

# FINDING MEANS FOR LEAN

*Analyzing the effects of organizational and personal characteristics on employees' commitment to change in a Lean change context*

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#### ABSTRACT

This research was conducted to gain knowledge concerning the influences of leadership, psychological empowerment and openness to experiences on employees commitment to change in a Lean change context. Quantitative research was performed in order to inquire the relations between dimensions of leadership, psychological empowerment and openness to experiences on the one hand and employees commitment to change on the other hand. Data of 40 respondents were used to perform multiple regression analysis. It was found that two types of *leadership* (i.e. transformational leadership and passive management by exception) had a positive influence on employees' commitment to change. Furthermore, one dimension of *psychological empowerment* had a positive influence, and another dimension had a negative influence on employees' commitment to change. Evidence was found that the level of employees' personality dimension *openness to experiences* had a positive influence on their commitment to change.

**Keywords:** Organizational Change, Commitment, Lean, Leadership, Psychological Empowerment, Openness to Experiences

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## INTRODUCTION

Nowadays many companies are having difficulties in highly competitive markets and changing environments. The pressure to improve performance by organizations is extraordinarily high. Many companies are searching and implementing strategies and initiatives to cope with these environmental changes. A possible strategy is Lean which makes an organization more effective and efficient by reducing production time and therefore costs. However, to outperform the competition by means of Lean is not easy to accomplish and requires more than just providing information by spray and pray methods. Support, involvement and cooperation of employees are important elements to strive for during Lean change. In addition, many Lean proponents view committed employees as a necessity for successful change (Adler, 1993; Wickens, 1987; Womack et al., 1990; Schonberger, 2007).

In the current change management literature employees' commitment to change is an important success factor for organizational changes (Armenakis & Bedeian, 1999; Herscovitch & Meyer, 2002). Furthermore, there is a plethora of research about the influences of organizational and personal characteristics on employees' commitment to change. However, there is a lack of research on what influences the commitment to change in a Lean change context. In the existing literature, relations can be found regarding factors which have an influence on employees' commitment to change (Herold, Fedor & Caldwell, 2007; Chen & Chen, 2008; Hill, Seo, Kang & Taylor, 2011). This study aims to inquire whether these relations can also be applied to a Lean change context. Data is gathered from employees of three small manufacturing organizations in the north of The Netherlands, which are in the middle of a Lean change.

This study is focused on the independent variables *leadership*, *psychological empowerment* and the personality dimension *openness to experiences*. The selection of the independent variables was based on the preference of the three organizations involved. These organizations desired knowledge on how the independent variables can be optimized to improve the Lean change initiatives. For instance, organizations can hire managers with certain *leadership* styles, or develop the *leadership* styles of current managers, to generate higher levels of employees' commitment to change. In literature, many articles emphasize the importance of *leadership* in relation to its followers in a change context (Oreg & Berson, 2011; Boseman, 2008). However, there is lack of research on the effects of *leadership* on commitment to change in a Lean change context. Therefore, *leadership* is included in this study as an independent variable.

As organizations are able to influence employees' *psychological empowerment*, it is important to know to what extent this variable influences employees' commitment to change in a Lean change context. In the current literature, *psychological empowerment* is found to have a great influence on

loyalty, organizational commitment, work satisfaction and job performance (Niehoff, Enz & Grover, 1990; Fulford & Enz, 1995; Liden, Wayne, and Sparrow, 2000). However, there is a lack of research about psychological empowerment and its effect on employees' commitment to change in a Lean change context. Therefore, this research includes psychological empowerment as an independent variable.

Besides *leadership* and *psychological empowerment*, employees' personality can also play an important role during organizational change. When it is known which effect personality has on employees' commitment to change, organizations can select potential employees by means of personality tests. Especially the *openness to experiences* personality trait can be important during an organizational change, due to its need to examine experiences. The current literature contains a plethora of research about the importance of personality traits in relation to organizational commitment (Matzler, Renzl, Mooradian, Krogh, Mueller, 2011; Matzler, Renzl, 2007; Aranya, Wheeler, 1986). However, there is a lack of research on the effect of *openness to experiences* on commitment to change. Therefore, *openness to experiences* is included in this research as an independent variable.

### **Research Question and Objective**

The purpose of this study is to gain knowledge concerning the influence of *leadership*, *psychological empowerment* and *openness to experiences* on employees' commitment to change in a Lean change context. The research question is formulated as follows:

*“To what extent do leadership, psychological empowerment and openness to experiences affect employees' commitment to change in a Lean change context?”*

This paper is structured as follows. Firstly, the theory section provides information about the theoretical background of this study. For instance, the theoretical relationships between the dependent and independent variables are explained and hypothesized. Secondly, in the method section the analysis used to test the hypotheses is described. Thirdly, the results of the hypotheses are presented and fourth the results are discussed in the discussion chapter. Finally, the limitations of this study and future research suggestions are provided.

## **THEORY**

### **Commitment to change**

Many researchers have defined commitment to change in different ways. For instance, Coetsee (1999) stated that commitment to change reflects a state in which employees are made aware of a change, have the skills needed to implement it, are empowered to implement it, are motivated to do so by

adequate rewards, and share the vision exemplified by the change. More recently, Neubert and Wu (2009) defined commitment to change as an employee's level of attachment to the implementation of new work rules, policies, programs, budgets and technology. Furthermore, Herscovitch and Meyer (2002) defined commitment to change as a force (mind-set) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative. These conceptualizations share the notion that commitment to change reflects some kind of attachment to and involvement in the change initiative which is a result of employees' awareness of the change, motivating factors and the mental and physical ability to work on behalf of the change (Jaros, 2010).

Herold, Fedor & Caldwell (2007) mentioned that commitment to change reflects not only positive attitudes toward the change, however also alignment with the change, intentions to support it and a willingness to work on behalf of its successful implementation. It is this notion of positive, proactive behavioral intent toward the change, that makes commitment to change distinctive from other attitudinal constructs (Herold, Fedor & Caldwell, 2007). For instance, resistance to change is only about negative attitudes (Kotter & Schlesinger, 1979; Piderit, 2000), and readiness for change and openness to change are about positive dispositions toward a change (Armenakis, Harris & Mossholder, 1993; Wanberg & Banas, 2000).

In current literature, commitment to change is constructed in unidimensional and multidimensional ways. The multidimensional construct of Herscovitch and Meyer (2002) has some advantages in comparison to the unidimensional constructs (which are used by Lau and Woodman, 1995; Conway and Monks, 2008; Herold, Fedor, Caldwell and Liu, 2008; Fedor, Caldwell, Herold, 2006; Neubert and Cady, 2001) in a sense that it seems more precise by its differentiation. The multidimensional construct of Herscovitch and Meyer (2002) can be differentiated as affective, normative and continuance commitment that binds, attach an individual to a course of action which are needed in a change. *Affective Commitment to Change* refers to the desire to provide support for the change based on a belief in its inherent benefits (they want to), *normative Commitment to Change* refers to a sense of obligation to provide support for the change (they ought to) and *continuance Commitment to Change* refers to the recognition that there are costs associated with failure to provide support for the change (they have to).

Herscovitch and Meyer (2002) mentioned that the multidimensional model of commitment to change has advantages in a sense that it improves our ability to predict employees change-related behavior by considering the additive and interactive effects of the three components of commitment. Therefore the multidimensional construct of Herscovitch and Meyer (2002) is used in this research. This results in a precise insight of commitment to change as a general dependent variable. Therefore, the dimensions affective, normative and continuance commitment to change are taken as dependent variables in this research.

## Psychological Empowerment

Empowerment is a set of cognitions shaped by a work environment that reflects the ebb and flow of employees' perceptions about themselves in relation to their work environments (Bandura, 1989; Thomas & Velthouse, 1990). Many researchers have inquired empowerment focused on management practices like delegation of decision making and increasing the access of information and resources for employees on the lower levels of organizations (Blau & Alba, 1982; Bowen & Lawler, 1992; Mainiero, 1986; Neilsen, 1986). However, some researchers have mentioned that empowerment in the sense of management practices presumably not always result in a stronger feeling of empowerment by employees (Thomas & Velthuis, 1990; Conger & Kanungo, 1988). In other words, the psychological experience of empowerment does not always have an equally positive correlation with the empowerment in a sense of management practices. Therefore, psychological empowerment prevails over empowerment in a sense that it demonstrates the result of empowerment management practices.

In contrast to Conger and Kanungo (1988), which defined empowerment as the motivational concept of self-efficacy, Thomas and Velthouse (1990) defined empowerment more broadly as increased intrinsic task motivation manifested in a set of four cognitions reflecting an individual's orientation to his or her work role: *Meaning*, *Competence*, *Self-determination* and *Impact*. Below, each dimension of psychological empowerment is hypothesized to be of influence on commitment to change.

