Effective Change Management in Modern Enterprises

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Abstract
Modern enterprises are constantly under change in the effort to enhance their internal operations and become more competitive in the market. A change process is always a challenge, and its success needs to consider multi-angled approaches, as it affects all involved stakeholders. The way changes are tackled is fundamental to the success and survivability of an enterprise. Change is interwoven with risks, and therefore it has to be effectively managed in order to be successful.

This work presents an effort to identify the key factors that should be considered in order to lead to effective change management in modern enterprises, and quantify their relationship to it. The theoretical investigation reveals that key factors often considered, both in theory and in practical change management strategies, include Employee, Leadership, Training & Development, Reward & Recognition, Culture, Politics, Information Systems. Driven by these findings, a model is proposed that depicts their correlation towards effective change management. Subsequently, a survey is conducted, and statistical analysis is performed to the empirical data collected, in order to evaluate the proposed model and its hypotheses. The empirical results indicate that all selected key factors, contribute towards achieving effective change management as hypothesized.

The results of this work, may benefit enterprise managers planning, executing and assessing change processes, as proper considerations of the factors discussed throughout this work may increase the chances of the change process success, resulting in a better performing and competitive enterprise.

Keywords
Change Management, Change Factors, Modern Enterprises, Structural Equation Model, Quantitative Positive Research.
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1 Introduction

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1.1 Motivation

The inspiration and motivation for this work stems from the position presented by Spies (2006): “The dilemma with change is that everyone likes to talk about it, but very few have insight into their own willingness to change, let alone their ability to influence change. Those who see the need for change often want others to change first. That applies to adversaries and onlookers, but also to analysts and practitioners”. In addition Clarke and Manton (1997) point out that “Many companies tend to focus on the change process rather than the key factors of success behind it”. If this is the case, we have to wonder and ask: What are the key factors that would enable change to be efficiently managed, especially in complex socio-technical environments such as the modern enterprise? This question is important, especially if the claim by Burnes and Jackson (2011) that ”70% of all change initiatives fail" holds true.

Modern enterprises strive towards optimizing all of their available resources in order to be stay competitive and capitalize on new market opportunities. In order to stay agile, they adjust and therefore undergo changes. Best (2008)
brings it to the point noting that “companies that survive and grow will be the ones that understand change and are leading, and often creating, change”.

Hence it is common in enterprise environments, that changes are announced by the management, with the aim to increase the performance of the enterprise. However, looking back, the management also often realizes that the induced changes of the past took longer than expected, and did not produce the remarkable benefits that were expected in a sustainable long-term manner but only in short-term or even worse they have failed. However, such changes are heavily depending on several factors, which need to be considered when a change process is planned, in order to lead to a successful outcome. Wierdsma (2004) points out that “organization is the process by which stability is achieved, while change is directed towards abandoning the familiar and achieving a desired new stability”, hence “change management is seen as the implementation process for a new design”.

Change is strongly interwoven with the fabric of modern enterprises, and is a highly complex undertaking. Change in organizations affects directly the people, and therefore Jashapara (2004) points out that “in order to manage change effectively, we need to understand how change affects people at an emotional and cognitive level”. Changes are often treated with resistance (Bennebroek Gravenhorst and Veld, 2004), however Bennebroek Gravenhorst et al. (2003) conclude that “resistance to change only occurred in combination with badly designed and managed change processes”. As such, any change has to be carefully planned and consider the multi-angled interactions among the various stakeholders within a change process. Several change management strategies aiming at making such changes a success, have been developed and are used in modern enterprises today such as the “McKinsey 7S model” (Waterman et al., 1980), ADKAR (Hiatt, 2006), and “Kotter’s 8-step Model” (Kotter, 1996) to name a few.

Especially when it comes to IT and organizational change, many organizations have trouble in taking effective advantage of IT to support their change processes (Kling and Lamb, 1999). Hence it is proposed to not only look at the technical side but also have social angle when it comes down to orga-
nizational shifts, especially if these are linked with the introduction of new technologies (Kling and Lamb, 1999). In that line of thought, we advocate that change management in modern enterprises should be seen at larger context, where the enterprise is seen as a complex socio-technical system. As Ropohl (1999) points out “the concept of the socio-technical system was established to stress the reciprocal interrelationship between humans and machines”. Similarly Avgerou et al. (2004) point out that “sociotechnical ideas can be witnessed in Information Systems thinking, even if not explicitly referred as such”. Hence, modern enterprises should operate in a larger context and consider also visions such as those defined by Bradley (2010) who has derived a convergence theory on ICT, society and human beings and points out the interdisciplinary aspects of psychosocial work environment and computerization than need to be considered.

By considering enterprises in this larger context, our aim is to shed some light in the key socio-technical factors that contribute to effective change management in modern enterprises, in order to enhance the effectiveness of such undertakings.

1.2 Problem Formulation and Contributions

Clarke and Manton (1997) point out that “Many companies tend to focus on the change process rather than the key factors of success behind it”. Our goal is to investigate exactly this part, i.e., the factors that are seen as instrumental to effective change management. As such the Research Question (RQ) that we pursue in this work can be formulated as:

Research Question: What are the key factors that contribute to effective change management in modern enterprises?

The goal is to identify the key factors and subsequently quantify their impact on effective change management for modern enterprises. This research goal is tackled via a literature review and identification of the key factors from the various theories pertaining change management. Once these high-level
factors are identified, posed hypotheses link them to effective change management. Via a survey constructed with questions aiming towards capturing each factor, empirical data is acquired. Subsequently, the data is statistically processed in order to evaluate the posed hypotheses of our model and assess their contribution to effective change management. Via the process of systematically addressing the posed research question, we derive new knowledge both from the theoretical analysis that led to the proposed model, as well as the quantitative analysis of the empirical data we gather and analyze.

The main contributions of this work can be summarized as:

- Identification of key factors contributing to effective change management in the area of modern enterprises via a literature review
- A model linking the key factors to the effective change management via posed hypotheses, and its validation (via the empirical data)
- The identification and validation of the key role of Information Systems (IS) in the efficient change management in modern enterprises, at the same level alongside with the other identified factors.

The targeted group that can benefit from this research is diverse. The primarily targeted groups are the leaders, the managers and the management team(s) within an enterprise, that lead changes and manage the enterprise (and therefore responsible for its performance). Another targeted group of interest includes researchers in the field of change management and performance of enterprises. In addition, stakeholders such as individual employees, employee organizations (e.g., work councils), regulators etc. could potentially also benefit from the results of this work and better serve not only enterprises but also its employees in change processes.

