $F(6, 41) = 5.222, p < .001, \text{Adj. } R^2 = .350$ ). The statistics indicate that 35% of the total variance can be explained by the variables included in this model. In this model, the effects of learning goal orientation ( $B = .448, p = .016$ ) and normative integration ( $B = .333, p = .011$ ) on individual AC are positive and significant. However, the effect of TPS ( $B = -.067, p = .664$ ) is non-significant. Furthermore the NI interaction ( $B = .063, p = .579$ ) is not significant. From this model it can be concluded that there is a main effect of LGO as well as normative integration on individual AC. However, the statistics in Model 3 do not provide prove for an interaction effect of NI.

Model 4 measured the moderating effect of team psychological safety on the relationship between LGO and individual AC, by including the interaction term of TPS. In the model is controlled for work experience and in-company experience. The model statistics of Model 4 indicate a good predictive power and model fit ( $F(6, 41) = 5.228, p < .001, \text{Adj. } R^2 = .351$ ). The adjusted  $R^2$  is .351, suggesting the independent variables included in this model explain 35,1% of the total variance of the dependent variable. The statistics show that the impact of NI on AC is significant and positive ( $B = .341, p = .009$ ). The effect of TPS ( $B = -.100, p = .514$ ) and the interaction effect of TPS ( $B = -.058, p = .568$ ) are non-significant. From model 4 it can be concluded that there is a main effect of LGO as well as normative integration on individual AC, but this the statistics in this model do not provide prove for an interaction effect of TPS.

In the fifth model the two interaction terms were added simultaneously. Similar to the other models, there is controlled for work experience and in-company experience. Model 5 has a good overall model fit, this can be concluded from the model statistics ( $F(7, 40) = 5.893, p < .001, \text{Adj. } R^2 = .422$ ) as displayed in Table 4.2. The statistics indicate that 42,2% of the total variance of AC can be explained by the independent variables included in this model, meaning Model 5 is by far the model with the highest percentage of explained variance.



The interaction term between LGO and PTS has a significant and negative effect on absorptive capacity ( $B = -.502$ ,  $p = .018$ ). Therefore, it can be concluded there is an interaction effect between TPS and LGO that weakens the relationship between LGO and individual AC. Thus, Hypothesis 3A can be confirmed. Furthermore, the interaction term between NI and LGO has a significant and positive effect on absorptive capacity ( $B = .565$ ,  $p = .018$ ), which supports Hypothesis 3B. Consequently, it can be concluded that NI has a moderating effect on the relationship between LGO and individual AC, indicating normative integration strengthens the positive impact of LGO on individual AC.

### 4.4.1 Control variables

The analyses showed the control variables work experience slightly improves the model, even though the control variables are not significant. Other controls such as 'country of employment' and 'age category' were excluded, because they were not significantly influencing any other variables or effects between variables and these controls did not influence the model.

### 4.5 Overview of the results from regression analysis

Table 6 provides an overview of each of the hypotheses with information regarding the rejection or confirmation of each of the hypotheses. Considering the statistical values and explained variance statistics of the different models, it can be concluded that the overall fit of the models as well as their predictive power can be considered as high.

The different models indicate that both LGO and NI have a positive main effect on LGO. Nevertheless, TPS does not have a direct effect on AC. The positive influence of LGO on AC is strengthened by the interaction of NI and LGO. Furthermore, this relationship is weakened the interaction effect between TPS and LGO. It is important to note that both interaction effects (NIxLGO and TPSxLGO) only exist when the interaction terms are both included in the analysis (the fifth model).

It is desired to compare the models and the different effects. The interaction effect of TPS is different from the effect of NI, in a sense that NI has a main as well as a moderating effect. TPS, however, only has a moderating effect. There is no significant main effect of TPS on individual AC in any of the models, thus it can be concluded that there is no main effect of TPS on individual AC in any of the models.

To summarize, the results indicate that employees with a high LGO have a better absorptive capacity than employees with a low LGO. This relationship is strengthened by the interaction effect between normative integration and learning goal orientation, and weakened by the interaction effect between team psychological safety and learning goal orientation. Both interaction effects are not significant when they are added one by one. Nevertheless, the

analysis does show significant interaction effects when both interaction terms are added. The interaction effect of NI is positive, whereas the interaction effect of TPS is negative.

Table 6 – Summary of results

| Hypotheses |                                                                                                                                                | Results   |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| H1         | Learning goal orientation enhances absorptive capacity at the individual level.                                                                | Confirmed |
| H2A        | Team psychological safety enhances absorptive capacity at the individual level.                                                                | Rejected  |
| H2B        | Normative integration enhances the level of absorptive capacity at the individual level.                                                       | Confirmed |
| H3A        | Team psychological safety weakens the positive relationship between learning goal orientation and absorptive capacity at the individual level. | Confirmed |
| H3B        | Normative integration strengthens the relationship between learning goal orientation and absorptive capacity at the individual level.          | Confirmed |

#### 4.6 The interaction effects visualized

Figure 3 and 4 visualize the two interaction effects of NI (See Figure 3) and TPS (See Figure 4). The figures are based upon the statistics in model 5 (as a result from simultaneously adding both interaction terms in the analysis). The independent variables and moderators have not been standardized before conducting this analysis, and the values of individual AC (dependent variable) are not interpretable as a consequence of including control variables in the analysis (unstandardized, not centered). However, the interaction pattern can still be interpreted, if the model statistics are significant ( $p < .05$ ). The results show that both interaction effects are significant, which indicates the interaction patterns can be interpreted. The interaction pattern in Figure 3 shows that the relationship between LGO and individual AC is strengthened by normative integration. In a high normative integration environment, the difference in individual absorptive capacity between low and high LGO individuals is bigger than in a low normative integration environment. The interaction pattern in Figure 4 indicates that TPS weakens the relationship between LGO and individual AC. Individuals with a high score on LGO will have a lower individual AC in a context characterized by TPS compared to individuals with a low score on LGO.