*Meaning* is the value of work goal or purpose, judged in relation to an individual's own ideals or standards (Thomas & Velthouse, 1990) and is the mechanism through which individuals become energized about work (Spreitzer, Kizilos, and Nason 1997). Therefore, a more proper term would be work meaningfulness. It comprises a fit between the beliefs, values, behaviors and the requirements of a work role or job (Brief & Nord, 1990; Hackman & Oldham, 1980). It is this fit and energy that result in a positive attitude, behavior and job satisfaction (Hackman & Oldham, 1980; Spreitzer et al., 1997; Thomas & Tymon, 1994) that in turn presumably support one's ability to handle changes. After all, persons which are optimistic and have positive attitudes are able to generate high performance, due to the fact that they try harder to succeed (Avey, Reichard, Luthans, Mhatre, 2011). Therefore, it can be concluded that employees which are optimistic and having positive attitudes (high work meaningfulness) are presumably more willing to support and get affectively committed to change.

In contrast, when there is no or less fit between the beliefs, values, behaviors and the requirements of the job, employees experience changes as a phenomena that create extra workload and therefore are less optimistic towards the change. As a result, employees with low meaningfulness of their work role, feel more obligated to support the change rather than feeling the inner affective motivation to support the change. Therefore, it is hypothesized that work meaningfulness is negatively related with employees' normative and continuance commitment to change.

*H1a: The work meaningfulness experienced by employees is positively related to their affective commitment to change in a Lean change context.*

*H1b: The work meaningfulness experienced by employees is negatively related to their normative commitment to change in a Lean change context.*

*H1c: The work meaningfulness experienced by employees is negatively related to their continuance commitment to change in a Lean change context.*

*Competence* is the confidence which individuals have about their abilities and capabilities to perform the actions that are deemed necessary for a job (Gist, 1987; Conger & Kanungo, 1988). Competence is a synonym for Conger and Kanungo's (1988) self-efficacy. Armenakis and Harris (2002) stated that employees are motivated to endeavor a change to the extent that they have the confidence that they can succeed. It seems logically to state that a person with high competence has lower anxiety and fear for changes in their environment and therefore less frightened to fail and face change. Indeed, Herold, Fedor and Caldwell (2007) found evidence that self-efficacy is positively related with commitment to change. Therefore, hypotheses are formulated as follows:

*H2a: The competence experienced by employees is positively related to their affective commitment to change in a Lean change context.*

*H2b: The competence experienced by employees is positively related to their normative commitment to change in a Lean change context.*

*H2c: The competence experienced by employees is positively related to their continuance commitment to change in a Lean change context.*

*Self-determination* is the autonomy or freedom and responsibility for an individual's action. In other words, self-determination reflects the sense of having a choice in initiating and regulating actions (Deci, Connel & Ryan, 1989) in a sense of making decisions about work methods, pace and effort on the job (Bell & Staw. 1989; Spector, 1986). Research shown that levels of self-determination are related to job satisfaction (Liden, Wayne, Sparrowe & Bradway, 1993; Thomas and Tymon, 1994). However, when employees face too high self-determination, they can feel a lack of direction or out of control due to the overload of responsibility they have to deal with (Guangping & Peggy, 2009). In addition, when employees have too low self-determination, it results in feelings of being controlled, having no freedom and as a result feel suffocated (Guangping & Peggy, 2009). These unsatisfied, non-optimistic feelings results in less willingness to put effort on the job (Avey, Reichard, Luthans, Mhatre, 2011). Therefore, the following hypotheses are formulated.



*H3a: There is a curvilinear relationship between the self-determination of employees on the one hand, and their affective commitment to change in a Lean change context on the other hand, with both high and low levels of self-determination giving rise to low commitment levels.*

*H3b: There is a curvilinear relationship between the self-determination of employees on the one hand, and their normative commitment to change in a Lean change context on the other hand, with both high and low levels of self-determination giving rise to low commitment levels.*

*H3c: There is a curvilinear relationship between the self-determination of employees on the one hand, and their continuance commitment to change in a Lean change context on the other hand, with both high and low levels of self-determination giving rise to low commitment levels.*

*Impact* is the extent of influence an employee's action has on the system (Thomas and Velthouse 1990). More specifically, it is the degree to which an individual can influence strategic, administrative or operating outcomes at work (Ashforth, 1990). Therefore, a more proper term would be personal impact. Employees who feel that they have high personal impact, are probably more committed to change because they feel that they are in control and have power and therefore will be more likely to feel that they can handle the change. Therefore the following is hypothesized:

*H4a: The personal impact experienced by employees is positively related to their affective commitment to change in a Lean change context.*

*H4b: The personal impact experienced by employees is positively related to their normative commitment to change in a Lean change context.*

*H4c: The personal impact experienced by employees is positively related to their continuance commitment to change in a Lean change context.*

### **Openness to Experiences**

Nowadays a widely accepted taxonomy of personality traits is called the "Big Five". The Big Five phrase is chosen to emphasize that each dimension is extremely broad in a sense that it summarizes a large number of distinct more specific characteristics (John & Srivasta, 1999). One factor of the big five personality dimensions is the most disputed one in a sense that there is still an ongoing discussion about the proper designation (Koutstaal, 2012). Despite the fact that there are different terms for this dimension (e.g. openness to intellect, culture), the most accepted and common one is *Openness to Experiences*.

According to McCrae and Costa (1996), openness to experiences relates to the breadth, depth and permeability of consciousness and in the recurrent need to enlarge and examine experience. To measure openness to experiences, the NEO-PI-R is developed. This standardized and frequently used

personality questionnaire contains six facets for the *Openness to Experiences* dimension. These facets are: *Ideas, Fantasy, Aesthetics, Feelings, Actions, and Values* (Costa & McCrae, 1992).

Each facet has its unique meaning and fits within the definition of openness to experiences. *Ideas* implies being open-minded and having a willingness to consider new ideas and pursuing intellectual interests. *Fantasy* means the possession and valuing a vivid imagination and fantasy life. *Aesthetics* stands for having a high esteem and can be moved by art, music, poetry and beauty. *Feelings* implicates that a person is receptive to inner feelings, deeply experience their emotions, and see them as important phenomena to their lives. *Actions* means the willingness to experience new activities, foods, and places, and prefer novelty to routine. *Values* implies that a person is willing to reexamine social, political, and religious values (Griffin & Hesketh, 2004).

Taking these facet descriptions into account, it can be concluded that someone with high openness to experiences in general has an appreciation for the originality of art, emotions, is adventurous, has unusual ideas, imaginations, intellectual curiosity, and a variety of experiences. In contrast to a more closed person, someone with a high openness of experiences tend to be more creative, curious, aware of their feelings and sees new upcoming projects, activities and programs more as opportunities and challenges instead of problems. In addition, a closed person have in general more traditional and conventional ideas/interests and prefer the more plain, straightforward and obvious over the complex, ambiguous and subtle. Where a closed person is more cautiousness and prefer the traditional and consistent endeavors, a person with high openness to experience is more innovative, inventive and curious in a sense that he or she makes the choice to take the risk of following a new path and face the unknown.

While openness to experiences and extraversion are different in its essence, they may incorrectly and mistakably be seen as substitutable terminologies for each other. Openness to experiences is more about being inventive and having intellectual curiosity where extraversion is more about engagement with the external world in a sense of worshipping interaction with people. For instance, an open person tends to be adventurous due to its intellectual curiosity, however this does not implicate that he or she likes to be in the middle of attention and therefore being an extravert. Consequently, it could be concluded that extraversion and openness to experiences are different concepts.

The need to examine experiences is important during organizational changes. For instance, organizational changes are often combined with extra workload and more tensions due to the fact that employees face the newly and unknown (Elrod & Tippett, 2002; Grant, 1996). People with high openness to experiences actually appreciate these new situations and therefore are more likely to operate enthusiastically and embrace the changes. Therefore, employees with high openness to experiences presumably feel the desire to provide support for the change and therefore are affectively

committed to the change. However, this desire is probably dependent from any obligation, requisition or compulsory, in a sense that starting a new adventure and face the newly and unknown is less important than any unpleasant feelings that comes with obligation or compulsory. In other words, when employees have less intellectual curiosity and low willingness to experience new activities, they feel more obligated when any change is introduced. Consequently, it is more likely that openness to experiences is negatively related to employees' normative and continuance commitment to change. Therefore the following hypotheses are formulated.