1.3 Delimitations

This work focuses on the key factors that can lead to effective change management in modern enterprises. The research space where this investigation can be applied is huge, hence we are forced to draw some boundaries and focus our research on a sub-area.
Firstly we are interested in the modern enterprises, and these feature heavy usage of Information Systems (Alter, 2008) both internally as well as externally in the interaction with all stakeholders. As such, the investigation space is seen as the intersection of Information Systems and Enterprises. In addition, we further limit our investigation space by focusing on Change Management, and more specifically how effective change management can be realized in modern enterprises. As such our research investigation focus can be defined by the intersection of Information Systems, Enterprises, and Change Management, as this is depicted in Figure 1.1.

Although the factors can be extremely fine-grained, our aim is to focus on the high-level ones that can be used to steer effectively a change process. Surely, each of those factors can be further in-depth analyzed, and other sub-factors can be identified there. However, considering such a detailed model is not possible within our restrictions and therefore is explicitly excluded. In addition, we consider that the factors may depend on various characteristics of the enterprise, the time, other external and internal conditions, geographic differentiators, policies etc. which are not investigated in this work. We analyze in detail these aspects in our critical review in section 5.3 (Critical View & Limitations).
We have to point out that we approach this research space with generalization in mind, hence the methodology and steps we follow as well as the survey we carry out, may be easily used in other domains in an easy-to-reproduce process.

1.4 Structure

The work undertaken is characterized discrete phases, i.e.:

- **Phase 1**: Literature review, construction of the theoretical framework, and definition of hypotheses to be empirically validated (as analyzed in chapter 3).
- **Phase 2**: Construction of a survey (included in the Appendix) with several questions per identified factor, in the effort to capture them in quantifiable data. Subsequently empirical data collection via the survey is realized.
- **Phase 3**: Statistical analysis of empirical data (as analyzed in chapter 4) results in an assessment where posed hypotheses are either supported or not supported.
- **Phase 4**: Discussion on the findings, its implications, as well as critical view and limitations (analyzed in chapter 5).

The structure of this document reflects the process to achieve the results:

- **Introduction (chapter 1)**: motivation and problem formulation for this work,
- **Literature Review & Hypotheses (chapter 2)**: presentation of key relevant theories, identification of factors, formulation of hypotheses and proposal of a model,
- **Methodology and Method (chapter 3)**: overview of the methodology and method followed
- **Empirical Results and Analysis (chapter 4)**: statistical assessment of the empirical data captured by the conducted survey
- **Discussion (chapter 5)**: discussion on the validation of the hypotheses in the proposed model, the implications to effective change management
in modern enterprises, critical considerations and limitations

- **Conclusions** *(chapter 6)*: overview of the conclusions.
2 Literature Review & Hypotheses

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2.1 Modern Enterprises & Change Management

Modern enterprises heavily rely on Information Systems (IS) in order to operate and interact with stakeholders both internally and externally. According to Alter (2008), Information Systems perform various combinations of six types of operations, i.e., capturing, transmitting, storing, retrieving, manipulating and displaying information. Our investigation focuses explicitly (as
Organizational change has been studied extensively in literature (Dunphy and Stace, 1988; Burke and Litwin, 1992; Boonstra, 2004; Jashapara, 2004; de Wit and Meyer, 2010). There are several types of change, e.g., incremental change, where small adjustments are required, discontinuous change where a major transformation is due, anticipatory change where a change is initiated but without an immediate need to respond, reactive change, which is a direct response by an organization to a change in the environment. In addition several in-depth investigations have been made in the various organizational change categories, e.g., evolutionary vs. revolutionary, incremental vs. transformative, transactional vs. transformational etc. Other types of organizational change include (i) tuning, which is incremental with no immediate need to change and is done under the motto “doing things better”, (ii) adaptation, which is incremental but as a response to an external threat or opportunity, (iii) re-orientation, which is a discontinuous voluntary change with no immediate need, and (iv) re-creation, which is a fundamental change and drastically changes “the way things are done”.

Moran and Brightman (2001) define change management as a “the process of continually renewing an organization’s direction, structure, and capabilities to serve the ever-changing needs of external and internal customers”. Bridges (1986) points out that “change happens when something starts or stops, or when something that used to happen in one way starts happening in another”. A clear common denominator also on other definitions found in literature, is that the fact that change requires a shift from a familiar situation towards a new one, and this has varying impact on people, processes, and organizations.

According to Cummings (2004), organizations are “experiencing competitive demands to perform more quickly and efficiently at lower cost and higher quality. They are being forced to adapt to turbulent environments where technological, economic, and cultural forces are changing rapidly and unpredictably”. Modern enterprises strive towards resource optimization in order
to be able to stay competitive and not only maintain their market position but also expand it. Companies change in order to better adapt to contemporary needs and optimize their processes in order to be more competitive. As such, the goal is that via change management, higher enterprise performance is pursued (Guimaraes and Armstrong, 1998).

The way changes are tackled is fundamental to the success and survivability of an enterprise. The “boiling frog syndrome” analogy (Frost, 1994) is often used to exemplify this. A frog put in cold water which gradually heats will attempt to react very slowly and eventually will be boiled to death; while a frog put to hot water will immediately jump out of it in order to survive. As such, the way a response to a change is introduced, will eventually impact the enterprise’s future.

Change in organizations, and especially in large multi-national modern enterprises, is always a challenging issue. Strebel (1996) points out that “success rates in Fortune 1,000 companies are well below 50%; some say they are as low as 20%”. A popular narrative also put forward by Burnes and Jackson (2011), claims that "there is substantial evidence that some 70% of all change initiatives fail", while others question such statistics; for instance Hughes (2011) points out that "there is no valid and reliable empirical evidence to support such a narrative [of 70% failure]".

Bennebroek Gravenhorst and Veld (2004) consider that some reasons for the challenges posed include (i) focus on single aspects during a change and not in a holistic manner, (ii) dominant management perspective, (iii) asymmetric focus on content-driven actions and not the process itself, and (iv) generally the top-down approach. Kotter and Schlesinger (2008) point out resistance is to blame for the failures, and that it can built up due to (i) parochial self-interest, (ii) misunderstanding and lack of trust, (iii) different assessments, (iv) low tolerance for change. As such, any change management plan needs to effectively tackle these issues in order to be successful.
2.2 Effective Change Management

We can consider that Effective Change management generally encompasses all approaches towards successfully managing all changes related to an enterprise’s processes, structures, employees and culture. An effective change has several characteristics such as: it yields all the benefits envisioned prior to its execution, e.g., improves enterprise performance or competitiveness, is done on-time and within-budget, makes the enterprise more agile to external (market) and internal needs, increases the skills and readiness of the enterprise to handle future change, and is fully integrated in the company culture.

Because change management is important to modern enterprises, being able to effectively manage it is a much-wanted skill (Senior, 2002). However, as Armenakis and Harris (2002) point out, it is also one of the least understood skills of leaders. In addition, one has to bear in mind that according to Self and Schraeder (2009), a change management process is specific to the circumstances and different strategies may increase the success. However, what has been effective in the past, is not a guarantee that will be effective in the future, as each change management process has to adjust to the dynamic changing environment and organizational complexity (Zeffane, 1996).