Figure 3 Interaction effect of normative integration visualized

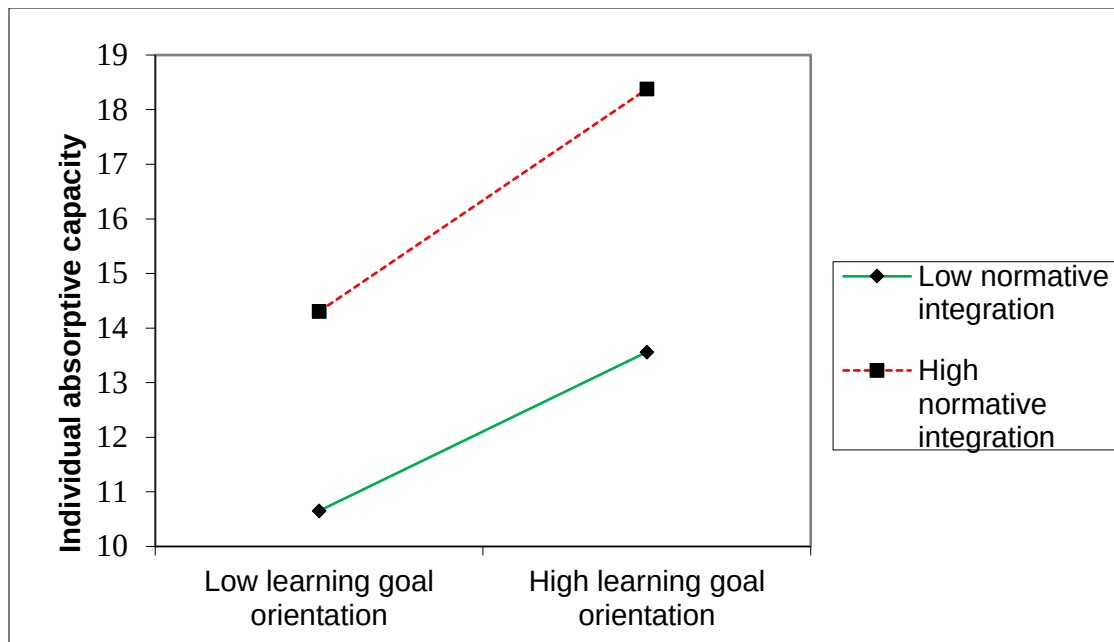
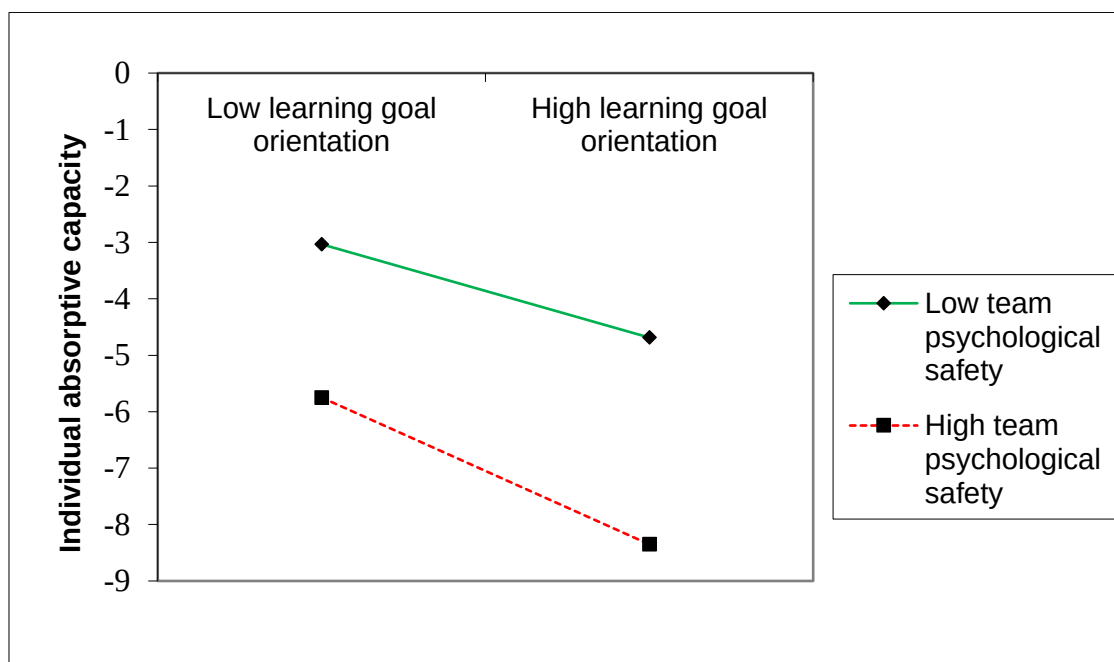


Figure 4 Interaction effect of team psychological safety visualized



## 5. Conclusion and Discussion

In this chapter the study results are interpreted based on scientific literature and theories. The conclusion is based on the studied literature and the results derived from analysis. Furthermore, the theoretical and practical implications are discussed. Finally, limitations and suggestions for future research directions are presented.

### 5.1 Conclusion

The underlying premise of this study was to extend the understanding of drivers of absorptive capacity in the context of organizational digital transformation processes. The focus has been on AC as a multilevel construct, operating dynamically on an individual and organizational level (Tripsas, 1997; Zahra & George, 2002; Gebauer, Worch & Truffer, 2012).

In today's digital marketplace, organizations have to integrate today's opportunities and digital technologies in their business models and have to implement digital transformation strategies (Berman, 2012; Kane et al., 2015; Mithas & Lucas, 2010). Digital transformation strategies are important for organizations in becoming digital, highly efficient and strategically flexible. An important prerequisite for these three aspects is the ability of organizations to recognize, assimilate and apply new external knowledge, which is referred to as absorptive capacity (Cohen & Levinthal, 1990). Ultimately, all these benefits lead to competitive advantage, supporting an organization's success and survival in today's marketplace (Zahra & George, 2002; Hurtado-Ayala & Gonzalez-Campo, 2015; Todorova & Durisin, 2007; Volberda et al., 2010).

The finding theorists of AC (Cohen & Levinthal, 1990) argued that organizational AC is a product of individual-level AC, suggesting AC exists on both organizational and individual level. As organizational AC is often examined and individual AC is understudied, this study focused on the latter. It was suggested by researchers that micro-foundations as well as macro-foundations of AC should be explored and studied, to get a better understanding of the dynamicity of AC (Schleimer & Pedersen, 2013; Volberda et al., 2010; Yao & Chang, 2017). One important individual micro-antecedent that is suggested to influence absorptive capacity is learning goal orientation (LGO) (Yao & Chang, 2017).

Literature distinguishes two types of goal orientation: learning and performance (Dweck, 1986; Yi & Hwang, 2003). LGO individuals believe their ability or intelligence is incremental and can be constantly improved by knowledge acquisition and refining their capabilities. Furthermore, they are more likely work on specific tasks and seek challenges in attempt to master new knowledge and increase their level of competence, even if this could result in being rejected or ignored by others (Dweck, 1986; 2006; Pintrich, 2000; Yi & Hwang, 2003). Altogether, the tendency LGO individuals to seek for ways to learn and personal development, even at risk of

being rejected or ignored, suggests that an individual characteristic such as LGO enhances individual AC.

Individuals in a team have a shared belief about the team psychological safety; whether it is safe for interpersonal risk taking in the team (Edmondson, 1999). This particular feeling of safety is assumed to be a necessary component of absorptive capacity, because it leads to openness among team members, which in turn stimulates discussion and the development of create ideas, suggestions, and deviating perception (Bradley et al., 2012; Hair et al., 2014). Work environments characterized by the aforementioned aspects positively affect learning, exploration-oriented activities, and performance, which suggests a positive influence of team psychological safety on 1) individual absorptive capacity, and 2) relationship between LGO and individual absorptive capacity.

Organizational mechanisms such as normative integration are assumed influence the emergence of AC (Zahra & George, 2002). This is confirmed by Schleimer and Pedersen (2013) who advocate that normative integration – the connectedness and convergence among different parts of the organization – is an important trigger of AC. Normative integration is expected to stimulate two things within organizations: the transfer of existing knowledge as well as the absorption of new knowledge (Schleimer & Pedersen, 2013). Consequently, this organizational mechanism is expected to impact AC and the relationship between LGO and individual AC.

Based upon these theoretical findings, this research aimed to provide an answer to the research questions:

1. ***To what extent does learning goal orientation influence the ability of an individual to recognize, assimilate and apply knowledge (absorptive capacity) during strategic digital change?***
2. ***To what extent is the relationship between learning goal orientation and individual absorptive capacity influenced by team psychological safety and normative integration?***

The first research question (HQ1) aims to explore the positive relationship between LGO and individual AC in a context of strategic digital change. It can be concluded LGO enhances individual AC, meaning that an individual who is learning goal oriented has a higher ability to recognize new knowledge, assimilate, and apply it (H1).

The second research question (HQ2) was formulated to get better understanding of the effect of team psychological safety and normative integration. Furthermore, the interaction effects of

these constructs with LGO was at stake. The goal was to examine how these interactions influences the relationship between LGO and individual AC.

First, team psychological safety was examined. It appears that TPS has no significant main effect on individual AC. However, the study results show a significant negative interaction effect between LGO and TPS. This means TPS weakens the effect between LGO and individual AC. A work environment characterized by team psychological safety does not influence individual AC (H2A). Nevertheless, it does negatively influence the relationship between LGO and individual AC (H3A).

Based on the findings of the literature study, a positive effect of TPS on individual AC was proposed. However, such an effect was not found. To explain this, it is important to note that this research was conducted research at one particular organization. It might be due to other aspects that TPS does not result into a stronger relationship between LGO and individual AC. Nevertheless, there might be other possible explanations. First, the questions included in the survey were formulated in the light of digital strategic change. Team psychological safety might be not as important during strategic digital change as we expected based on literature. Even though may be important during work activities (Edmondson, 1999), it may be less important for digital strategic change. For example, clear communication about the digital strategy by the management, combined with a good integration between the top of the organization and other parts, might provide employees with enough confidence and motivation to absorb the knowledge, assimilate it, and apply it. This means TPS itself does not directly result in higher absorptive capacity.