*H5a: Employees' openness to experiences is positively related to their affective commitment to change in a Lean change context.*

*H5b: Employees' openness to experiences is negatively related to their normative commitment to change in a Lean change context.*

*H5c: Employees' openness to experiences is negatively related to their continuance commitment to change in a Lean change context.*

## **Leadership**

Many research has been done about leadership and several different definitions are generated by researchers and well-known leaders. For instance, Winston Churchill defined leadership as the ability to influence people to set aside their personal concerns and support a larger agenda. This definition implicates that leaders motivate people to perform above and beyond the call of duty to enhance group success. In addition, Burns (1978) defines leadership as leaders inducing followers to act for certain goals that represent the values, motivations, the wants and needs, the aspirations and expectations of both leaders and followers. It is important to note that not only the expectations and aspirations of the leader are met, however also the ones of the followers. Furthermore, Boseman (2008) stated a definition of leadership as the act of stimulating, engaging and satisfying the motives of followers that results in the followers taking course of action toward a mutually shared vision. It seems that definitions about leadership embrace three important components, namely: the leader, the followers and the context or situation in which the leader and followers find themselves (Boseman, 2008). The question is, which leadership style is the most effective one in a Lean change context.

Researchers have combined leadership behaviors in order to form different kind of leadership styles (Conger & Kanungo, 1998; Avolio Bass, & Jung, 1999; Bass, 1985). Currently, the transactional vs transformational paradigm is according to Sims, Faraj and Yun (2009) the most dominate one in the leadership literature. Therefore, this research will focus on the two major types of leadership within that paradigm (e.g. Transactional leadership and transformational leadership).

### ***Transactional Leadership***

In general transactional leadership is seen as an exchange process between a leader and their followers based on the fulfillment of contractual obligations and is typically represented as setting objectives, monitoring and controlling outcomes (Antonakis, Avolio & Sivasubramiam, 2003). The three types of transactional leadership are *Management by Exception (Active and Passive)* and *Contingent Reward* (Bass, 1985).

*Passive Management by Exception* implicates that the leader passively waits for deviations to intervene (Bass & Avolio, 1994). In other words, leaders only take corrective actions after noncompliance has occurred or when mistakes already happened. Due to the fact that leaders only take action when something goes wrong, and therefore do not motivate and stimulate employees to put more effort on the job (which is often needed during change) it seems logical to state that passive management by exception is negatively related with employees' affective commitment to change. In contrast, passive management by exception, due to its control over noncompliance's, presumably results in employee compliance and a sense of obligation. Therefore passive management by exception is positively related with employees' normative and continuance commitment to change. Consequently, the following hypotheses are formulated:

*H6a: Passive management by exception is negatively related to employees' affective commitment to change in a Lean change context.*

*H6b: Passive management by exception is positively related to employees' normative commitment to change in a Lean change context.*

*H6c: Passive management by exception is positively related to employees' continuance commitment to change in a Lean change context.*

In contrast, *Active Management by Exception* implicates that leaders shows active vigilance (Antonakis, Avolio & Sivasubramiam, 2003) and actively/continuously anticipates, monitors deviations from standards while taking corrective actions (Bass & Avolio, 1994). This leadership behavior is also focused on the fulfillment of standards and extrinsic rewards rather than intriguing employees and reward them intrinsically. Therefore, employees presumably do not go the extra mile and are not becoming affectively committed to change. However, due to the slightly motivation and stimulation that can be gained from the continuously controlling of the performance standards, active management by exception probably show a slight positive relation with employees' normative commitment to change. Additionally, due to its active control over compliance's, presumably results in employee compliance and therefore relates positively with employees continuance commitment to change.

*H7a: Active management by exception is negatively related with employees' affective commitment to change in a Lean change context.*

*H7b: Active management by exception is positively related with employees' normative commitment to change in a Lean change context.*

*H7c: Active management by exception is positively related with employees' affective commitment to change in a Lean change context.*

The third type, *Contingent Reward* is labeled as the most proactive one which is focused on clarifying role and task requirements and providing followers with material or psychological rewards contingent on the fulfillment of contractual obligations (Antonakis, Avolio & Sivasubramiam, 2003; Bass & Avolio, 1994). In other words, employees are rewarded in tangible (e.g. extra day off, preferred work, financial benefits) and non-tangible (e.g. praise, recognition) ways (Kirkbride, 2006). This positive tangible and non-tangible stimulation probably results in more positive attitudes and willingness to support the change in a sense of positive inner feelings towards the change. In addition, the stimulation for employees to gain their targets by financial rewards can result in employees' normative commitment to change in a sense that they feel obliged to support the change. Consequently, contingent reward is positively related to employees' affective and normative commitment to change. Furthermore, the motivations that result in positive inner feelings, fade away the feeling of mandatory cooperation and support for the change. Therefore, employees' continuance commitment to change is negatively related to contingent reward. The following hypotheses are formulated.

*H8a: Contingent reward is positively related with employees' affective commitment to change in a Lean change context.*

*H8b: Contingent reward is positively related with employees' normative commitment to change in a Lean change context.*

*H8c: Contingent reward is negatively related with employees' continuance commitment to change in a Lean change context.*

### ***Transformational leadership***

In contrast to transactional leadership, transformational leadership inspires and motivates employees to go the extra mile and perform beyond expectations instead of only stimulating and instigating employees to accomplish what they are told to do (Bass 1985; Podsakoff et al., 1990). Therefore, transformational leadership can be found on the other end of the continuum. According to Podsakoff et al. (1990), transformational leadership is multidimensional by nature which are categorized in six key behaviors; *Identifying and Articulating a Vision, Providing an Appropriate Model, Fostering the*

*Acceptance of Group Goals, High Performance Expectations, Providing Individual Support and Intellectual Stimulation.*

*Identifying and Articulation a Vision* is the leaders behavior aimed at identifying new opportunities for his or her unit, division or company, and developing, articulating and inspiring others with his or her vision of the future (Podsakoff et al., 1990). This kind of behavior is positively related with affective commitment due to the “inspiring” element. Inspiring means stimulating or exalting to the spirit, and therefore results in employees’ emotional attachment with the leader and his thoughts, ideas and plans. Employees which are not yet convinced by the thoughts, ideas and plans of their leader, will face peer pressure of employees who are convinced by their inspiring leader. Furthermore, the inspiring element of leaders result in lesser feeling of mandatory support for the change, however, in contrast to more inner support for the change. Therefore, the following hypotheses are formulated.

*H9a: Identifying and articulating a vision is positively related with employees’ affective commitment to change in a Lean change context.*

*H9b: Identifying and articulating a vision is positively related with employees’ normative commitment to change in a Lean change context.*

*H9c: Identifying and articulating a vision is negatively related with employees’ continuance commitment to change in a Lean change context.*

*Providing an Appropriate Model* implicates that the leader sets an example by using his or hers espoused values (Podsakoff et al., 1990). Giving examples that indicates what needs to happen and in what way it needs to be fulfilled, results in greater understanding and perception by employees about what, why and how things needs to be done. In turn, this results in higher support for the change in sense of greater beliefs about its inherent benefits (affective commitment) and higher severity of the situation with the related urgency of the change, which results in higher normative and continuance commitment.

*H10a: Providing an appropriate model is positively related with employees’ affective commitment to change in a Lean change context.*

*H10b: Providing an appropriate model is positively related with employees’ normative commitment to change in a Lean change context.*

*H10c: Providing an appropriate model is positively related with employees’ continuance commitment to change in a Lean change context.*

*Fostering the Acceptance of Group Goals* is the leaders behavior that is aimed at promoting cooperation among employees and getting them to work together toward a common goal (Podsakoff et

al., 1990). This transformational leader behavior results in greater group sphere in a sense that employees within or between units are motivated to cooperate, collaborate and being helpful with each other. The common group goals which are generated by this kind of behavior, results in employees felt of being part of something bigger than themselves. To maintain connection with the group, employees do need, less or more, to stay with the groups culture (i.e. norms and values) and way of thinking (i.e. mindset) and acting. When a leader is able to create an acceptance of the desired common group goals and stimulates employees to form a strong group culture, then employees are more willing to stay affective, normative and continuance committed to change.

*H11a: Fostering the acceptance of group goals is positively related to employees' affective commitment to change in a Lean change context.*

*H11b: Fostering the acceptance of group goals is positively related to employees' normative commitment to change in a Lean change context.*

*H11c: Fostering the acceptance of group goals is positively related to employees' continuance commitment to change in a Lean change context.*

*High Performance Expectations* is a leaders behavior that demonstrates the leaders expectations for excellence, quality and/or high performance on the part of the followers (Podsakoff et al., 1990). This leader behavior probably results in higher normative and continuance commitment due to the fact that the leader demonstrates that he or she only accepts the best performance. Employees are feeling motivated or obligated or forced to perform according to what their leader wants from them. In addition, the “demonstration” part implicates an inspirational leadership aspect of behavior. This results in higher employees' affective commitment for the same reasons as described at *Identifying and Articulation a Vision*.