A change can be very challenging, especially when several of its variables alter in parallel, e.g., processes, tools, responsibilities etc. Moran and Brightman (2001) point out that change is non-linear, i.e., there is no clear begin and end, and effective change is both top-down and bottom-up, it interweaves with multiple actions, it has an important people dimension, and last but not least, effective and sustainable change relies on measurement, i.e., the quantification of goals and progress towards achieving them.

Change is interwoven with risks (Will, 2014), and therefore it has to be effectively managed in order to be successful. Beer et al. (1990) also point out that only top-down change processes are at best inadequate and at worst, they may jeopardize any chance for success in future change processes. Bennebroek Gravenhorst et al. (2003) point out that resistance to change raises if there are problems with the change process.

Change management is not easy nor standard, and being effective is inher-
ently challenging. Hayes (2007) points out that change management deals with several aspects including analyzing organizational effectiveness, revealing the needed changes in order to achieve better performance and clearly determine the steps that need to be followed in order to be effective. Overall organizational readiness for change (Weiner, 2009; Neves, 2009) is seen as beneficial as it enables the organization to be ready for emerging challenges.

Change management generally follows a three phase process which helps individuals, groups and organizations to manage change. This process is widely known as Lewin (1951) 3-step Model, and deals with overcoming resistance to change and how to sustain change once it is made. The key assumption is that the targets of change and social processes underlying them are relatively stable when forces driving for change are roughly equal to forces resisting change (Cummings, 2004). Although Lewin’s change management model is very simple, it has served the organizational development for over 60 years and has formed the basis of numerous techniques for leading and managing change in organizations. As Weick and Quinn (1999) point out, Lewin’s model “continues to be a generic recipe for organizational development”.

According to Lewin’s change management model, three steps are necessary as analyzed by Cummings (2004) and Jashapara (2004), i.e.:

- **Unfreezing**: This step, referred to as a “force field analysis”, examines the driving and restraining forces that maintain the status quo (Cummings, 2004). This assessment reveals which forces are the strongest (or weakest) and which are the easiest (or hardest) to modify.

- **Moving**: This steps aims towards moving the change target to the new level or kind of behavior. As such it involves intervening in the situation to change it and improve organizational issues, e.g., relevant to human processes, strategic choices, human resource management, and work designs and structures.

- **Refreezing**: This concluding step makes changes permanent and reinforces the new behaviors. This steps is referred to as “institutionalizing” change and its methods target making the new behavior the culture via supporting mechanisms, policies, structure, organizational norms etc.
This is necessary, as without it organizations tend to regress to the previous stable state.

Kotter and Schlesinger (2008) point out that once a manager has understood the restraining forces and the change management problems, there are a number of approaches and options for managing resistance to change, i.e., (i) education and communication, (ii) participation and involvement, (iii) facilitation and support, (iv) negotiation and agreement, (v) manipulation and co-optation, and (vi) explicit and implicit coercion.

### 2.3 Change Management Strategies

Several change management strategies have been developed utilized in various change management processes in enterprises with varying success the last decades. Although none of them should be considered as panacea, it is interesting to see what steps these strategies propose, as they affect the factors that contribute to effective change management (which are in our focus as detailed in section 2.4).

“Kotter’s 8-step Model” (Kotter, 1996) is in-compliance with the Lewin (1951) phases, and proposes structured steps on how these can be realized. The effort is towards preventing conflict and convincing the employees of the change, so that this can be realized more effectively The eight steps proposed by Kotter (1996, 2014) are:

1. Creating/establishing a sense of urgency,
2. Creating/building the guiding coalition,
3. Developing a strategic vision and initiatives,
4. Communicating the change vision / enlist a volunteer army,
5. Empowering employees for broad-based action / enable action by removing barriers,
6. Generating short-term wins,
7. Consolidating gains and producing more change / sustain acceleration,
8. Anchoring new approaches in the culture / institute change

It is also argued that “successful change goes through all eight stages”, and
“skipping even a single step or getting too far ahead without a solid basis almost always creates problems” (Kotter, 1996).

The Prosci ADKAR model (Hiatt, 2006), which was first introduced in 1999 focuses on individual change, and hence it is utilized for successful personal transitions within enterprises. The main elements of ADKAR (Hiatt, 2006) are: Awareness of the need for change, Desire to participate and support the change, Knowledge on how to change, Ability to implement required skills and behaviors, Reinforcement to sustain the change. The ADKAR approach can be applied by managers to groups or individuals, in order to identify and remove potential barriers that may hinder the successful transition.

The “McKinsey 7S model” (Waterman et al., 1980) advocates that an organization consists of interconnected elements, i.e., Structure, Strategy, Systems, Style, Skills, Staff, Superordinate goal (Shared Values), all of which were deliberately chosen to start with “S” (Peters, 2011). Each of these elements affects the others (due to interconnectivity) and hence the quest is how to align them in order to realize an effective change management. Waterman et al. (1980) advocate that all seven “S” need to be properly aligned for a change process to succeed. However, due to the interconnections, the model is complex and its application assumes very good understanding of the elements and their interconnections. The “McKinsey 7S model” generally offers a good way to diagnose and understand the enterprise current status (prior to the change) as well as the target (pursued by change). Therefore it can significantly help towards initiating change processes and providing the necessary direction for success.

Burke and Litwin (1992) identify twelve drivers of change and rank them in terms of importance. These are: External Environment, Mission and Strategy, Leadership, Organizational Culture, Structure, Systems, Management Practices, Work Unit Climate, Tasks and Skills, Individual Values and Need, Motivation Level, and Individual and Overall Performance. The effective utilization of this approach, is dependent on how well the twelve dimensions can be approached. In the model by Burke and Litwin (1992), transformational and transactional factors are emphasized as change is depicted in terms of
both process and content. The environmental factors are considered as the most important for change, while the other elements are impacted by changes originating outside the organization.

Clarket and Garside (1997) have identified five key success factors to drive change, i.e., commitment, social & cultural issues, communication, tools & methodology and interactions. Each of the identified factors is utilized in different stages within the change process.

All of the strategies we have shortly addressed, aim towards target directly or indirectly key factors, in order to realize effective change management. A more in-depth analysis of these factors is provided in a harmonized way in section 2.4.

2.4 Key Change Management Factors in Literature

Clarket and Manton (1997) point out that “Many companies tend to focus on the change process rather than the key factors of success behind it”. A comprehensive literature review has been carried out in the effort to identify the key change management factors. The results of the process are presented here in a per-factor grouped form as they emerged from the literature review and also consider the change management strategies we already discussed.