Second, the role of normative integration was examined. NI has a significant positive effect on individual AC, indicating convergence about norms and values among an organization positively affects individual AC. Hypothesis H2B is confirmed. Moreover, the interaction effect has a positive impact on the relationship between LGO and individual AC. This implies that NI has impact on AC of individuals as well as the AC of LGO individuals. Normative integration is an organization is an important driver of individual absorptive capacity, even more when the individuals are learning goal oriented.

### 5.2 Theoretical contribution

This study focused of the role of individual characteristics and team and organizational mechanisms on absorptive capacity in digital transformation contexts. Influencers on the micro as well as the organizational level were taken into account.

The results of this research have several contributions to existing literature. First, although Cohen & Levinthal (1990) already suggested the role of individuals (individual AC) in organizational AC, this paper is only one (of a few) to focus on the absorptive capacity of

individuals. This provides knowledge about the existence of AC on the micro-level as well as organizational AC being a product of individual AC. Secondly, team psychological safety and normative integration were part of the research model. It was examined whether these higher-level mechanisms influence individual AC, or moderate the relationship between LGO and AC on the micro-level. More specifically, this contributes to theory about the emergence of AC at multiple levels of the organization, as suggested as a study direction for future studies by diverse researchers (Jansen et al., 2006; Minbaeva et al., 2003; Schleimer & Pedersen, 2013; Yao & Chang, 2017). Thirdly, TPS is – by our knowledge – the first mechanism studied in relation to absorptive capacity. Since the TPS construct appears to moderate the relationship between LGO and individual AC negatively, it seems very promising to further explore this relation. Finally, this study showed that normative integration is an organizational mechanism influencing individual absorptive capacity. Moreover, Schleimer & Pedersen (2013) showed that normative integration also influences subsidiary absorptive capacity.

### 5.3 Practical implications

The research findings have implications for practice. The concept of learning goal orientation has been linked to development, implementation, absorption of digital strategies. Differences in individual AC were explained by differences in learning goal orientation. Therefore, individual AC is suggested to play a highly important role in an organization's strategic flexibility, competitive advantage, and performance success. The latter suggests that organizations will be more successful when hiring these types of employees, which is valuable information for the organization that participated in this study and other (strategic) policy makers/managers. This information may help to target and hire individuals with the right skills and capabilities to absorb digital strategies. Based upon these results, the firm may want to engage in specific strategic orientations or human resource management practices, for example recruiting, training, and developing employees with particular individual characteristics such as LGO. By hiring these types of individuals a work environment that fosters individual AC can be created, because LGO individuals will be more likely to continuously seek for new information, challenges, and feedback to further improve their capabilities (Dweck, 1986).

The research outcomes indicate that creating a safe and open atmosphere is of great importance in order generate higher individual AC. Integration between and among different parts of the organization appears to influence individual AC directly, and it moderates the relationship between LGO and individual AC as well. The organization should try to assess more in-depth to what extent their organizational members experience connectedness between and among organizational parts. This could be done by asking the employees to rate normative integration and connectedness in the annual employee satisfaction surveys. In case employees believe there is too little integration, the company should invest more resources



(time and money) in the integration and connectedness within the organization. For instance, the management could set up policies or programs to promote integration. The improvement of integration will create a context characterized of trust and openness, and sharing information also contributes to an increase of organizational performance. Furthermore, managers can measure and evaluate the ability of organizational members to absorb digital strategies in order to set up a strategy for improvement. This will provide managers insight in which employees have a high absorptive capacity and it will help them to target individuals that might need more coaching in understanding and absorption of the digital strategy. In short, the results of this study imply that managers have to pay attention and undertake activities to improve integration and connectedness within the organization. The application of an organizational mechanism, such as normative integration, may increase employees' openness to new knowledge, which in turn improves the capacity to absorb new knowledge and respond to dynamic, changing digital environments.

Contrary to the hypothesized expectations, the results suggest that TPS is weakening the relationship between LGO and individual AC. Although the negative moderating effect should further be explored in scientific research as well as practice, the results suggest that fostering psychological safety will not lead to a higher ability to absorb of individuals in this context. However, research outcomes of Edmondson (1999, 2002) suggest that learning behavior in teams is influenced by TPS, which means it could still have implications for practice as organizational change and complexity intensify (Edmondson, 1999). Therefore, it is suggested to study the influence of TPS on absorptive capacity at other levels (e.g. team, subsidiary, or organizational absorptive capacity).

### 5.4 Study limitations

This study aims to address absorptive capacity of individuals in a context of strategic digital transformations. This study has several limitations, these can be addressed in future studies to improve current findings and fill in potential research gaps. First, the most important limitation involves generalizability. This paper attempted to explain AC in a work environment characterized by strategic digital change, meaning there was no reference group to compare the results of digital transformation contexts with non-digital transformation contexts. In this case, strategic digital transformation was merely examined in a context characterized by strategic change. Therefore, the results are not generalizable and might not be applicable for any company involved in strategic digital change.

As mentioned in the method chapter, the employees within the Technology Department of the case company are involved in the strategic digital change, while the other employees of the company might not be aware of any digital transformation. For this reason, the questionnaire was only sent to the organizational members that are part of the Technology Department.

Thus, the research population (the amount of people the questionnaire was sent to) was low. Furthermore, there have been some time concerns. Since a questionnaire was used to gather qualitative data, the researcher depended on the respondents that were willing and had time to respond to the survey in the short period (about two weeks) that the questionnaire was open to response. Due to this shortage in time, the number of observations was a little low (N=75). The amount of response is too low to be able to generalize the results, findings and conclusion the total population, since the number of observations is lower than expected/required and may not be representative.

The questionnaire had to be sent to employees by the CIO of the company in order to create support from the managers and employees, with the idea that more organizational members would be willing to answer the questionnaire. However, it might lead to unreliable answers. Although it was strongly emphasized in the introduction of the questionnaire that participation would be confidential and the answers would not be shared with the company, employees might still believe their job position might be at risk if answering honestly. This could be an explanation for the low response rate. Another possible result is that participants might have not responded completely honest. However, in the cover letter of the questionnaire it was emphasized to respondents' that their answers would be confidential and individual answers will not be shared with the company.

### 5.5 Recommendations for future research

Based on our first contribution to theory – namely expanding the knowledge about individual AC – it is suggested to explore individual AC more in-depth. For example, it could be interesting to expand knowledge about how and to what extent individual AC relates to team or organizational AC. Furthermore, the impact of individual characteristics other than LGO can be examined.

The research findings confirm the proposed impacts of individual characteristics and organizational mechanisms on individual absorptive capacity. Thus, it could be interesting to study other individual characteristics as well as organizational antecedents (socialization or other type of mechanisms). The moderating influence of team psychological safety and normative integration could be further explored. The findings suggest that TPS and NI might have impact on AC emerging at other levels of the organization and its environment, for example industries or sectors. Furthermore, the impact of industrial normative integration on AC could be investigated, as well as its moderating effects.

Finally, it is suggested to conduct a longitudinal research method, as it would be interesting to investigate absorptive capacity at the beginning, during, end, and 6 months after strategic digital change. In this paper, individual AC was studied in the context of digital strategy

implementation and transformation. The questionnaire was solely send to individuals that are all employed in the same organization, this organization is currently implementing a digital strategy. Measuring AC on diverse moments could provide organizations with insight on the growth of individual AC by and the benefits of implementing digital strategies. In addition, it is recommended to investigate individual AC in other contexts, not merely in a digital transformation environment, to enable comparison of the AC in different contexts.