*H12a: High performance expectations is positively related to employees' affective commitment to change in a Lean change context.*

*H12b: High performance expectations is positively related to employees' normative commitment to change in a Lean change context.*

*H12c: High performance expectations is positively related to employees' continuance commitment to change in a Lean change context.*

*Providing Individualized Support* is a leaders behavior that indicates that he or she respects followers and is concerned about their personal feelings and needs (Podsakoff et al., 1990). This behavior leads to a tighter and stronger relationship between the leader and employees. Therefore, employees are more easily willing to become affectively committed to the proposed change provided by their leader. In addition, even when employees are not agreed with the proposed change, they are more willing to

support the change because they don't want to disappoint their leader which takes such a good care for them. In contrast, employees' continuance commitment to change is negatively hypothesized to individualized support by means of the inner positive feelings that are created by the leader. These positive inner feelings about the change, result in lesser feeling of mandatory support. Therefore the following hypotheses are formulated.

*H13a: Providing individualized support is positively related to employees' affective commitment to change in a Lean change context.*

*H13b: Providing individualized support is positively related to employees' normative commitment to change in a Lean change context.*

*H13c: Providing individualized support is negatively related to employees' continuance commitment to change in a Lean change context.*

*Intellectual Stimulation* is a leaders behavior that challenges followers to re-examine some of their assumptions about their work and rethink how it can be performed (Podsakoff et al., 1990). This type of behavior indicates the leaders motivation to let employees change their way of fulfilling work when needed in the sense of efficiency and effectiveness. When a leader has this type of behavior, he or she can let employees come up with the change (which the leaders actually wants) by themselves. As a result employees feel the desire to change and therefore become affectively committed towards change. On the other hand, when a leader is hammering on developing new ways of doing things, employees feel that they need to change their routines by obligation. Therefore, this type of behavior is also positively related towards employees normative and continuance commitment to change.

*H14a: Intellectual stimulation is positively related to employees' affective commitment to change in a Lean change context.*

*H14b: Intellectual stimulation is positively related to employees' normative commitment to change in a Lean change context.*

*H14c: Intellectual stimulation is positively related to employees' continuance commitment to change in a Lean change context.*

### **Control Variables**

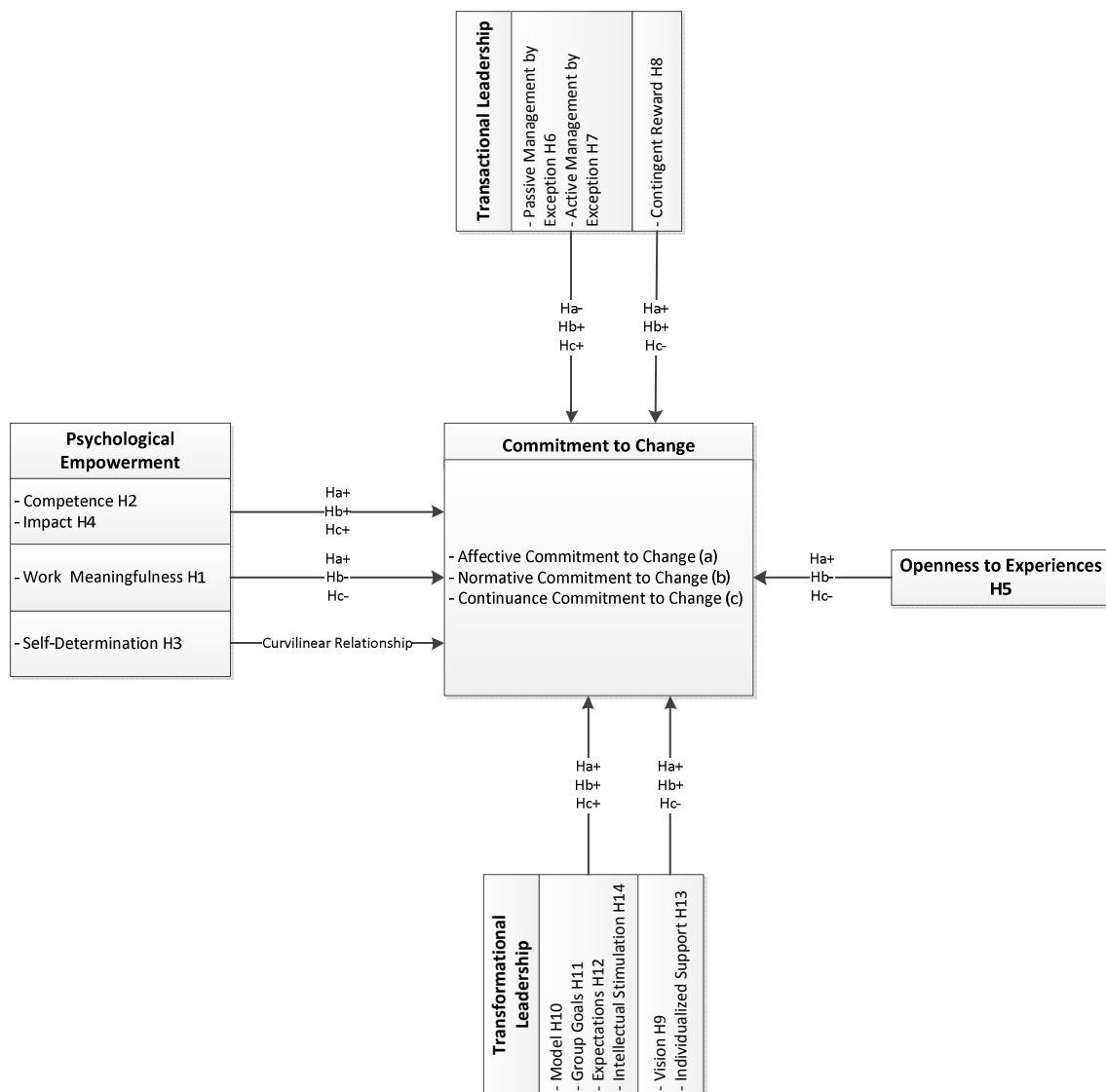
In literature it is argued that age, tenure and education might have an influence on commitment to change. However, there is still no consensus about the influence of these personal variables (Iverson, 1996; Madsen, Miller & John, 2005). Additionally the organizations included in this study can have their own influences on employees' commitment to change. Therefore age, tenure, education and organization are included as control variables in this study as potential confounders.



## Conceptual Model

Figure 1 illustrates a conceptual model, which is in line with the hypotheses described. The dependent variable commitment to change is placed in the center of this model. All the independent variables are connected by arrows to the dependent variable. Each arrow carries indications that represents the hypotheses to each dimension of the dependent variable. For example, the relation hypothesized between openness to experiences (indicated by H5) and affective commitment to change is indicated by Ha+. This indicates a positive relation between those variables.

**FIGURE 1**  
**Conceptual Model**



## RESEARCH METHOD

### Data collection

For this study data was gathered by means of a questionnaire which was designed in order to measure the control variables and the seventeen variables which are related to the hypotheses. The questionnaire was physically distributed to employees of three organizations, namely: Biddle, MSE Forks and Neopost. All three organizations initiated Lean which is an organizational change. Employees who had to deal with the changes as a consequence of the Lean program, were asked to fill in the questionnaire at free will. In order to prevent socially acceptable answers, anonymity was guaranteed.

The questionnaire included items which were conscientiously selected and developed in line with the existing literature. In addition, the questionnaire was approved by the management of each organization. The questionnaire contained 71 items which were tested to be completed within 10 minutes. The variables were measured by 61 items, and each item could be answered on a 7 point likert scale anchored with 1= *Strongly Disagree* and 7 = *Strongly Agree*. The remaining 10 items were used to gather demographic information such as gender, age and education.

The questionnaire was distributed among a total amount of 82 employees, of which were 20 from Biddle, 37 from MSE Forks and 25 from Neopost. Each employee had the opportunity to physically contact a manager who could provide some clarification when needed. As can be seen in table 1, 40 questionnaires were returned which resulted in a response rate of 48.78 %. The distribution per organization within the sample was 25% for Biddle, 45% for MSE Forks and 30 % for Neopost. The sample consists of one female respondent and 39 male respondents. This represents the population distribution of gender within these three manufacturing organizations. The average educational level was between LBO and MBO (level 7 is WO, level 6 is HBO, level 5 is MBO, level 4 is Havo, level 3 is VMBO, level 2 is LBO, level 1 is BO). Furthermore, each organization had a mean tenure between 12 and 16 years and a mean age between 34 and 41 years. This data is representative for the population of these organizations.