An overview of our research investigation towards key factors relevant for effective change management is depicted in Table 2.1. The high level groupings presented include several sub-factors as these are identified in literature. The grouping has been done to ease this work, as well as due to the fact that we are interested in high-level factors that are applicable to all modern enterprises. As such the focus on sub-factors is outside of this work’s focus; this delimitation is also discussed in detail in section 5.3).
Table 2.1: Overview of factors linked to effective change

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2.4.1 Employee

In enterprises, people interact in a structured or organized way towards realizing a purpose or goal (Senior and Fleming, 2006). van Dijk and van Dick (2009) point out that "Resistance to change is a socially constructed phenomenon that is generated and defined through interaction". Organizations are social systems (Năstase et al., 2012) and since any organizational change affects people (i.e., employees), we need to understand how the people dimension is affected at both emotional and cognitive level in order to manage a change process effectively and raise its change readiness level (Neves, 2009).

Hiatt and Creasey (2003) point out that it is a common error to focus only on business, and that the focus should be both on business and people (the employees). Asymmetric focus, e.g., putting more emphasis on business than on people will lead to loss of employees and expertise/knowledge, decreasing efficiency etc. while vice-versa, putting more emphasis on people rather than the business will not enable the change process to achieve its objectives. As such an equilibrium is sought.

Employees are central to any change according to Smith (2005) and Dievernich et al. (2014), as they are the source and target of any change. Jashapara (2004) points out that there are known transition phases in the cycle of change, e.g., shock, denial, depressing, letting go, testing, consolidation and internalization, which have to be considered within the change management process and this includes also the emotional response to such changes. Smith (2005) points out that positive or negative social energy is a major factor upon which the success or failure of organisational initiatives depend.

As an example, a cornerstone of the ADKAR (Hiatt, 2006) focuses on the ability to implement the required skills and behavior which includes the physical capabilities, availability of resources and removal of psychological blocks to enable the individuals to embrace the change. ADKAR (Hiatt, 2006) also focuses overwhelmingly on the individual and how to enable him to make the transition successfully.

Gaining commitment for change is also seen as a critical part of any change process (Jaros, 2010). As Strebel (1996) points out “Employees often mis-
understand or, worse, ignore the implications of change for their individual commitments to the company”. The process fairness is especially important for knowledge-based organizations (like the modern enterprises in our case) which rely on the attitudes of individuals to achieve superior performance (Jashapara, 2004). Kim and Mauborgne (2003) note that employees will commit to a manager’s decision even though they may disagree with it as long as they feel that the process is fair. To that extend, a change management plan has to successfully consider the three basic principles underlying a fair process which according to Kim and Mauborgne (2003) are: (i) Engagement, i.e., involving people in the processes, (ii) Explanation, which enables employee understanding and raises trust in a management, (iii) Expectation clarity, which sets clear behaviors that are wished and rewards or penalties.

Realizing the employee commitment has usually three stages as analyzed by Jashapara (2004), i.e., (i) compliance (ii) identification, (iii) internalization. Clearly the change management process must not only reinforce the trust and fairness of the process but also motivate people and tackle all three stages of commitment. In practice for instance that would imply employee involvement, clear rules, clear rewards etc.

For employees, any change is also connected to strong emotions. Hayes (2007) has identified several transition phases in the cycle of change, i.e., shock, denial, depression, letting go, testing, consolidation and adaptation. Emotional response to change may lead to considerable resistance to change according to Kotter and Schlesinger (2008).

Jashapara (2004) argues that employee involvement practices can span quite a spectrum, are time consuming, and many senior managers may feel that it detracts from their focus on tight cost control or other strategic directions and leave themselves open to criticisms about lack of investment in human resources such as training and development. However, employees need to be involved at all stages including how the change management process is applied in its parts. Moran and Brightman (2001) point out that people want the early involvement and dialog as then “they have an opportunity to express their fears and hopes and to put their imprint on the proposed
changes”. As such, popular change management strategies focus on this, e.g., Kotter (2014) focuses significantly on raising a large force of people who are ready, willing and urgent to drive change within the teams throughout the organization. Being involved is seen also as part of a fair process (Kim and Mauborgne, 2003) and can lead to commitment (Jaros, 2010).

2.4.2 Leadership

Leaders play a pivotal role in the change process and its success. However, although implementing organizational changes are of pivotal importance, it is unfortunately one of the least understood skills of leaders (Armenakis and Harris, 2002). Beer et al. (1990) point out that leaders possessing the necessary convictions and skills are extremely scarce and emphasis should be given in developing those skills. As Jashapara (2004) analyses: (i) leaders are those that offer a vision which mobilizes, energizes and empowers people to reach that vision, (ii) set goals connected with building and articulating clearly accepted goals and expectations, and (iii) they gain commitment to the goals in the change process.

According to Kotter (1996) shaping a vision is essential towards steering the change effort as “it simplifies hundreds or thousands of more detailed decisions and motivates people to take action in the right direction even if pain is involved”. However, the vision has to be followed-up by strategic initiatives to achieve it. Having formulated an effective vision, is not much help if those involved don’t have a common understanding of its goals and direction in order to motivate and coordinate the actions that can create the necessary transformations to achieve it. As such there is a necessity to effectively communicate the change vision (Kotter, 1996; Smith, 2005).

A change process highly depends on the aspect that the new vision put forward is well communicated and understood throughout the enterprise. Accepting a new vision may be a challenging intellectual and emotional task. Therefore the vision must be simple, focused, and jargon-free. A clear definition of shared purpose must be fully understood by the employees (Moran and Brightman, 2001). In addition the impact must be understood as well as
the contingency plans and options that are available to each employee. **Hiatt and Creasey (2003)** point out that when the vision is not clear or miscommunicated or not understandable, employees might invent their own answers to key questions which might be worse than the truth. As such, special care should be given both to the communication of the key message as well as the message content.

**Moran and Brightman (2001)** point out that leaders are fundamental in the change management process, and they do have certain traits, e.g., they lead the change effort by example (**van der Voet et al., 2013**), they justify the change, they create an atmosphere that enables people to experiment and contribute to a change, they frame the display constant dedication in making the change a reality, they realize the gap between understanding of the change and its effects on organization and try to close it etc. Negative leadership has similar impact on the implementation of organizational change processes (**Higgs, 2009**).

**Pearce and Sims (2002)** indicate that there are several leadership types, i.e., aversive, directive, transactional, transformational, empowering and shared, which have different impact on effectiveness. Especially their results point out that shared leadership can be a better predictor than the vertical one with respect to team performance.

A gap between company statements and management behavior may result in employees remaining skeptical of the vision, distrustful of management and hence may resist the change process. As such leaders and managers should be the first to adopt the new changes publicly, i.e., "go beyond talking the talk and start walking the walk" as **van der Voet et al. (2013)** put it. Awareness is key and therefore poor communication of the vision by the leadership may result in not achieving its role. Awareness of the need to change is addressed in modern change management models, e.g., ADKAR (**Hiatt, 2006**) and **Kotter (1996)**.