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## Appendix 1 Invitation e-mail and reminder

*Text deleted for privacy/confidentiality reasons*



## Appendix 2 Survey design

| Constructs                                                    | Description/question                                                                                                                                                    | Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Response scale                                                                                                                                     |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Absorptive capacity (Schleimer &amp; Pedersen, 2013)</b>   | <i>Strategy recognition:</i> Please indicate on a scale of 1-5 to what extent you agree with each statement. 0 = completely disagree and 100% is completely agree.      | <ol style="list-style-type: none"> <li>1. I completely understand the importance of the digital transformation.</li> <li>2. I completely recognize the benefits of the digital transformation.</li> <li>3. I completely recognize the potential of the digital transformation to create value for our company.</li> </ol>                                                                                                                                                                           | 1 = 0% (completely disagree)<br>2 = 25% (disagree)<br>3 = 50% (neutral)<br>4 = 75% (agree)<br>5 = 100% (completely agree)<br>Do not know/no answer |
|                                                               | <i>Strategy assimilation:</i> Please indicate on a scale of 1-5 to what extent you agree with each statement. 0 = completely disagree and 100% is completely agree.     | <ol style="list-style-type: none"> <li>1. I completely understand how the different elements of the technology strategy fit together to make the digital transformation work.</li> <li>2. I completely understand the new aspects of the new technology strategy compared to our earlier strategy.</li> <li>3. I completely understand the impact of the key elements of the digital transformation on my individual job tasks.</li> </ol>                                                          | 1= 0% - 5 = 100%                                                                                                                                   |
|                                                               | <i>Strategy application:</i> Please indicate on a scale of 1-5 to what extent you agree with each statement. 0 = completely disagree and 100% is completely agree.      | <ol style="list-style-type: none"> <li>1. I can easily adjust my job tasks to make the digital transformation work successfully.</li> <li>2. All my job tasks are in line with the digital transformation.</li> <li>3. I can easily evaluate the alignment between my work and the technology strategy to adjust my job tasks to the digital transformation.</li> </ol>                                                                                                                             | 1= 0% - 5 = 100%                                                                                                                                   |
| <b>Learning goal orientation (Yao &amp; Chang, 2017)</b>      | <i>Learning goal orientation:</i> Please indicate on a scale of 1-5 to what extent you agree with each statement. 0 = completely disagree and 100% is completely agree. | <ol style="list-style-type: none"> <li>1. I am willing to select a challenging work assignment that I can learn a lot from.</li> <li>2. I often look for opportunities to develop new skills and knowledge.</li> <li>3. I enjoy challenging and difficult tasks at work where I will learn new skills.</li> <li>4. For me, development of my work ability is important enough to take risks.</li> <li>5. I prefer to work in situations that require a high level of ability and talent.</li> </ol> | 1= 0% - 5 = 100%                                                                                                                                   |
| <b>Normative integration (Schleimer &amp; Pedersen, 2014)</b> | <i>Normative integration:</i> Please indicate to what extent you agree with each statement presented below. 0% = totally disagree and 100% = totally agree.             | <ol style="list-style-type: none"> <li>1. In our organization, there is a feeling of trust and confidence between different units.</li> <li>2. Our organization's management style encourages a high level of participation from employees.</li> <li>3. Information is shared honestly and openly in our organization.</li> <li>4. In our organization, people feel that their ideas and input are listened to by others.</li> </ol>                                                                | 1= 0% - 5 = 100%                                                                                                                                   |
| <b>Team psychological safety (Edmondson, 1999)</b>            | <i>Team psychological safety:</i> Please indicate to what extent you agree with each statement presented below. 0% = totally disagree                                   | <ol style="list-style-type: none"> <li>1. In this team, I am able to bring up problems.</li> <li>2. People on my team sometimes reject others for being different.</li> <li>3. It is safe to make a mistake on this team.</li> <li>4. I find it difficult to ask other members of this team for help</li> <li>5. No one in this team would deliberately act in a way that undermines my efforts.</li> </ol>                                                                                         | 1= 0% - 5 = 100%                                                                                                                                   |

## ABSORPTIVE CAPACITY IN DIGITAL STRATEGIES

|                                 |                          |                                                                                |                                                                                       |
|---------------------------------|--------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                 | and 100% = totally agree | 6. Working with members of this team, my unique skills and talents are valued. |                                                                                       |
| <b>Work experience in years</b> |                          | How many years of working experience do you have?                              | <b>Less</b> than 2 years<br>2-5 years<br>6-9 years<br>10-13 years<br>14 years or more |
| <b>Years at current company</b> |                          | How many years have you been working at (company name)                         | <b>Less</b> than 2 years<br>2-5 years<br>6-9 years<br>10-13 years<br>14 years or more |

## Appendix 3 - Little MCAR's test: missing data patterns

### Univariate Statistics

|                   | N  | Mean | Std. Deviation | Missing |         | No. of Extremes <sup>a</sup> |      |
|-------------------|----|------|----------------|---------|---------|------------------------------|------|
|                   |    |      |                | Count   | Percent | Low                          | High |
| Job_function      | 75 | 1,33 | ,475           | 0       | ,0      | 0                            | 0    |
| Work_experience   | 75 | 4,39 | 1,077          | 0       | ,0      | 5                            | 0    |
| Years_at_company  | 75 | 2,67 | 1,571          | 0       | ,0      | 0                            | 0    |
| Educational_level | 73 | 4,77 | 1,380          | 2       | 2,7     | 0                            | 0    |
| Age_cat           | 59 | 3,64 | 1,436          | 16      | 21,3    | 0                            | 0    |
| AC_scale          | 58 | 4,11 | ,613           | 17      | 22,7    | 0                            | 0    |
| NI_scale          | 68 | 3,72 | ,757           | 7       | 9,3     | 1                            | 0    |
| TPS_scale         | 66 | 4,03 | ,693           | 9       | 12,0    | 2                            | 0    |
| LGO_scale         | 71 | 4,45 | ,681           | 4       | 5,3     | 2                            | 0    |

a. Number of cases outside the range (Q1 - 1.5\*IQR, Q3 + 1.5\*IQR).

### EM Means<sup>a</sup>

| Job_function | Work_experience | Years_at_comp<br>any | Educational_level | Age_cat | AC_scale | NI_scale | TPS_scale | LGO_scale |
|--------------|-----------------|----------------------|-------------------|---------|----------|----------|-----------|-----------|
| 1,33         | 4,39            | 2,67                 | 4,75              | 3,78    | 4,08     | 3,74     | 4,05      | 4,46      |

a. Little's MCAR test: Chi-Square = 88,404, DF = 83, Sig. = ,322

## Appendix 4 SPSS Output reverse-coding

### TPS2 and TPS4 reverse-coded

```
SAVE OUTFILE='C:\Users\Marlieke
Leermakers\Dropbox\Thesis\Results\SPSS\ready for use no '+
'missing\Basefile_AC_reversecoded_scales.sav'
/COMPRESSED.
RECODE Team_psych_safety2 (1=5) (2=4) (3=3) (4=2) (5=1) INTO TPS2_RV.
VARIABLE LABELS TPS2_RV 'Team Psychological Safety2 Reverse-coded'.
EXECUTE.
RECODE Team_psych_safety2 Team_psych_safety4 (1=5) (2=4) (3=3) (4=2) (5=1)
INTO TPS2_RV TPS4_RV.
VARIABLE LABELS TPS2_RV 'Team Psychological Safety2 Reverse-coded'
/TPS4_RV 'Team Psychological '+
'Safety4 Reverse-coded'.
EXECUTE.
```

Missing data imputed by using Pairwise method

```
MVA VARIABLES=Country Job_function Work_experience Years_at_company
Educational_level Age_cat
S_recognition1 S_recognition2 S_recognition3 S_assimilation1
S_assimilation2 S_assimilation3
S_application1 S_application2 S_application3 LG01 LG02 LG03 LG04 LG05
CV1 CV2 CV3 CV4 NI1 NI2 NI3
NI4 TPS1 TPS2 TPS3 TPS4 TPS5 TPS6 IOC1 IOC2 IOC3 IOC4 Resources1
Resources2 Resources3
/PAIRWISE
/EM(TOLERANCE=0.001 CONVERGENCE=0.0001 ITERATIONS=25).
```