**TABLE 1**

**Response percentages, gender, tenure, age and education per organization**

	# Respondents	% per organization within sample	Men	Women	Tenure		Age		Education	
					Mean	SD	Mean	SD	Mean	SD
Biddle	10	25	10	0	13.05	12.21	41	10.45	5	1.70
MSE Forks	18	45	17	1	12.06	9.61	34.56	8.60	3.72	2.02
Neopost	12	30	12	0	15.75	7.05	46.42	4.60	2.25	1.60
Total	40	100	39	1	13.41	9.55	39.73	9.49	3.60	2.06

## Data analysis

The items which were extracted from literature were translated because all respondents were Dutch. To assure that the essence and real meaning of the original items are retained in the questionnaire used by this study, the translations were checked and corrected by an expert in the field of HRM and Psychology.

In order to generate scales that are valid and reliable at the same time, an explorative factor and reliability analyses were performed in several steps. Firstly, a principal component analysis with a varimax rotation was performed. This resulted in an overview of all the loadings of items per variable on factors. Each factor is representative for one variable. However, there were some items that did not load on the factor they belonged to, and loaded on a factor that represented a different variable. These items were removed. Secondly, items which had a relatively low loading on a factor (factor loading below .50) were removed. Furthermore, it was remarkable that the six dimensions of *transformational leadership* loaded on the same factor. Additionally, the three items used for variable *contingent reward* loaded on three different factors. This reduced that amount of variables from 17 to 11, therefore the fixed number of factors was set to 11 instead of 17. Fourthly, a further selection of items per scale was based on the internal consistency which is measured by use of Cronbach's alpha. This measurement value indicates the reliability of the items that are used in the questionnaire. Cronbach's alpha coefficient values should be 0.7 or higher to indicate an acceptable consistency (Pallant, 2007). Therefore, this research indicates Cronbach's alpha below 0.7 as not reliable and above 0.7 as reliable. Each set of items that represents a variable were measured by means of reliability analysis. Items were removed in order to generate a reliable Cronbach's alpha. The number of selected items per variable, and related Cronbach's alpha of the dependent and independent variables, are shown in table 2 and 3 respectively. Below the selection of items per variable are explained, appendix A contains the initial set of items per variable with their Dutch translations, related scale and factor loading.

### *Employees' commitment to change*

Affective, normative and continuance commitment to change were measured using items which were used in Herscovitch and Meyer's (2002) multidimensional construct. To reduce the amount of time to fulfill the questionnaire, four out of six items per dimension were selected. The items with the highest factor loadings in Herscovitch and Meyer were selected for this study. One item of the variable *affective commitment to change* was removed because it loaded relatively high on the *work meaningfulness* factor. This resulted in a small reduction of Cronbach's alpha from .84 to .81. Furthermore, two items of the variable *normative commitment to change* were removed in order to increase the Cronbach's alpha from .52 to .77. In addition, two items of the variable *continuance commitment to change* were removed in order to increase the Cronbach's alpha from .71 to .77.

**TABLE 2**  
**Reliability scores per dependent variable**

Dependent Variables	# Items	Cronbach's $\alpha$
Affective Commitment to Change	3	.81
Normative Commitment to Change	2	.77
Continuance Commitment to Change	2	.77

**TABLE 3**  
**Reliability scores per independent variable**

Independent Variables	# Items	Cronbach's $\alpha$
Psychological Empowerment – Work meaningfulness	3	.72
Psychological Empowerment – Competence	2	.91
Psychological Empowerment – Self-Determination	1	-
Psychological Empowerment – Personal Impact	3	.86
Openness to Experiences	4	.70
Transactional Leadership - Passive Management by exception	2	.76
Transactional Leadership - Active Management by exception	1	-
Transactional Leadership - Contingent Reward	-	-
Transformational Leadership	13	.92

***Psychological empowerment***

The four variables of psychological empowerment are measured by means of the questionnaire from Spreitzer (1995). Items for the variable *work meaningfulness* were taken from Tymon (1988). The *competence* items were adapted from Jones's (1986) self-efficacy scale. The *self-determination* items were adapted from Hackman and Oldham's (1985) autonomy scale and the *personal impact* items were taken from Ashforth's (1990) helplessness scale. The initial set contained three items per variable.

None of the items that represents the variable *work meaningfulness* were removed. All three items loaded on the same scale and had a Cronbach's alpha of .72. Based on the reliability analysis, one item of the variable *competence* was removed. This resulted in an increase of the Cronbach's alpha from .51 to .91.

One item of the variable *self-determination* was removed because it did not load on the same factor as the other two items of *self-determination*. Additionally this removed item contained two questions which were interwoven into one question, consequently this made it more difficult to answer correctly. In view of the average educational level of this sample, which was 80% MBO or lower, it can be concluded that this was not a good question. Furthermore, the two other items did not load on the same factor. It was decided to remove the reversed question and keep one item to represent this variable. Because of the low reliability scores and inconsistent loadings in the factor analysis, all the reverse

questions were removed from the initial set of items. Unfortunately, there was only one item left for the variable *self-determination*, therefore a Cronbach's alpha could not be given in table 3. In contrast, none of the items that represents the variable *personal impact* were removed. All three items loaded on the same scale and had a reliable Cronbach's alpha of .86.

### ***Openness to experiences***

Items from Costa and McCrae's (1992) NEO-FFI and John & Srivastava's (1999) BFI scale were used to measure *openness to experiences*. Five items did not load on the same scale as the others did, therefore these items were removed. Two more items were removed in order to increase the Cronbach's alpha from .49 to .70.

### ***Leadership***

Items regarding the variable *passive management by exception* were extracted from Bass and Avolio's (2004) MLQ-5X scale. One item was removed in order to create an acceptable reliability score, this resulted in an increase of the Cronbach's alpha from .59 to .76.

Items regarding the variable *active management by exception* were also extracted from Bass and Avolio's MLQ-5X scale. One item was removed because it did not load on the same factor as the other two items. However the two items left, generated a very low reliability score of .35. Therefore, it was decided to keep the item that covers the subject of the variable *active management by exception* more. Since only one item was left to measure this variable, the Cronbach's alpha could not be presented in table 3.

Items regarding the variable *contingent reward* were extracted from Podsakoff et al. (1996) behavioral scale. However, the three items used in this study did not load on the same factor. Therefore, the variable *contingent reward* was excluded for further analysis.

*Transformational leadership* items were selected from Podsakoff et al. (1990) behavioral scale. The items with the highest factor analysis score were selected. This resulted in three items per dimension and a total amount of eighteen items for *transformational leadership*. The items of each dimension of the independent variable *transformational leadership* loaded on the same factor. Therefore hypotheses 9a,b,c up to and including 14a,b,c are combined and shortened into only three hypotheses. As a result, the hypotheses for *transformational leadership* are formulated as follows:

*H15a: Transformational leadership is positively related to employees' affective commitment to change in a Lean change context.*

*H15b: Transformational leadership is positively related to employees' normative commitment to change in a Lean change context.*

*H15c: Transformational leadership is positively related to employees' continuance commitment to change in a Lean change context.*

Four items did not load on the same factor as the other items, therefore these items were removed. Additionally, one item was removed because it had a low loading on the *transformational leadership* factor. Another item loaded on two different factors, however because it loaded a little bit higher on the *transformational leadership* factor, it was decided to keep this item in the *transformational leadership scale*. The Cronbach's alpha of variable *transformational leadership* was .92.

Selection of the items which were useful for this study was based on the reliability and factor analysis. In order to test if there is a relation between the independent and dependent variables, a correlation analysis was performed. Additionally, a hierarchical multiple regression analysis was performed in order to check if these relationships are still significant when the control variables age, education and organization were included. Since this study contains three dependent variables, the multiple hierarchical regression analysis was performed three times. Each multiple hierarchical regression analysis contained two steps. First, the control variables age, education and organization are simultaneously included in the first step of analysis. Second, the dependent variables are simultaneously included in the second step of analysis. In the next chapter, table 5 presents the results of the multiple hierarchical analyses. In this study hypotheses are confirmed when the results of the multiple hierarchical regression analyses is significant ( $p < .05$ ).

Hypotheses 3a,b and c were tested by means of non-linear regression analysis, because the hypotheses predict curvilinear instead of linear relations. Non-linear regression analysis was performed by putting the independent variable in the first step of a multiple regression analysis. During the second step the squared values of this variable were included.

## RESULTS

### Correlation analysis

Table 4 shows the correlations of the variables that are part of this study. However, as was mentioned before in the method section, the variable *contingent reward* was not included for further analyses due to the fact that the items did not load on the same factor. As shown in table 4, three significant correlations can be found between the dependent and independent variables. First, there is a positive correlation between employees' *work meaningfulness* and their *affective commitment to change* (.39,  $p < 0.05$ ). Second, employees' *openness to experiences* is positively related with their *affective commitment to change* (.34,  $p < 0.05$ ). Third, *passive management by exception* is positively correlated with employees' *normative commitment to change* (.42,  $p < 0.01$ ).