**Kotter (1996)** argues that complacency natively exists in organizations and this can be devised, e.g., from absence of crisis, wrong performance indexes, lack of feedback, too much "happy talking" etc. Hence it is up to the leader
to increase the urgency level, which removes these sources of complacency or minimizes their impact, and enables the change process. Kotter (1996) indicates that this is due to the fact that visible crises catch people’s attention and disrupt the “operate as usual” mode which is no longer seen as adequate. However, not all scholars agree to the “sense of urgency”, e.g., Bennebroek Gravenhorst et al. (2003) point out that such increase in the urgency level is not always needed. To utilize these actions and tackle complacency, Kotter (1996) estimates that the majority of employees and 75% of management as well as all top executives need to believe in the need for considerable change.

2.4.3 Training & Development

A change often comes with requirements of acquiring new knowledge in the form of skills, new ways of understanding, new behaviors that need to make sense etc. As such learning to change, is critical, and this is usually tackled in large enterprises at mass via training & development. Beer et al. (1990) point out that people must have the skills and competencies to function effectively in the challenges posed in the new environment.

Training and development are necessary in order to support successful change management strategies. However, in a standalone manner it is not enough. Although employees may be sent to training programs, the “Del the Delegate” problem (Jashapara, 2004) may arise where upon the return of the trained employee, his new ideas are not understood or valued by the other colleagues who lack the same training. The result is that often the employee then reverts to old habits and fails to utilize the new skills which in turn may endanger the success of the change process.

Especially when the change process involves new systems, training is indispensable despite of any costs, as people will not be able to benefit from the new systems if they do not know how to effectively utilize them (Jarrar et al., 2000).

Appropriate actions need to be taken in order to bridge the gap between Knowledge, Skills and Attitudes (KSA) held by the individual employees.
Knowledge on how to change and the ability to implement the required skills and behaviors are also highlighted in the ADKAR (Hiatt, 2006). In the same line of thought Carter (2008) also advocates that skills (employee development) are one of the key ingredients for success of a change process.

Training & Development may significantly help in the direction of change acceptance. Armenakis and Harris (2002) point out that active participation such as enactive mastery (build up of skills & knowledge), vicarious learning (observation & learning) and participation in decision making are part of the “active participation strategy” which is the most effective in communicating the change message as it capitalizes on self-discovery.

There are several training and development strategies in modern organizations (Reid and Barrington, 2000), where increasingly the self-managed learning, e.g., via e-learning platforms within the organization is wide-spread in large enterprises. Such internal tools can be used to train employees in a low-cost and mass-reaching activity. As such online trainings could provide large-scale training to the employees within the organization. To guarantee though that these will be followed, it is also advisable to link the training and development with performance and career planning processes as well as the organizational goals and continuous learning.

Self and Schraeder (2009) point out that if managers have failed in the past to arrange effective trainings, this might result to employees not being ready for the change, and which subsequently will create lack of self-confidence which jeopardizes the success of the change process.

2.4.4 Reward & Recognition

Reward and recognition schemes are an important change management process tool, as it is assumed that employee engagement and effort will lead to greater performance which will eventually be rewarded. As a result greater employee satisfaction and commitment are evident as Jashapara (2004) points out.

In addition, rewards, especially monetary ones, e.g., profit-sharing, bonuses etc. might enable employees to achieve greater identification with the organi-
zation (and its goals), which may result to commitment and hence less resistance to change. Other forms of rewards, e.g., company car, office facilities, medals, dinners, cash prizes, holidays etc. may also lead to increased employee satisfaction and subsequently to commitment (Beardwell et al., 2004).

Change management inherently has risks. Will (2014) points out that incentives can be used to make both employees and managers willing to bear higher risks. The best example how this works in practice is the example of Henry Ford who agreed to pay his workers a wage double the amount of the average wage that typical workers received in manufacturing industries at the time, in order to build acceptance for the extremely risky changes, which resulted in enormous benefits for both the enterprise and the workers (Will, 2014).

Kotter (1996) also advocates that by generating short-term wins, and making them evident, justification for the actions undertaken is realized, and the resulting positive feedback builds further morale and motivation. Hence, as evidence is produced that the change process has tangible benefits, even those neutral to it may turn into supporters and reluctant supporters to active helpers of the change.

2.4.5 Culture

Jashapara (2004) indicates that “organizational culture concerns the underlying values and assumptions that define prevailing norms and behaviors”. Corporate culture, gauged through the social dimension of the employee personal compacts (Strebel, 1996), is very powerful, and affects everyone regardless of level or location. Senior and Fleming (2006) consider culture as the “organization iceberg”, where the formal part is visible, and therefore easy to control, however the largest part is below the surface and as it is bound to invisible things, e.g., attitudes & beliefs, it is much more difficult to manage.

Managing the culture within an organization is pivotal to long term success (Zeffane, 1996). Kotter (1996) explicitly warns that “when practices made in a transformation effort are not compatible with the relevant cultures, they will always be subject to regression”. ADKAR (Hiatt, 2006) also focuses on
the reinforcement to sustain change. Social and cultural issues have also been identified by Clarke and Garside (1997) as a key success factor for producing a successful change. Especially for large enterprises with multi-cultural personnel, change processes need to also consider cross-cultural dynamics (Kirsch et al., 2012).

Beer et al. (1990) indicates that for longer-running change processes, the organization in order to sustain change, has eventually to confront its own organization and behavior. The integration of the new changes to become the new norm and therefore be integrated in the new organization culture is fundamental for the sustainable success of the process. Two drivers are here predominantly identified by Jashapara (2004), i.e., leadership and human resource interventions. Reinforcing beliefs, values and assumptions are important and personal involvement especially of high-ranking managers sends a key message and influences employees.

Kotter (2014) notes that once the changes en-route are established, some credibility is acquired on the process and therefore it should be used to induce further changes, e.g., change systems, structures and policies that are not fully aligned with the vision, or engage new employees who can speedup its realization. In addition, human resource interventions may also assist, e.g., changes in reward and recognition norms, changes in performance appraisal norms, and changes in induction, socialization and training norms for the whole organization.

2.4.6 Politics

Perceived organizational politics and commitment to change are correlated according to Bouckenooghe (2012), who also points out that this is more complex as it is a socially constructed phenomenon, and several factors can affect it. Jashapara (2004) also points out that often organizational change processes fail due to lack of political skills by the people who implement it, and therefore they induce resistance. Therefore a focus on a “dominant coalition” formed by senior executives who have are respected and possess the necessary influence is highly advised, as they can move things within the or-
ganization. Building internal alliances and coalitions, as well as group pressure for employee conformity could be utilized to succeed.

Building a “guiding coalition” is not enough, if this is not done properly. One has to additionally consider if in such coalitions enough key players are on-board, if the expertise is well represented, if the group has enough people with good reputation in the firm (credibility) and if enough proven leaders are included in order to drive the change process. Especially to the last point is sometimes not enough attention paid, but Kotter (1996) points out that both management and leadership skills are needed in a guiding coalition to work together. In addition people with large egos, the so-called “snakes” by Kotter (1996), that damage trust among people, and reluctant players should be avoided or make sure they don’t negatively impact the process.