## Appendix 5 Reliability analysis

### Absorptive Capacity Scale

```
RELIABILITY
/VARIABLES=S_recognition1 S_recognition2 S_recognition3 S_assimilation1
S_assimilation2
      S_assimilation3 S_application1 S_application2 S_application3
/SCALE('Absorptive Capacity') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE CORR
/SUMMARY=TOTAL.
```

### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| ,880             | ,879                                         | 9          |

### Item-Total Statistics

|                                                                                                                                    | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| S_recognition1<br>Understanding importance of the digital transformation                                                           | 32,43                      | 25,899                         | ,501                             | ,621                         | ,877                             |
| S_recognition2<br>Recognizing benefits of digital transformation                                                                   | 32,52                      | 25,973                         | ,550                             | ,640                         | ,873                             |
| S_recognition3<br>Recognizing potential of digital transformation in creating value for the company                                | 32,59                      | 25,264                         | ,587                             | ,757                         | ,870                             |
| S_assimilation1<br>Understanding the fit between different elements of technology strategy to make the digital transformation work | 33,03                      | 22,385                         | ,781                             | ,751                         | ,852                             |
| S_assimilation2<br>Understanding of new aspects of net technology strategy compared to earlier strategy                            | 33,16                      | 23,712                         | ,618                             | ,750                         | ,868                             |
| S_assimilation3<br>Understanding the impact of the key elements of the digital transformation on individual job tasks              | 33,10                      | 22,445                         | ,742                             | ,797                         | ,856                             |
| S_application1<br>Possibility to adjust indiv job tasks to make the digital transformation work successfully                       | 32,91                      | 25,764                         | ,526                             | ,483                         | ,875                             |
| S_application2<br>Alignment between indiv job tasks and digital transformation                                                     | 33,24                      | 24,011                         | ,676                             | ,714                         | ,863                             |
| S_application3<br>Capability to evaluate the alignment between work and digital transformation                                     | 33,16                      | 24,239                         | ,638                             | ,655                         | ,866                             |

**Scale absorptive Capacity: Srecognition1, Srecognition2, Srecognition3, Sassimilation1, Sassimilation2, Sassimilation3, Sapplication1, Sapplication2, Sapplication3**

### Learning Goal Orientation Scale

#### RELIABILITY

```
/VARIABLES=LGO1 LGO2 LGO3 LGO4 LGO5
/SCALE('Learning Goal Orientation') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE CORR
/SUMMARY=TOTAL.
```

#### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| ,914             | ,920                                         | 5          |

#### Item-Total Statistics

|                                                                                     | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|-------------------------------------------------------------------------------------|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| LGO1 Willing to select challenging work assignment to learn a lot from              | 17,65                      | 7,660                          | ,809                             | ,729                         | ,890                             |
| LGO2 Looking for opportunities to develop new skills and knowledge                  | 17,70                      | 7,554                          | ,782                             | ,664                         | ,895                             |
| LGO3 Enjoying challenging and difficult tasks at work to learn new skills           | 17,70                      | 7,583                          | ,855                             | ,759                         | ,882                             |
| LGO4 Perceiving development of work ability important enough to take risks          | 18,01                      | 7,414                          | ,657                             | ,505                         | ,928                             |
| LGO5 Preference to work in situations that require high level of ability and talent | 17,83                      | 7,628                          | ,852                             | ,730                         | ,882                             |

No items deleted → Cronbach's alpha is higher than .6 and no significant increase after deletion of one or several item(s)

**Scale Learning Goal Orientation: LGO1, LGO2, LGO3, LGO4, LGO5**

### Normative Integration Scale

#### RELIABILITY

```
/VARIABLES=NI1 NI2 NI3 NI4
/SCALE('Normative Integration') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE CORR
/SUMMARY=TOTAL.
```

### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| ,846             | ,851                                         | 4          |

### Item-Total Statistics

|                                                                                                 | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|-------------------------------------------------------------------------------------------------|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| NI1 In our organization, there is a feeling of trust and confidence between different units     | 11,24                      | 5,735                          | ,515                             | ,328                         | ,882                             |
| NI2 Our organization's management style encourages a high level of participation from employees | 11,15                      | 5,441                          | ,720                             | ,598                         | ,790                             |
| NI3 Information is shared honestly and openly in our organization                               | 11,06                      | 5,101                          | ,797                             | ,639                         | ,756                             |
| NI4 In our organization, people feel that their ideas and input are listened to by others.      | 11,16                      | 5,391                          | ,731                             | ,630                         | ,786                             |

No items deleted → Cronbach's alpha is higher than .6 and no significant increase after deletion of one or several item(s)

**Scale Normative Integration: NI1, NI2, NI3, NI4**

### Team Psychological Safety Scale

RELIABILITY

```

/VARIABLES=TPS1 TPS3 TPS5 TPS6 TPS2_RV TPS4_RV
/SCALE('Team Psychological Safety') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE CORR
/SUMMARY=TOTAL.

```

### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| ,476             | ,538                                         | 6          |

**Item TPS2\_RV deleted**

RELIABILITY

## ABSORPTIVE CAPACITY IN DIGITAL STRATEGIES

```
/VARIABLES=TPS1 TPS3 TPS5 TPS6 TPS4_RV
/SCALE('TPS adapted') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE CORR
/SUMMARY=TOTAL.
```

### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| ,541             | ,595                                         | 5          |

### Item-Total Statistics

|                                                                                     | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|-------------------------------------------------------------------------------------|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| TPS1 In this team, I am able to bring up problems                                   | 15,80                      | 7,422                          | ,401                             | ,276                         | ,454                             |
| TPS3 It is safe to make a mistake on this team                                      | 16,48                      | 6,315                          | ,423                             | ,269                         | ,411                             |
| TPS5 No one in this team would deliberately act in a way that undermines my efforts | 16,06                      | 5,966                          | ,356                             | ,226                         | ,452                             |
| TPS6 Working with members of this team, my unique skills and talents are valued     | 16,08                      | 6,963                          | ,460                             | ,278                         | ,416                             |
| TPS4_RV Team Psychological Safety4 Reverse-coded                                    | 16,12                      | 7,677                          | ,048                             | ,027                         | ,665                             |

Item TPS4\_RV deleted

### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| ,665             | ,683                                         | 4          |

Item TPS2 and TPS4 both deleted to increase Cronbach's alpha (value after deletion >.6 and deletion of any other items does not increase the value)

**Scale Team Psychological Safety: TPS1, TPS3, TPS5, TPS6**



## Appendix 6 Test for normality

### Descriptives

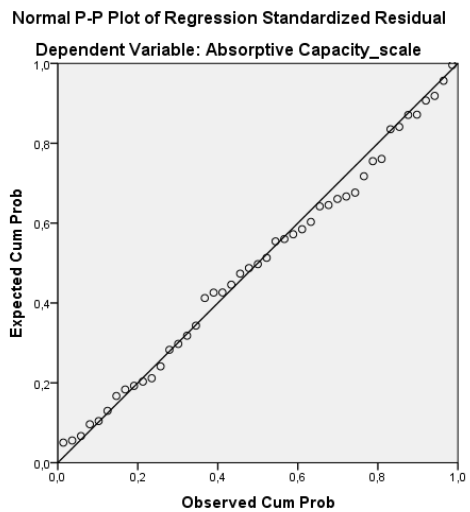
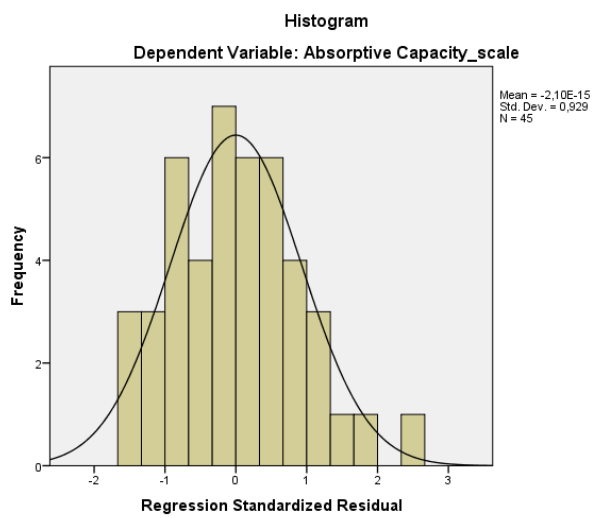
|                                    |                                  |             | Statistic | Std. Error |
|------------------------------------|----------------------------------|-------------|-----------|------------|
| AC_scale Absorptive Capacity_scale | Mean                             |             | 4,11      | ,080       |
|                                    | 95% Confidence Interval for Mean | Lower Bound | 3,95      |            |
|                                    |                                  | Upper Bound | 4,27      |            |
|                                    | 5% Trimmed Mean                  |             | 4,14      |            |
|                                    | Median                           |             | 4,22      |            |
|                                    | Variance                         |             | ,376      |            |
|                                    | Std. Deviation                   |             | ,613      |            |
|                                    | Minimum                          |             | 2         |            |
|                                    | Maximum                          |             | 5         |            |
|                                    | Range                            |             | 3         |            |
|                                    | Interquartile Range              |             | 1         |            |
|                                    | Skewness                         |             | -,567     | ,314       |
|                                    | Kurtosis                         |             | ,115      | ,618       |