Furthermore, table 4 shows three interesting findings. First, the correlations between the dependent and independent variables that are significant are in line with the hypotheses. Second, most correlations between the dependent and independent variables that are less or insignificant are mostly, however not completely, in line with the expectations. For instance, variable *personal impact* had negative insignificant correlation coefficients with the dependent variables *affective*, *normative* and *continuance commitment to change*. Third, the mean of the variable *affective commitment to change* was relatively high and the standard deviation is relatively low. In addition, the mean values of employees' *work meaningfulness* and *competence* were also highly valued and are related with a relatively low standard deviation.

**TABLE 4**  
**Pearson Correlations, Mean, Standard Deviation and Reliability**

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Age	39.77	9.61	(-)													
2 Education	3.56	2.07	-.25	(-)												
3 Organization	3.08	.74	.24	-.49**	(-)											
4 Affective Commitment to change	6.28	.74	.14	.18	-.22	(.81)										
5 Continuance Commitment to change	4.24	1.92	.03	.05	.05	-.06	(.77)									
6 Normative Commitment to change	4.05	1.62	.14	-.01	.19	-.01	.51**	(.77)								
7 Psychological Empowerment-Work Meaningfulness	6.26	.75	.35*	-.12	.01	.39*	-.32	-.09	(.72)							
8 Psychological Empowerment-Personal Impact	4.80	1.33	.09	.04	-.03	-.01	-.09	-.29	.15	(.86)						
9 Psychological Empowerment-Competence	6.32	.68	.18	.16	.05	.17	.20	.27	.06	.10	(.91)					
10 Psychological Empowerment-Self-Determination	5.59	1.16	-.02	-.02	.00	.01	-.30	-.14	.05	-.01	.29	(-)				
11 Transformational Leadership	5.31	.80	-.04	-.15	.09	.20	.14	.05	-.02	.18	.03	-.09	(.92)			
12 Active Management by Exception	3.36	1.48	-.08	-.08	.14	-.11	.18	-.08	-.04	.33*	-.18	-.11	.03	(-)		
13 Passive Management by Exception	4.08	1.52	.15	.03	.21	.06	.10	.42**	.02	-.04	.25	-.08	-.37*	-.06	(.76)	
14 Openness to experiences	5.74	.81	-.08	.35*	-.01	.34*	-.20	-.19	.18	.08	-.14	-.05	-.03	.10	-.08	(.70)

Legend: \* Correlation is significant at the .05 level (2-tailed) \*\* Correlation is significant at the .10 level (2-tailed) Listwise N=39

Note: Reliability values can be found between diagonal parentheses

## Regression analysis

### *Psychological empowerment*

Table 5 shows one significant and one partly significant result. For instance, relation between *affective commitment to change* and *work meaningfulness* was almost significant ( $B = .31, p < .10$ ). It must be noted that the p-value is closer to the .05 value than .10. This result is in line with hypothesis 1a, *the work meaningfulness experienced by employees is positively related to their affective commitment to change in a Lean change context*. Furthermore, relation between *normative commitment to change* and employees' *personal impact* was significant ( $B = -.46, p < .05$ ). This result is not in line with hypothesis 4b, *the personal impact experienced by employees is positively related to their normative commitment to change in a Lean change context*. It is remarkable that hypotheses 4a and 4c were also not in line with the results of the regression analyses, however these were not significant.

Hypotheses 3a,b and c, *There is a curvilinear relationship between the self-determination of employees on the one hand, and their affective, normative and continuance commitment to change in a Lean change context on the other hand, with both high and low levels of self-determination giving rise to low commitment levels*, were tested by non-linear regression analysis. However, according to the non-linear regression analysis it could be concluded that the results were not significant ( $P > .05$ ).

Hypotheses 1b, 1c, 2a, 2b, and 2c were in line with the results, however were insignificant.

**TABLE 5**  
**Multiple Regression Analysis**

Independent variables	Dependent variables		
	Affective commitment	Normative commitment	Continuance commitment
	B	B	B
	Step 1	Step 1	Step 1
Age	.02	.02	.01
Education	.05	.10	.10
Organization	-.21	.50	.25
	Step 2	Step 2	Step 2
Age	.02	.02	.01
Education	.05	.10	.10
Organization	-.23	.48	.31
Psychological Empowerment - Work Meaningfulness	.31 <sup>-</sup>	-.11	-.76
Psychological Empowerment - Competence	.18	.35	.52
Psychological Empowerment - Personal Impact	-.10	-.46*	-.32
Openness to Experiences	.34*	-.27	-.35
Passive Management by Exception	.11	.46*	.16
Active Management by Exception	.01	.12	.41
Transformational Leadership	.33*	.58	.55

Legend: \* Correlation is significant at the .05 level (2-tailed) \*\* Correlation is significant at the .10 level (2-tailed) <sup>+</sup> Significant at the .10 level (2-tailed) Note: All the control variables are included in Step 1. All the independent variables are included at the same time in Step 2

### ***Openness to experiences***

Table 5 shows a significant relation between employees' *openness to experiences* and *affective commitment to change* ( $B = .34, p < .05$ ). This result is in line with hypothesis 5a, *employees' openness to experiences is positively related to their affective commitment to change in a Lean change context*. Furthermore, employees' *openness to experiences* was not significant related to employees' *normative and continuance commitment to change*.

### ***Passive management by exception***

*Passive management by exception* was found significantly related with employees' *normative commitment to change* ( $B = .46, p < .05$ ). This result was in line with hypothesis 6b, *passive management by exception is positively related to employees' normative commitment to change in a Lean change context*. Furthermore, table 5 shows that the relation between *passive management by exception* and *affective and continuance commitment to change* were not significant.



### ***Active management by exception***

Relations between *active management by exception* and *affective, normative and continuance commitment to change* were not significant.

### ***Transformational leadership***

*Transformational leadership* is significantly related to employees' *affective commitment to change* ( $B = .34, p < .05$ ). This is in line with hypothesis 15a, *transformational leadership is positively related to employees' affective commitment to change in a Lean change context*. In contrast, table 5 shows that *transformational leadership* had no significant relation with employees' *normative and continuance commitment to change*.

## **CONCLUSION**

### **Confirmed hypotheses**

Results show that there is statistical evidence for accepting hypotheses H1a, H4b, H5a, H6b and H15a.

#### ***Psychological empowerment (H1a, H4b)***

The results show a positive correlation between employees' *work meaningfulness* and their *affective commitment to change*. In addition, multiple regression analysis demonstrates that there is a positive relation between the concepts ( $B = .31, p < .10$ ). Therefore, hypothesis 1a, *the work meaningfulness experienced by employees is positively related to their affective commitment to change in a Lean change context*, is confirmed.

#### ***Openness to experiences (H5a)***

The results show a positive correlation between employees' *openness to experiences* and their *affective commitment to change*. In addition, multiple regression analysis demonstrates that there is a positive relation between the concepts ( $B = .34, p < .05$ ). Therefore, hypothesis 5a, *employees' openness to experiences is positively related to their affective commitment to change in a Lean change context*, is confirmed.

#### ***Passive management by exception (H6b)***

The results show a positive correlation between *passive management by exception* and employees' *normative commitment to change*. In addition, multiple regression analysis demonstrates that there is a positive relation between the concepts ( $B = .46, p < .05$ ). Therefore, hypothesis 6b, *passive management by exception is positively related to employees' normative commitment to change in a Lean change context*, is confirmed.

#### ***Transformational leadership (H15a)***

The results show a positive correlation between *transformational leadership* and employees' *affective commitment to change*. In addition, multiple regression analysis demonstrates that there is a positive

relation between the concepts ( $B = .34, p < .05$ ). Therefore, hypothesis 15a, *transformational leadership is positively related to employees' affective commitment to change in a Lean change context*, is confirmed.

### **Rejected hypotheses**

The results show a negative correlation between *personal impact* and *normative commitment to change*. In addition, multiple regression analysis demonstrates that there is a negative relation between the concepts ( $B = -.46, p < .05$ ). Therefore, hypothesis 4b, *the personal impact experienced by employees is positively related to their normative commitment to change in a Lean change context*, is disconfirmed.

The results show no statistical evidence for hypotheses 1b,c, 2a,b,c, 3a,b,c, 4a,c, 5b,c, 6a,c and 15b,c. The correlations are not significant, therefore, these hypotheses could not be confirmed nor rejected.

## **DISCUSSION**

### **Theoretical contributions**

The purpose of this study is to gain knowledge concerning the influences of leadership, psychological empowerment and openness to experiences on employees' commitment to change in a lean change context. The results shows that each independent variable have to a certain extent influence on the dependent variable commitment to change.