Buchanan et al. (1999) points out that the majority of managers find politics become more intense when the changes are radical, complex and wide-ranging. Although politics are usually associated with the negative aspects, i.e., “as a collection of dirty tricks to be avoided and eradicated” (Bouckenooghe, 2012), in this work we focus on the positive side of it, i.e., effort to increase political support among the various company groups and leaders, towards creating powerful coalitions that will act as enablers of the change process, or who at least won’t actively block it.

2.4.7 Information Systems

The relationship of information technology at large and organizational change has been under research the last decades (Markus and Robey, 1988). Change, especially in modern enterprises is often strongly related to technology and generally to the effectiveness of the Information Systems (IS) used (Guimaraes and Armstrong, 1998), which empower employees to fully utilize their skills and realize their work. The focus of our investigation deals with modern enterprises, one key characteristic of which is the extended usage of IS both internally and externally when interacting with all stakeholders.

Although IS are often not explicitly mentioned as such (or often included as “Systems” or “Technology”), they are implied by many researchers when
development of appropriate tools and infrastructure is considered. However, for modern enterprises, this translates to a large percentage towards the existence of appropriate IS, e.g., Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Supply Chain Management (SCM), Decision Support System (DSS), Management Information Systems (MIS), expert systems, enterprise systems, Geographic Information Systems (GIS), automation systems, data warehouses, knowledge repositories, etc.

IS and technology at large, are seen as a tool for assisting realizing the change processes, e.g., the staff appraisal process (Jashapara, 2004), in measuring the progress, enabling the employees etc., and as such, it can act as a key differentiator at all stages of a change process. Such capabilities provide clarity on the state of the change management process, enable actions and assist towards informed decisions in all phases. Hence, it comes as no surprise that (Information) Systems are considered in mainstream modern change management strategies, e.g., by Kotter (1996); Waterman et al. (1980); Hiatt (2006); Burke and Litwin (1992).

Clarke and Manton (1997) point out that although organizations undergo significant changes, very little benchmarking of the change process itself is actually being done. As such tools and methodologies are seen as indispensable, and IS could play a significant role, especially the modern enterprises we focus on.

Moran and Brightman (2001) point out that “the organization must have a constant supply of timely and useful information that enables customer-focused and cost-effective decision making to take place at all levels of the organization on a daily basis”. IS are instrumental on measuring and delivering this constant supply of information, so that informed decisions can be made. The latter is especially true as nowadays IS can deal with “Big Data” (Goes, 2014) which in conjunction with high performance analytics can provide valuable insights at unprecedented level and enhance decision making processes.

The adoption especially of IT innovations, is bound to several factors as identified by Moore and Benbasat (1991), such as relative advantage, moral
compatibility, ease of use, compatibility, trialability etc. As such, technology offering those treats can be easier accepted by the respondents, who via this also bind to the new business process (if it is strongly coupled). As such technology and effective IS can ease changes. Effective IS are seen as contemporary, user-friendly with low learning curves that enable the employee achieve high performance.

Hammer and Champy (1993) point out that IS can act as a catalyst for change, as it forces enterprises to utilize the latest advancements in “disruptive technologies” and reconsider their processes towards finding new ways of operating. Although the IS can support change, one has to utilize them properly and not use them, e.g., “to do wrong things faster”.

2.5 Proposed Model

The literature review has revealed insights on several aspects of change management as we have presented in section 2.4. Based on the identified factors, we have formulated seven hypotheses, and propose the model depicted in Figure 2.1. The model links the key identified factors and hypothesizes their positive impact on effective change management.

More specifically the hypotheses are:

- **Hypothesis #1 (H1):** Change measures related to Employee (People) aspects can have a positive contribution to Effective Change Management in modern enterprises.
- **Hypothesis #2 (H2):** Change measures related to Leadership can have a positive contribution to Effective Change Management in modern enterprises.
- **Hypothesis #3 (H3):** Change measures related to Training & Development can have a positive contribution to Effective Change Management in modern enterprises.
- **Hypothesis #4 (H4):** Change measures related to Reward & Recognition can have a positive contribution to Effective Change Management in modern enterprises.
• **Hypothesis #5 (H5):** Change measures related to Culture can have a positive contribution to Effective Change Management in modern enterprises.

• **Hypothesis #6 (H6):** Change measures related to Politics can have a positive contribution to Effective Change Management in modern enterprises.

• **Hypothesis #7 (H7):** Change measures utilizing Information Systems can have a positive contribution to Effective Change Management in modern enterprises.

The proposed model with the integrated seven hypotheses is empirically assessed, as we describe in detail in chapter 4.

![Figure 2.1: Proposed model](image-url)
3 Methodology and Method

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3.1  Research Approach

We approach the research question by conducting a literature review in order to identify the key factors that are relevant to effective change management. As we have already formulated the research problem (i.e., the “what” and “why”) we proceed here in clarifying the design of our approach (i.e., the “how”).

At first sight, both Qualitative Research (Myers, 1997) and Quantitative Research (Straub, Gefen and Boudreau, 2004) seem to fit our objectives. However Qualitative Research is primarily exploratory, and its methods are designed to “help researchers understand people and the social and cultural contexts within which they live” (Myers, 1997). Quantitative Research specializes according to Straub, Gefen and Boudreau (2004) in “quantities in the sense that numbers come to represent values and levels of theoretical
constructs”. As we propose a model and quantify it via empirical data, Quantitative Research is a better fit to our objectives. As we discuss in section 5.3, a mixed approach known as triangulation (Myers, 1997) could potentially be utilized, however, due to time constraints we focused exclusively on the Quantitative Research.

The phenomenon we study is the effective change management and the key factors that contribute to it. Our approach can be classified as Quantitative Positive Research (QPR) which according to Straub, Gefen and Boudreau (2004) is “a set of methods and techniques that allow IS researchers to answer research questions about the interaction of humans and computers”. In QPR the emphasis is put on (i) quantitative data and (ii) positivist philosophy.

As Myers (1997) points out “positivist studies generally attempt to test theory, in an attempt to increase the predictive understanding of phenomena”. This fits very well with our intentions, as we want to test the model we propose after its construction based on hypotheses stemming from the literature review.

Orlikowski and Baroudi (1991) point out that positivist studies fulfill some criteria such as “evidence of formal propositions, quantifiable measures of variables, hypotheses testing, and the drawing of inferences about the phenomenon from the sample to a stated population” – with the exception of the “descriptive” studies. Indeed our approach falls within this category as we test a theory that links various factors together and hypothesize their positive contribution to the effective change management. This is done via quantifiable measures of variables and hypotheses testing.