### Tests of Normality

|                                    | Kolmogorov-Smirnov <sup>a</sup> |    |       | Shapiro-Wilk |    |      |
|------------------------------------|---------------------------------|----|-------|--------------|----|------|
|                                    | Statistic                       | df | Sig.  | Statistic    | df | Sig. |
| AC_scale Absorptive Capacity_scale | ,089                            | 58 | ,200* | ,960         | 58 | ,054 |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction



## Appendix 7 – Levene’s test of homogeneity of variance

### 1. Learning goal orientation

#### Test of Homogeneity of Variances

AC\_scale Absorptive Capacity\_scale

| Levene<br>Statistic | df1 | df2 | Sig. |
|---------------------|-----|-----|------|
| 1,790               | 7   | 45  | ,113 |

### 2. Normative integration

#### Test of Homogeneity of Variances

AC\_scale Absorptive Capacity\_scale

| Levene<br>Statistic | df1 | df2 | Sig. |
|---------------------|-----|-----|------|
| 1,942               | 11  | 40  | ,062 |

### 3. Team psychological safety

#### Test of Homogeneity of Variances

AC\_scale Absorptive Capacity\_scale

| Levene<br>Statistic | df1 | df2 | Sig. |
|---------------------|-----|-----|------|
| 1,698               | 8   | 42  | ,127 |

### 4. Work experience

#### Test of Homogeneity of Variances

AC\_scale Absorptive Capacity\_scale

| Levene<br>Statistic | df1 | df2 | Sig. |
|---------------------|-----|-----|------|
| ,508                | 3   | 53  | ,678 |

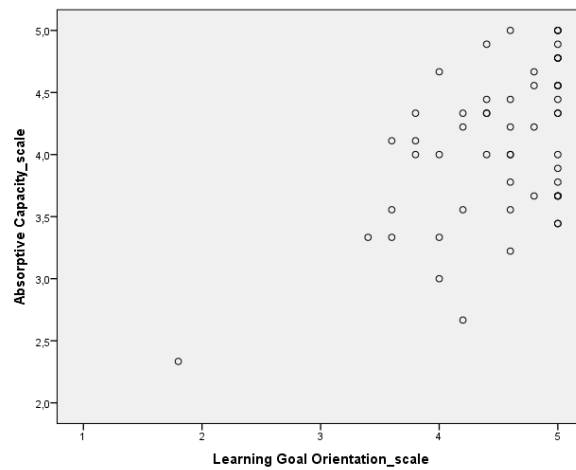
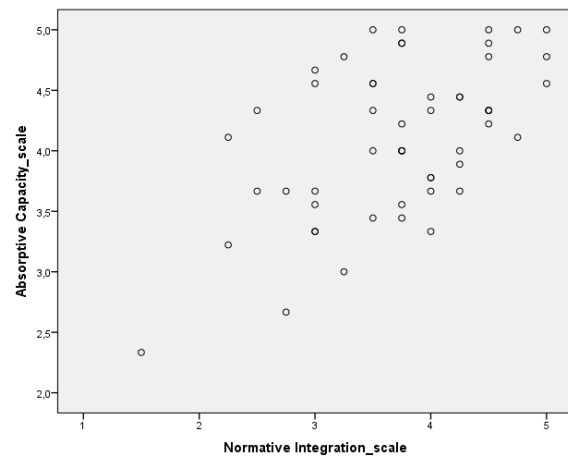
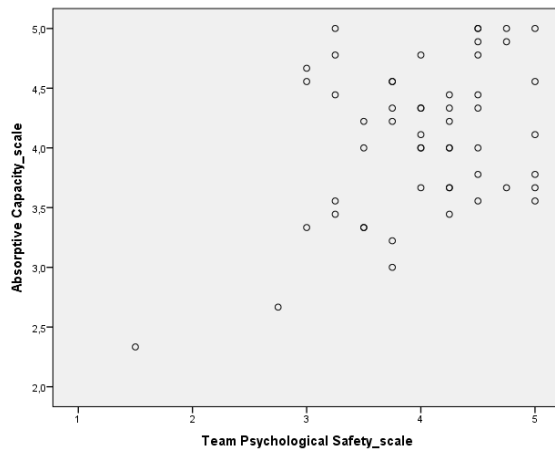
### 5. Years at the company

#### Test of Homogeneity of Variances

AC\_scale Absorptive Capacity\_scale

| Levene<br>Statistic | df1 | df2 | Sig. |
|---------------------|-----|-----|------|
| 1,448               | 4   | 53  | ,231 |

## Appendix 8 – Test for Linearity



## Appendix 9 Polynomial and quadratic terms

**Coefficients<sup>a</sup>**

| Model |              | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. | Collinearity Statistics |          |
|-------|--------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|----------|
|       |              | B                           | Std. Error | Beta                      |        |      | Tolerance               | VIF      |
| 1     | (Constant)   | 4,084                       | ,128       |                           | 31,843 | ,000 |                         |          |
|       | LGO_centered | ,332                        | ,475       | ,330                      | ,698   | ,488 | ,066                    | 15,156   |
|       | LGO_2        | -,055                       | ,461       | -,086                     | -,120  | ,905 | ,029                    | 34,328   |
|       | LGO_3        | ,187                        | 1,233      | ,776                      | ,152   | ,880 | ,001                    | 1771,172 |
|       | LGO_4        | ,061                        | ,415       | ,664                      | ,147   | ,884 | ,001                    | 1389,563 |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

**Coefficients<sup>a</sup>**

| Model |             | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. | Collinearity Statistics |          |
|-------|-------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|----------|
|       |             | B                           | Std. Error | Beta                      |        |      | Tolerance               | VIF      |
| 1     | (Constant)  | 13,593                      | 5,504      |                           | 2,470  | ,017 |                         |          |
|       | NI_centered | 4,205                       | 2,166      | 5,148                     | 1,942  | ,058 | ,002                    | 522,483  |
|       | NI_2        | -,834                       | ,490       | -7,263                    | -1,704 | ,095 | ,001                    | 1349,592 |
|       | NI_4        | ,011                        | ,007       | 2,763                     | 1,600  | ,116 | ,005                    | 221,631  |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

**Coefficients<sup>a</sup>**

| Model |              | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. | Collinearity Statistics |         |
|-------|--------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|---------|
|       |              | B                           | Std. Error | Beta                      |        |      | Tolerance               | VIF     |
| 1     | (Constant)   | 4,130                       | ,116       |                           | 35,648 | ,000 |                         |         |
|       | TPS_centered | ,350                        | ,317       | ,391                      | 1,103  | ,276 | ,131                    | 7,624   |
|       | TPS_2        | ,017                        | ,282       | ,024                      | ,059   | ,953 | ,097                    | 10,354  |
|       | TPS_3        | -,202                       | ,387       | -,738                     | -,522  | ,604 | ,008                    | 121,250 |
|       | TPS_4        | -,106                       | ,161       | -,950                     | -,659  | ,513 | ,008                    | 125,892 |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