### ***Psychological empowerment***

All four dimensions are supporting one's overall felt of empowerment. In general, higher values of each dimensions results in higher psychological empowerment (Thomas & Velthouse, 1990) and higher positive attitudes and behavior in relation to change by employees (Chen & Chen, 2008). Indeed, this study shows a positive relation between employees' *work meaningfulness* and their *affective commitment to change*. However, the relations between *competence* and *commitment to change* and *self-determination* and *commitment to change* were not significant. Additionally, the results of this study shows a negative relation between employees' *personal impact* and their *normative commitment to change*. This latter implicates that the extent of influence of employees' actions on the system, has a negatively effect on their *normative commitment to change*.

However, according to Chen & Chen (2008) higher levels of *personal impact* would result in higher *normative commitment to change*, which result in the desired positive attitudes and behaviors. This contrasting result can be explained while taking the context of this study into account. Most organizations that implement lean, are manufacturing organizations. The average educational level of employees within manufacturing organizations are relatively low (Campolieti & Krashinsky, 2005). Indeed, results of this study demonstrates relatively low educational levels (between lbo and mbo).

Torberg and Massih (2011) found evidence to say that employees educational level is positively related with their intelligence quotient. In contrast to employees which are highly educated (hbo, wo), lower educated employees tend to have more difficulties with taking and handling job responsibilities, due to their limited cognitive ability (Morgeson & Delaney-Klinger, 2005). Guangping & Peggy (2005) mentioned that employees which have high levels of *personal impact* can face overwhelming high job expectations that induce job stress and ambiguity. As a result, employees are less positive about the initiated lean change. Therefore, it can be explained that employees' level of *personal impact* is negatively related with their *normative commitment to change* in a lean change context.

### ***Openness to experiences***

It was found that employees' level of *openness to experiences* positively influences their *affective commitment to change*. Therefore, it could be concluded that employees with high levels of *openness to experiences* are more likely to operate enthusiastically and embrace the changes because they feel emotionally attached to the change and having the desire to provide support for the change. This study contributes to the existing literature by finding evidence for the relation between *openness to experiences* and *affective commitment to change* in a lean change context. The current literature only shows evidence for the relation between *openness to experiences* and *organizational commitment* (Erdheim, Wang & Zickar, 2006.).

Furthermore, according to McCrae (1996), employees with high levels of *openness to experiences* may not value things that are often valued. Kumar and Bakhshi (2010) argued that employees with high levels of *openness to experiences* have low moral obligation to remain with the organization leading to a decrease in the level of *normative commitment*. In this study, it was hypothesized that this was also applicable for employees' *normative and continuance commitment to change*. In other words employees with relatively low intellectual curiosity and low willingness to experience new activities, tend to feel more obligated when any change is introduced. However, the results of this study did not show any significant evidence for the relations between *openness to experiences* and *normative and continuance commitment to change*.

### ***Leadership***

This study contributes to existing literature by determining which type and to what extent the leadership styles affects employees' commitment to change in a lean change context. Some researchers categorize *passive management by exception* as a negative organizational characteristic that can harm the organization. For instance, Einarsen, Aasland, & Skogstad (2007) find passive leadership leading to psychological distress and even possible bullying due to lack of control. Neuman and Baron (2005) mentioned that passive leaders often fail to provide subordinates with important information and feedback. In contrast, this study brings the positive side of *passive management by exception* into light by presenting evidence for a positive relation with employees' *normative*

*commitment to change*. In most changes, employees' *normative commitment to change* is preferred because employees do what they are told to do. Furthermore, this study did not show significant evidence for relations between *passive management by exception* and *affective and continuance commitment to change*. Additionally, no significant evidence was found for the relations between *active management by exception* and employees' *commitment to change*. This was also the case with *contingent reward*.

*Transformational leadership* was found to have a positive influence on employees' *affective commitment to change* in a lean change context. This result is in line with the research of Whittington, Goodwin and Murray (2004) in which they stated that *transformational leadership* is positively related to *affective commitment*. Furthermore, this result confirms existing literature of Atwater and Bass (1994) that *transformational leadership* is positively related to successful change, due to the fact that employees' *affective commitment to change* is positively related to successful change (Herscovitch & Meyer, 2002; Lau & Herbert, 2001; May & Kettelhut). No significant evidence was found for the relation between *transformational leadership* and employees' *normative and continuance commitment to change*.

### **Practical implications**

Results shows that respondents of this study were highly affective committed to change, feel very confident about their abilities and capabilities to perform their work and indicates that their job means a lot to them. These are all positive characteristics for making a Lean change successful. However, to become even more successful, organizations needs to know on what dimensions of commitment to change they need to focus on.

*Affective commitment to change* is, psychologically oriented, likely to have the greatest impact on an employees' organizational-relevant behavior (Meyer & Allen, 1991). Herscovitch and Meyer (2002) confirm this and mentioned that *affective and normative commitment to change* is associated with higher levels of support behavior. This support becomes important during organizational change such as Lean, where employees often have to deal with different work processes and strictly have to follow work procedures. For instance, waste elimination reduces contingency resources such as standby workers and inventory, which in turn creates a fragile system by making worker responses essential to maintain production during disruptions such as part defects or machine malfunctions (Angelis, Conti, Cooper & Gill, 2010). Therefore, the success of an organizational change such as Lean, is dependent on having employees with high levels of *affective and normative commitment to change*. In order to gain the desired levels of employees' *commitment to change*, organizations needs to take the results of this study into account.

### ***Psychological empowerment***

The results implicate that organizations need to focus on developing employees' *work meaningfulness* and *personal impact* to generate the desired levels of *commitment to change*. However, it is argued that the four dimensions can affect each other. In other words it is possible that there are interactive effects among psychological dimensions (Guangping & Peggy, 2009). Furthermore, Spreitzer and colleagues mentioned that a lower level of one dimension might change the overall constellation in disproportional ways (Spreitzer, 1995; Spreitzer, Kizilos & Nason, 1997). This phenomena is called a gestalt, which indicates that the sum of all individual dimensions does not have to be representative for the overall experience. In addition, the lack of any single dimension deflates, though not completely eliminate, the overall degree of felt empowerment (Thomas and Velthous, 1990). Therefore it is important to focus on each dimension and put the emphasis on the two dimensions that are significant in this study.

### ***Openness to experiences***

According to the results of this research, organizations need to select or hire employees with high levels of *openness to experiences* in order to gain the preferred levels of employees' *commitment to change*.

### ***Leadership***

Organizations need to focus on the development of their leaders *transformational leadership* style in order to gain employees' *affective commitment to change*. Furthermore, taking leaders *passive management by exception* into account to increase employees' *normative commitment to change*. However, it must be noted that the latter goes along with the risk of an overwhelming effect of the *passive management by exception* leadership style over the *transformational leadership* style. Furthermore, the focus should be on developing *transformational leadership* style because it augments the effects of *transactional leadership* (Avolio & Bass, 1988).

### **Limitations and further research**

Although this research has interesting findings, some hypotheses were rejected due to the low significance in correlations and regression analysis. In order to inquire the relations between all the independent and dependent variables extensively, a higher amount of respondents is required. In the current study a response of N=40 was used, however with a response rate of 48.78%. Although this is a high response rate, results could change when a larger amount of sample size was used. In other words, a higher amount of respondent could change the outcomes of this study in a sense of correlation and regression analyses. Therefore, it would be interesting for future research, to inquire the same relations with a higher amount of respondents.

Another point of attention is that the research data was collected at a single point in time. Multiple measurement times would have generated a more profound and exhaustive analysis of the data by means of measuring differences in time.

Additionally, the dependent variables affective, normative and continuance commitment to change are probably not only influenced by the independent variables included in this study. For instance, uncertainty (Narine & Persaud, 2003), compensation strategies, job satisfaction and job performance (Paik, Parboteeah & Shim, 2007) can also have an influence on employees' commitment to change. It would be interesting for future research, to include these variables in relation to employees' commitment to change.

Furthermore, the questionnaires were completed by employees themselves. A problem with self-report measures is that respondents could be influenced by self-service bias and common method variance (Spector, 2006). However, the items involved this research could not be measured easily by only external observations and interviews. Therefore, it was decided to have a quantitative research. However, it would be interesting for future research to use besides the quantitative data, also qualitative data in the sense of interviews with employees and leaders, to see if there are differences.

The research data was collected from three manufacturing organizations which were in the middle of a Lean change. Therefore, the conclusions derived from this study are generalizable for other organizations which operates in a Lean change context. However, due to the relatively low amount of respondents, it must be noted that the conclusion must be interpreted cautiously.