Straub, Gefen and Boudreau (2004) point out that quantitative data play a pivotal role in QPR because:

i) “the researcher is motivated by the numerical outputs and how to derive meaning from them”

ii) “emphasis on numerical analysis is also key to the second cornerstone, positivism, which defines a scientific theory as one that can be falsified”. In quantitative analysis there is also, as Myers (1997) points out a “clear distinction between data gathering and data analysis”. The Quantitative Re-
search method was chosen as with it we can verify our theoretical findings through empirically acquired data. In Quantitative Research as Straub, Gefen and Boudreau (2004) note “the interpretive and critical positions are not meaningful; only the positivist one is”.

Figure 3.1 depicts the key aspects of the overall approach we take within this work. First we identify the key factors via a literature review and propose a model for their correlation (as shown in section 2.5). Subsequently we construct a survey with questions that capture the identified factors and collect empirical data. An Exploratory Factor Analysis (EFA) is performed to see if all factors are adequately captured, or if other factors not hypothesized are also captured in the empirical data (section 4.3). Following the EFA, a Confirmatory Factor Analysis (CFA) is realized (section 4.3). Finally we take a look at our Structural Equation Model (section 4.5) and discuss on the results (chapter 5).

There are a wide range of research methods as Straub, Gefen and Boudreau (2004) depict, and in our case we have made the following selections to carry out our research:

- **Type of Research**: We do confirmatory, i.e., hypothesis-testing research.
- **General Research Approach**: Field Study where conditions such as “non-
experimental inquiries occurring in natural systems” and “researchers using field studies cannot manipulate independent variables or control the influence of confounding variables” are prevalent as discussed by Boudreau et al. (2001)

- **Data Collection Technique:** A survey is conducted as this is a “practical way to learn many types of information and the most economical way in many other situations” as pointed out by Emory (1980).

- **Data Analysis Technique:** Structured Equation Modeling (SEM) which as Byrne (2009) points out “is a statistical methodology that takes a confirmatory (i.e., hypothesis-testing) approach, to the analysis of a structural theory baring on some phenomenon”.

Within the quantitative inquiry we try to explain the causal structures and mechanisms and make predictions that we then verify/falsify via statistical analysis. Straub, Gefen and Boudreau (2004) point out that in QPR a “theoretical hypothesis is supported [...] but not proven, because theory in the positivist philosophy cannot be proven, strictly speaking”.

### 3.2 Sampling Group

We undertake a Quantitative Research, and hence our objective is to measure variables and generalize findings from a representative sample of the total population. Hence choosing a sample is key to the success of our research, and in literature there are several ways of doing this (Lohr, 1999). Generally we have two types of sampling. First, non-probability sampling where the sample group is left to the researcher (and some elements of the population have no chance of being selected); as a result bias often arises. Typical examples of non-probability sampling are convenience sampling, voluntary sampling, snowball sampling, quota sampling and purposive sampling. The second type is probability-sampling where the selection of every unit in the population has a chance (defined by a probability) of being selected in the sample. Typical examples of probability sampling are Simple Random Sampling (SRS), Systematic Sampling, Stratified Sampling, Probability Propor-
tional to Size Sampling, and Cluster or Multistage Sampling. As we try to avoid bias, and do have access to means of creating a probability-sampling, we have rejected all non-probability types.

In probability-sampling, SRS is simple and can be easily applied, especially with computerized means (e.g., random selection from a list of elements), however it might result to a sampling error. Systematic Sampling is constructing the study population according to some ordering scheme, which however is vulnerable to periodicity. Stratified Sampling assumes that individuals are assigned to one (and only one) stratum and that the population can be constructed by selecting randomly elements from the individual strata. Although this approach is much better than the previous two, it may increase the cost and complexity of the process. The probability proportional to size sampling focuses on large elements when creating the sample, as these have the most impact on population estimates. In cluster or multistage sampling, clusters are selected and the individuals within the selected clusters are surveyed. For the interested reader, a detailed discussion on the sampling methods (including others not discussed here), their characteristics as well as pros and cons has been realized by Lohr (1999). In our case, proportional stratified sampling would probably be the best approach to follow. However, due to the complexity and time-constraints, we have knowingly opted for a less optimal method, i.e., that of simple random sampling, due to its qualities and ease of realization.

The population are the employees of a single enterprise, and it can be acquired via the global employee list catalog (enterprise address-book). The sampling frame can be defined as the employees who have participated in at least one change process. The sampling frame complies with the qualities identified by Särndal et al. (1992), e.g., it is organized in logical and systematic fashion, every element of the population of interest is present only once in the frame etc.

The sampling method utilized in this work can be described as Simple Random Sampling (SRS), as the employees to participate in the survey are selected randomly from the global employee catalog (enterprise address-book).
More specifically the employee emails were extracted from the global employee catalog which is accessed via LDAP (Sermersheim, 2006), and imported in R (www.r-project.org). There a random number generator was used to extract 500 random numbers which were subsequently used as indexes to match the respective position of the emails extracted from LDAP. These randomly selected 500 employees, were contacted (via email) to fill in the online survey. The company from which the sample is drawn is a multinational one, with tens of thousands of employees operating worldwide in 100+ countries and which falls under the category this work focuses on, i.e., a modern enterprise which heavily relies on Information Systems for its daily operations as defined in section 2.1.

We have included a filtering question, i.e., the number of change processes the employee has participated, in order to filter out a posteriori employees that do not fit in our criteria. As we note in section 4.1, this resulted in the removal of 1 case from our dataset. Overall the sampling frame is seen as adequate, complies to our limited time-frame to carry out this research (a census would have been preferred but is impossible under our constraints), and also is in-line with the general netiquette of not spamming via email the specific enterprise’s employees.

Response rates are not favorable for online/Internet surveys and are significant lower than other approaches (Vehovar and Manfreda, 2008; Nulty, 2008), however, they offer other treats which are seen as beneficial in our case, e.g., universal accessibility via heterogeneous devices (computer, tablets, mobile), on-line validation etc. In addition, due to the time constraints of this work, this approach was considered feasible and with the associated risks as relative low and manageable. To boost the response rate some of the suggestions by Nulty (2008) have been adopted, e.g., providing a direct electronic link of the survey via email, provide frequent reminders, and persuading them that their input will be used. In addition also other actions are taken, i.e., selection of a simple survey form, user-feedback on the progress of filling in the survey, limited number of questions (approx. 4 per factor), anonymity guarantee etc.
3.3 Data Collection

Two sections exist in the survey, i.e., the demographics one collecting various anonymized data as well as info on the background of the respondents and the main one, where 4–5 questions per identified factor are posed.

Data collection is done online, where the respondents fill in an electronic form. The usage of specific online survey tools means that no semantically invalid answers can be entered and that all questions are answered (verification is done in real-time), hence we will not have to deal with missing or invalid data, and probably be able to utilize the full dataset.