## Appendix 10 Multicollinearity statistics

### Coefficients<sup>a</sup>

| Model |                                           | Collinearity Statistics |       |
|-------|-------------------------------------------|-------------------------|-------|
|       |                                           | Tolerance               | VIF   |
| 1     | LGO_scale Learning Goal Orientation_scale | ,501                    | 1,998 |
|       | NI_scale Normative Integration_scale      | ,539                    | 1,854 |
|       | TPS_scale Team Psychological Safety_scale | ,482                    | 2,075 |
|       | NlxLGO                                    | ,111                    | 8,981 |
|       | TPSxLGO                                   | ,117                    | 8,537 |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

## Appendix 11 Descriptive statistics

| Descriptive Statistics                                        |                |                      |                      |                   |                             |          |      |          |      |
|---------------------------------------------------------------|----------------|----------------------|----------------------|-------------------|-----------------------------|----------|------|----------|------|
|                                                               | N<br>Statistic | Minimum<br>Statistic | Maximum<br>Statistic | Mean<br>Statistic | Std. Deviation<br>Statistic | Skewness |      | Kurtosis |      |
| Work_experience Work<br>experience in the field<br>(years)    | 75             | 1                    | 5                    | 4,39              | 1,077                       | -1,767   | ,277 | 2,371    | ,548 |
| Years_at_company Work<br>experience in the<br>company (years) | 75             | 1                    | 5                    | 2,67              | 1,571                       | ,445     | ,277 | -1,350   | ,548 |
| AC_scale Absorptive<br>Capacity_scale                         | 58             | 2                    | 5                    | 4,11              | ,613                        | -,567    | ,314 | ,115     | ,618 |
| NI_scale Normative<br>Integration_scale                       | 68             | 2                    | 5                    | 3,72              | ,757                        | -,525    | ,291 | ,098     | ,574 |
| TPS_scale Team<br>Psychological<br>Safety_scale               | 66             | 2                    | 5                    | 4,03              | ,693                        | -,913    | ,295 | 1,502    | ,582 |
| LGO_scale Learning<br>Goal Orientation_scale                  | 71             | 2                    | 5                    | 4,45              | ,681                        | -2,012   | ,285 | 5,736    | ,563 |
| NixLGO                                                        | 66             | -,67                 | 5,88                 | ,2491             | ,93453                      | 4,627    | ,295 | 24,563   | ,582 |
| TPSxLGO                                                       | 63             | -,63                 | 6,70                 | ,2370             | ,91417                      | 6,032    | ,302 | 41,809   | ,595 |
| Valid N (listwise)                                            | 48             |                      |                      |                   |                             |          |      |          |      |

## Appendix 12 Regression analysis

### NIxLGO

| Model Summary |                   |          |                   |                            |
|---------------|-------------------|----------|-------------------|----------------------------|
| Model         | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1             | ,556 <sup>a</sup> | ,309     | ,262              | ,540                       |
| 2             | ,655 <sup>b</sup> | ,429     | ,361              | ,502                       |
| 3             | ,658 <sup>c</sup> | ,433     | ,350              | ,506                       |
| 4             | ,713 <sup>d</sup> | ,508     | ,422              | ,478                       |

a. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years)

b. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale

c. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, NIxLGO

d. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, NIxLGO, TPSxLGO

| ANOVA <sup>a</sup> |            |                |    |             |       |                   |
|--------------------|------------|----------------|----|-------------|-------|-------------------|
| Model              |            | Sum of Squares | df | Mean Square | F     | Sig.              |
| 1                  | Regression | 5,726          | 3  | 1,909       | 6,552 | ,001 <sup>b</sup> |
|                    | Residual   | 12,816         | 44 | ,291        |       |                   |
|                    | Total      | 18,542         | 47 |             |       |                   |
| 2                  | Regression | 7,952          | 5  | 1,590       | 6,307 | ,000 <sup>c</sup> |
|                    | Residual   | 10,590         | 42 | ,252        |       |                   |
|                    | Total      | 18,542         | 47 |             |       |                   |
| 3                  | Regression | 8,032          | 6  | 1,339       | 5,222 | ,000 <sup>d</sup> |
|                    | Residual   | 10,510         | 41 | ,256        |       |                   |
|                    | Total      | 18,542         | 47 |             |       |                   |
| 4                  | Regression | 9,414          | 7  | 1,345       | 5,893 | ,000 <sup>e</sup> |
|                    | Residual   | 9,128          | 40 | ,228        |       |                   |
|                    | Total      | 18,542         | 47 |             |       |                   |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

b. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years)

c. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale

d. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, NIxLGO

e. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, NIxLGO, TPSxLGO



## ABSORPTIVE CAPACITY IN DIGITAL STRATEGIES

| Coefficients <sup>a</sup> |                                                         |                             |            |                           |        |      |
|---------------------------|---------------------------------------------------------|-----------------------------|------------|---------------------------|--------|------|
| Model                     |                                                         | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|                           |                                                         | B                           | Std. Error | Beta                      |        |      |
| 1                         | (Constant)                                              | 2,294                       | ,629       |                           | 3,648  | ,001 |
|                           | Work_experience Work experience in the field (years)    | -,144                       | ,085       | -,222                     | -1,698 | ,097 |
|                           | Years_at_company Work experience in the company (years) | -,013                       | ,055       | -,032                     | -,243  | ,809 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,545                        | ,128       | ,551                      | 4,242  | ,000 |
| 2                         | (Constant)                                              | 1,931                       | ,613       |                           | 3,150  | ,003 |
|                           | Work_experience Work experience in the field (years)    | -,117                       | ,080       | -,181                     | -1,473 | ,148 |
|                           | Years_at_company Work experience in the company (years) | -,007                       | ,051       | -,017                     | -,137  | ,892 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,391                        | ,143       | ,395                      | 2,723  | ,009 |
|                           | NI_scale Normative Integration_scale                    | ,340                        | ,123       | ,433                      | 2,756  | ,009 |
|                           | TPS_scale Team Psychological Safety_scale               | -,084                       | ,148       | -,094                     | -,568  | ,573 |
| 3                         | (Constant)                                              | 1,672                       | ,773       |                           | 2,162  | ,036 |
|                           | Work_experience Work experience in the field (years)    | -,126                       | ,082       | -,194                     | -1,543 | ,131 |
|                           | Years_at_company Work experience in the company (years) | -,014                       | ,053       | -,033                     | -,258  | ,798 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,448                        | ,178       | ,453                      | 2,523  | ,016 |
|                           | NI_scale Normative Integration_scale                    | ,333                        | ,125       | ,425                      | 2,666  | ,011 |
|                           | TPS_scale Team Psychological Safety_scale               | -,067                       | ,153       | -,075                     | -,438  | ,664 |
|                           | NlxLGO                                                  | ,063                        | ,113       | ,092                      | ,560   | ,579 |
| 4                         | (Constant)                                              | 1,770                       | ,731       |                           | 2,423  | ,020 |
|                           | Work_experience Work experience in the field (years)    | -,114                       | ,077       | -,175                     | -1,467 | ,150 |
|                           | Years_at_company Work experience in the company (years) | -,019                       | ,050       | -,045                     | -,375  | ,709 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,461                        | ,168       | ,466                      | 2,748  | ,009 |
|                           | NI_scale Normative Integration_scale                    | ,282                        | ,120       | ,359                      | 2,349  | ,024 |
|                           | TPS_scale Team Psychological Safety_scale               | -,068                       | ,144       | -,076                     | -,470  | ,641 |
|                           | NlxLGO                                                  | ,565                        | ,230       | ,826                      | 2,457  | ,018 |
|                           | TPSxLGO                                                 | -,502                       | ,204       | -,800                     | -2,461 | ,018 |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

**TPSxLGO**

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | ,556 <sup>a</sup> | ,309     | ,262              | ,540                       |
| 2     | ,655 <sup>b</sup> | ,429     | ,361              | ,502                       |
| 3     | ,658 <sup>c</sup> | ,433     | ,351              | ,506                       |
| 4     | ,713 <sup>d</sup> | ,508     | ,422              | ,478                       |