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## APPENDIX A: FACTOR ANALYSIS

Category	Variable	Item #	Item	Scale	Factor loading
Commitment To Change	Affective	1	I believe in the value of this change. Ik geloof in het nut van deze verandering.	3	.82
		2	I sense that this change is the best option for this organization. Gevoelsmatig is deze verandering de juiste keuze voor deze organisatie.	_*	_*
		3	It would be nice to be part of this change. Het lijkt mij/ik vind het leuk om mee te werken aan deze verandering.	3	.81
		4	I have faith that this change will be successfull. Ik heb vertrouwen in het succes van deze verandering.	3	.77
	Normative	5	I feel a sense of duty to work toward this change. Ik voel de druk van anderen om aan deze verandering mee te werken.	9	.71
		6	I would feel badly about opposing this change. Ik zou me schuldig voelen als ik me verzet tegen deze verandering.	_**	_**
		7	I feel some obligation to support this change. Ik voel dat er van mij verwacht wordt dat ik mee werk aan deze verandering.	9	.78
		8	My colleagues would appreciate it when i work along this change. Mijn collega's zullen het waarderen als ik mee werk aan deze verandering.	_**	_**
	Continuance	9	I have no choice but to go along with this change. Ik heb geen andere keus dan meegaan met deze verandering.	_**	_**
		10	It would be too costly for me to resist this change. Het zou mij te veel kosten als ik weerstand bied tegen deze verandering.	6	.72
		11	It would be risky to speak out against this change. De consequenties zijn te groot als ik niet meewerk aan deze verandering.	6	.85
		12	Resisting this change is not a viable option for me. Weerstand bieden tegen deze verandering is geen zinvolle optie voor mij.	_**	_**
Psychological Empowerment	Work meaningfulness	13	The work I do is very important to me. Het werk wat ik doe is erg belangrijk voor mij.	4	.86
		14	My job activities are personally meaningful to me. (R) Het werk wat ik doe betekent niet veel voor mij. (R)	4	.62
		15	The work I do is meaningful to me. Mijn werk is waardevol voor mij.	4	.86
	Competence	16	I am confident about my ability to do my job. Ik ben er heel zeker van dat ik het vermogen heb om mijn werk uit te voeren.	7	.87
		17	I am self-assured about my capabilities to perform my work activities. Ik beheers de vaardigheden die nodig zijn om mijn werk uit te voeren.	7	.93
		18	I have mastered the skills necessary for my job. (R) Ik heb moeite om mijn werkzaamheden naar behoren uit te voeren. (R)	_**	_**



Psychological Empowerment	Self-Determination	19	I have significant autonomy In determining how i do my job. Ik kan zelf bepalen hoe ik mijn werk doe.	10	-.84
		20	Others determine how i do my job. (R) Anderen bepalen op welke manier ik mijn werk doe. (R)	.*	.*
		21	I have considerable opportunity for independence and freedom in how I do my job. Ik kan zelf bepalen hoe snel ik mijn werk uitvoer en af heb.	.*	.*
	Impact	22	My impact on what happens in my department is large. Mijn invloed op wat er gebeurt binnen mijn afdeling is groot.	2	.76
		23	I have a great deal of control over what happens in my department. Ik heb veel controle over wat er gebeurt binnen mijn afdeling.	2	.89
		24	I have significant influence over what happens in my department. Ik heb aanzienlijk invloed op wat er gebeurt binnen mijn afdeling.	2	.90
		25	Reacts to problems. if chronic. Grijpt meestal pas in op het moment dat fouten herhaaldelijk voorgekomen zijn.	8	.72
Transactional Leadership	Passive management by exception	26	Reacts to mistakes with high impact Grijpt alleen in bij fouten die grote gevolgen hebben.	8	.89
		27	Has the mentality 'if it ain't broke. don't fix it'. Heeft de mentaliteit "Waarom iets repareren. als het nog niet helemaal stuk is?".	***	***
		28	Is focused on mistakes i make. Let erg op fouten die ik maak.	.**	.**
	Active management by exception	29	Concentrates on failures that can be made. Controleert continue op fouten die gemaakt kunnen worden.	11	.79
		30	Puts out fires. Neemt meteen actie bij het ontdekken van fouten.	.*	.*
		31	Personally compliments me when i do outstanding work. Beloont mij wanneer ik uitstekend werk heb verricht.	.*	.*
	Contingent Reward	32	Set clear standards and personally compliments me when i meet those standards. Stelt duidelijke eisen en geeft me waardering als ik daaraan voldoe.	.*	.*
		33	Gives me special recognition when my work is very good. Geeft mij speciale erkenning wanneer ik mijn werk goed heb uitgevoerd.	.*	.*
		34	Is always seeking new opportunities for the unit/department/organization. Zoekt altijd naar nieuwe mogelijkheden voor de afdeling/organisatie.	.*	.*
	Transformational Leadership	Articulating a vision	35	Inspires others with his/her plans for the future. Krijgt het voorelkaar om anderen achter zijn/haar gedachten voor de toekomst te krijgen.	1
36			Has a clear understanding of where we are going. Brengt duidelijk onder woorden waar we naar streven en wat we willen bereiken.	1	.52

Transformational Leadership	Provide appropriate model	37	Leads by doing rather than simply telling. Geeft vaak voorbeelden om hetgeen hij/zij bedoelt te verduidelijken.	1	.78
		38	Provides a good model to follow. Geeft het goede voorbeeld.	.*	.*
		39	Leads by example. Leidt door voorbeelden te geven.	1	.71
	Fostering acceptance of group goals	40	Develops a team attitude and spirit among his/her employees. Creëert een teamgevoel en teamgeest onder medewerkers.	1	.71
		41	Encourages employees to be team players. Motiveert medewerkers met elkaar samen te werken.	1	.62
		42	Gets the group to work together for the same goal. Zorgt ervoor dat iedereen naar hetzelfde doel streeft.	1	.81
	High performance expectations	43	Does not require the best performance. (R) Stelt geen hoge eisen. (R)	.*	.*
		44	Shows us that he/she expects a lot from us. Verwacht hoge inzet van de medewerkers.	1	.78
		45	Insists on only the best performance. Accepteert alleen maar het beste resultaat.	1	.56
	Individualized support	46	Behaves in a manner that is thoughtful of my personal needs. Houdt rekening met mijn behoeftes.	1	.73
		47	Acts without considering my feelings. (R) Houdt weinig rekening met mijn gevoelens. (R)	.*	.*
		48	Shows respect for my personal feelings. Respecteert mijn persoonlijke gevoelens.	1	.58
	Intellectual stimulation	49	Stimulated me to seek for possibilities to improve effectiveness and efficiency. Stimuleert mij om Efficiëntere en effectievere manieren te zoeken om het werk uit te voeren.	1	.74
		50	Does not like any changes in the method to perform activities. (R) Moet niets hebben van wijzigingen in de methode om werk uit te voeren. (R)	.*	.*
		51	Has stimulated me to think about old problems in new ways. Stimuleert mij om op een andere manier te kijken naar routine werkzaamheden.	1	.62
Openness to Experiences	Ideas	52	I often come up with new original ideas. Ik heb vaak nieuwe ideeën die origineel zijn.	.**	.**
		53	I have a lot of intellectual curiosity. Ik ben benieuwd/nieuwsgierig naar veel verschillende dingen.	.**	.**
	Fantasy	54	I don;t like to waste my time daydreaming. (R) Ik hou er niet van om mijn tijd te verspillen aan dagdromen. (R)	.*	.*
		55	I have an active imagination. Ik heb een levendige fantasie.	5	.86

Openness to Experiences	Aesthetics	56	I am intrigued by the patterns i find in art and nature. Als ik aan het wandelen ben. geniet ik van alles wat om mij heen gebeurt en te zien valt.	-.*	-.*
		57	Sometimes when i am reading poetry or looking at a work of art. i feel a chill or wave of excitement. Het lezen van een gedicht of het kijken naar kunst beïnvloedt mijn emoties.	-.*	-.*
	Actions	58	I like it to try new and non-routine tasks in my job. Op mijn werk vind ik het leuk om nieuwe onbekende taken op te pakken.	-.*	-.*
		59	During holidays i prefer to go to a location where i never been before. Ik vind het leuk om naar een plek op vakantie te gaan waar ik nog nooit geweest ben.	5	.51
	Feelings	60	I notice the moods or feelings that different environments produce. Mijn gevoelens en stemmingen worden beïnvloed door de omgeving waar ik mij in bevind.	-.*	-.*
	Values	61	I like to reexamm the way we do things. Ik stel mijzelf vaak de vraag "waarom doen we de dingen zoals we ze doen?".	5	.73

\*=Item removed because it did not load on the same factor as other items of the scale. or had a low factor loading. \*\*=Removed in order to improve the reliability score of the scale. (R)= Reversed item. Extraction method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. A. Rotation converged in 28 iterations.

Note: Item 48 also loaded on scale 10 with .56, however it was decided to assign this item to scale 1 because of the higher loading on that scale.