- a. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years)
- b. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale
- c. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, TPSxLGO
- d. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, TPSxLGO, NlxLGO

**ANOVA<sup>a</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 5,726          | 3  | 1,909       | 6,552 | ,001 <sup>b</sup> |
|       | Residual   | 12,816         | 44 | ,291        |       |                   |
|       | Total      | 18,542         | 47 |             |       |                   |
| 2     | Regression | 7,952          | 5  | 1,590       | 6,307 | ,000 <sup>c</sup> |
|       | Residual   | 10,590         | 42 | ,252        |       |                   |
|       | Total      | 18,542         | 47 |             |       |                   |
| 3     | Regression | 8,037          | 6  | 1,339       | 5,228 | ,000 <sup>d</sup> |
|       | Residual   | 10,505         | 41 | ,256        |       |                   |
|       | Total      | 18,542         | 47 |             |       |                   |
| 4     | Regression | 9,414          | 7  | 1,345       | 5,893 | ,000 <sup>e</sup> |
|       | Residual   | 9,128          | 40 | ,228        |       |                   |
|       | Total      | 18,542         | 47 |             |       |                   |

- a. Dependent Variable: AC\_scale Absorptive Capacity\_scale
- b. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years)
- c. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale
- d. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, TPSxLGO
- e. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, TPSxLGO, NlxLGO

| Coefficients <sup>a</sup> |                                                         |                             |            |                           |      |
|---------------------------|---------------------------------------------------------|-----------------------------|------------|---------------------------|------|
| Model                     |                                                         | Unstandardized Coefficients |            | Standardized Coefficients | Sig. |
|                           |                                                         | B                           | Std. Error | Beta                      |      |
| 1                         | (Constant)                                              | 2,294                       | ,629       |                           | ,001 |
|                           | Work_experience Work experience in the field (years)    | -,144                       | ,085       | -,222                     | ,097 |
|                           | Years_at_company Work experience in the company (years) | -,013                       | ,055       | -,032                     | ,809 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,545                        | ,128       | ,551                      | ,000 |
| 2                         | (Constant)                                              | 1,931                       | ,613       |                           | ,003 |
|                           | Work_experience Work experience in the field (years)    | -,117                       | ,080       | -,181                     | ,148 |
|                           | Years_at_company Work experience in the company (years) | -,007                       | ,051       | -,017                     | ,892 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,391                        | ,143       | ,395                      | ,009 |
|                           | NI_scale Normative Integration_scale                    | ,340                        | ,123       | ,433                      | ,009 |
|                           | TPS_scale Team Psychological Safety_scale               | -,084                       | ,148       | -,094                     | ,573 |
| 3                         | (Constant)                                              | 2,180                       | ,754       |                           | ,006 |
|                           | Work_experience Work experience in the field (years)    | -,108                       | ,082       | -,166                     | ,197 |
|                           | Years_at_company Work experience in the company (years) | -,002                       | ,052       | -,004                     | ,977 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,339                        | ,170       | ,343                      | ,052 |
|                           | NI_scale Normative Integration_scale                    | ,341                        | ,124       | ,434                      | ,009 |
|                           | TPS_scale Team Psychological Safety_scale               | -,100                       | ,152       | -,112                     | ,514 |
|                           | TPSxLGO                                                 | -,058                       | ,100       | -,092                     | ,568 |
|                           |                                                         |                             |            |                           |      |
| 4                         | (Constant)                                              | 1,770                       | ,731       |                           | ,020 |
|                           | Work_experience Work experience in the field (years)    | -,114                       | ,077       | -,175                     | ,150 |
|                           | Years_at_company Work experience in the company (years) | -,019                       | ,050       | -,045                     | ,709 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,461                        | ,168       | ,466                      | ,009 |
|                           | NI_scale Normative Integration_scale                    | ,282                        | ,120       | ,359                      | ,024 |
|                           | TPS_scale Team Psychological Safety_scale               | -,068                       | ,144       | -,076                     | ,641 |
|                           | TPSxLGO                                                 | -,502                       | ,204       | -,800                     | ,018 |
|                           | NixLGO                                                  | ,565                        | ,230       | ,826                      | ,018 |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

**NlxLGO and TPSxLGO simultaneously**

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | ,556 <sup>a</sup> | ,309     | ,262              | ,540                       |
| 2     | ,655 <sup>b</sup> | ,429     | ,361              | ,502                       |
| 3     | ,713 <sup>c</sup> | ,508     | ,422              | ,478                       |

a. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years)

b. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale

c. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, TPSxLGO, NlxLGO

**ANOVA<sup>a</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 5,726          | 3  | 1,909       | 6,552 | ,001 <sup>b</sup> |
|       | Residual   | 12,816         | 44 | ,291        |       |                   |
|       | Total      | 18,542         | 47 |             |       |                   |
| 2     | Regression | 7,952          | 5  | 1,590       | 6,307 | ,000 <sup>c</sup> |
|       | Residual   | 10,590         | 42 | ,252        |       |                   |
|       | Total      | 18,542         | 47 |             |       |                   |
| 3     | Regression | 9,414          | 7  | 1,345       | 5,893 | ,000 <sup>d</sup> |
|       | Residual   | 9,128          | 40 | ,228        |       |                   |
|       | Total      | 18,542         | 47 |             |       |                   |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale

b. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years)

c. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale

d. Predictors: (Constant), LGO\_scale Learning Goal Orientation\_scale, Work\_experience Work experience in the field (years), Years\_at\_company Work experience in the company (years), NI\_scale Normative Integration\_scale, TPS\_scale Team Psychological Safety\_scale, TPSxLGO, NlxLGO

| Coefficients <sup>a</sup> |                                                         |                             |            |                           |        |      |
|---------------------------|---------------------------------------------------------|-----------------------------|------------|---------------------------|--------|------|
| Model                     |                                                         | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|                           |                                                         | B                           | Std. Error | Beta                      |        |      |
| 1                         | (Constant)                                              | 2,294                       | ,629       |                           | 3,648  | ,001 |
|                           | Work_experience Work experience in the field (years)    | -,144                       | ,085       | -,222                     | -1,698 | ,097 |
|                           | Years_at_company Work experience in the company (years) | -,013                       | ,055       | -,032                     | -,243  | ,809 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,545                        | ,128       | ,551                      | 4,242  | ,000 |
| 2                         | (Constant)                                              | 1,931                       | ,613       |                           | 3,150  | ,003 |
|                           | Work_experience Work experience in the field (years)    | -,117                       | ,080       | -,181                     | -1,473 | ,148 |
|                           | Years_at_company Work experience in the company (years) | -,007                       | ,051       | -,017                     | -,137  | ,892 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,391                        | ,143       | ,395                      | 2,723  | ,009 |
|                           | NI_scale Normative Integration_scale                    | ,340                        | ,123       | ,433                      | 2,756  | ,009 |
|                           | TPS_scale Team Psychological Safety_scale               | -,084                       | ,148       | -,094                     | -,568  | ,573 |
| 3                         | (Constant)                                              | 1,770                       | ,731       |                           | 2,423  | ,020 |
|                           | Work_experience Work experience in the field (years)    | -,114                       | ,077       | -,175                     | -1,467 | ,150 |
|                           | Years_at_company Work experience in the company (years) | -,019                       | ,050       | -,045                     | -,375  | ,709 |
|                           | LGO_scale Learning Goal Orientation_scale               | ,461                        | ,168       | ,466                      | 2,748  | ,009 |
|                           | NI_scale Normative Integration_scale                    | ,282                        | ,120       | ,359                      | 2,349  | ,024 |
|                           | TPS_scale Team Psychological Safety_scale               | -,068                       | ,144       | -,076                     | -,470  | ,641 |
|                           | NlxLGO                                                  | ,565                        | ,230       | ,826                      | 2,457  | ,018 |
|                           | TPSxLGO                                                 | -,502                       | ,204       | -,800                     | -2,461 | ,018 |

a. Dependent Variable: AC\_scale Absorptive Capacity\_scale