3.4 Scale of Measurement

The scale of measurement is an Ordinal scale, i.e., a seven level Likert scale (Norman, 2010). The seven levels range from strongly disagree (coded as 1) to strongly agree (coded as 7). Apart from the Likert scale questions, each section (containing a factor's questions) has an additional field where text feedback can be provided by the respondents in order to capture additional aspects we have missed when constructing the survey. Although there are several scales, the Likert scale was selected as it is easy to use, straightforward and fits well with the statements which we want to present to the sampling group in order to acquire their feedback. It was decided to select the seven level Likert scale, in the hope to be able to capture more fine-grained feedback via the survey and subsequently use it with SEM.

3.5 Unit of Analysis

The unit of analysis in this work is the enterprise. The level of analysis and observational unit are the individuals, i.e., employees within a single enterprise that have undergone at least one change process and who will anonymously participate in the online survey.
3.6 Validity and Reliability

There are several ways to demonstrate instrumentation validity according to Straub, Boudreau and Gefen (2004). Through careful selection of factors and unambiguous questions that capture all aspects of the factors we aimed at construct validity. Since we will utilize SEM, construct validity is also addressed as Straub, Gefen and Boudreau (2004) point out: “in short, SEM, including both least-square and covariance-based techniques, accounts for error, including measurement error, in a holistic way”. For reliability, we will measure Cronbach’s alpha as an indicator of internal validity (Cronbach, 1951). Yin (2009) also notes that reliability is enhanced if respondents give comments; hence this kind of feedback is integrated in the survey. The data is collected anonymously, and hence we do not foresee any “effect of the researcher”.

3.7 Ethical Considerations

This survey does not explicitly deal with personal data and individual behaviors, however some of these might be implicitly evident. To avoid any potential shortcomings that would prevent participation in the short timeframe we have, we decided to make it anonymous. The anonymity is enforced for both employees and their opinions as well as for the company from which the sample is acquired, and this was explicitly communicated and enforced.

Throughout this process, no data is collected (directly or indirectly) that may compromise respondent’s privacy and/or lead to respondent characteristics identification (e.g., which group s/he belongs to within the company etc.) As no additional ethical considerations are raised, no further actions have been undertaken.
The aim of this chapter is to provide deep insights on the empirical data and its analysis as it was carried out. To achieve the goal, advanced statistical methods have been used, which however are standard for quantitative survey analysis in the field. As such, it is beyond the aim of this work to introduce the reader to the theoretical aspects of statistics and formulas used. However, whenever such equation or indicator is used, detailed references are provided, and therefore the interested reader easily can follow-up and acquire in-depth insights on the mathematics used in this work. The end result of the statistical assessment is captured at the end of the chapter in Table 4.11.

4.1 Data Screening & Demographics

The empirical data collection was done via an electronic survey. The respondents are employees in a multi-national organization and have undergone a number of change activities as part of their organizational worklife. The survey could be accessed uniformly from mobile and desktop computers, and
depicted some questions per factor, as it can be seen in the chapter 6. In order to engage and retain the interest of the respondents, we have kept it short with mostly four questions per factor, and in an appealing layout. A progress indicator was visible in order for the respondents to have the overview of the remaining steps (and extrapolate the time) needed to finalize the survey. A validation of respondent’s input was done at each step, which means that (i) the respondent was able to fix any errors in real-time, and therefore all supplied data are semantically valid and (ii) we have the complete dataset, i.e., there is no missing data. In addition, a free-text area was included, so that user-provided feedback could be captured, in order to include new ideas and comments for the further assessment.

Overall we received 151 responses which corresponds to a response rate of 30.2%. However, three of these were removed from the dataset, as the respondents had answered with the same value for all criteria (note: answering all questions in a page, is a perquisite to progress to the next page of the survey). Therefore we assume that the respondents had an interest in looking the questions asked, but did not really want to provide any meaningful input to our survey. In order to avoid collecting “contextually-invalid” data, we had in the demographics section a question asking about the number of change processes the respondent had participated. Our interest was to focus on respondents that had some practical experience, and hence had participated in at least one such change process. As a result, an additional one response was removed from the dataset for this reason.

Under the aforementioned considerations, our valid dataset that we further examine, after the removal of 4 responses, consists of 147 valid answers ($N = 147$). All items are of the 7-level Likert scale (Norman, 2010) as analyzed in section 3.4. An overview of the demographic aspects of the dataset is depicted in Figure 4.1, while additional details can also be found per factor in Table 4.1.
The demographics reveal a high percentage of young (26%) and middle-aged (57%) workforce, with experience that spans the full spectrum from work starters, to professionals and veterans with several decades of experience. The education level is very high with 97% holding a degree, the majority of which are subordinates (84%), while the management accounts for approx. 15%. Apparently several change processes have happened and the majority of the respondents have participated in 4–9 of them, while the rest is divided to 10+ and 1–3 participations, which means we have in the dataset...
newbies as well as very experienced personnel in change management.

4.2 Descriptive Data Inspection

An overview of the descriptive data statistics can be seen in Table 4.1. The first column depicts the factors, while the survey questions (listed in the Appendix) for each factor are in the second column, i.e., Employee (EM1–EM4), Leadership (L1–L4), Training & Development (T1–T4), Reward & Recognition (R1–R4), Culture (C1–C4), Politics (P1–P4), Information Systems (I1–I4), and Effective Change Management (ECM1–ECM5). The number $N$ denotes the total responses collected, while min and max depict the results in the survey's scale which in our case is the Likert 7-point scale (Norman, 2010). In addition the mean values reflect the central tendency of our data, while the dispersion around the mean is shown in the standard deviation column.

All of our variables are based on Likert scale, and therefore there is no reason to exclude variables on skewness unless they exhibit no variance. As such we focus on the kurtosis but also include skewness in Table 4.1 for reference. A kurtosis $> 1$ or $< -1$ is potentially problematic. Sposito et al. (1983) point out however, that for practical purposes this could be the case only for values $> 2.2$ or $< -2.2$. Kurtosis outside these limits indicates lack of sufficient variance, however, as we can see, our values are within these limits and therefore there is no reason to exclude any of them, as sufficient variance is evident.
Table 4.1: Data descriptive statistics

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Valid N (listwise) 147
4.3 Exploratory Factor Analysis

Factor analysis is used for exploring data patterns, for data reduction, confirming a hypothesis for a factor structure etc. The Exploratory Factor Analysis (EFA) is a multivariate statistics method used to identify the underlying relationships between measured variables (Norris and Lecavalier, 2010). With EFA we investigate if our theoretically considered factors are also evident in the dataset, or if additional ones emerge from the dataset, that we had not considered in our model. This is a cautionary measure to check if we are in the right path with our efforts.

The Kaiser-Meyer-Olkin (KMO) statistic is a Measure of Sampling Adequacy (MSA), both overall and for each variable (Kaiser, 1970; Cerny and Kaiser, 1977), and tests whether the partial correlations among variables are small. KMO values greater than 0.8, as it is the case (shown in Table 4.2) are characterized as meritorious by Kaiser and Rice (1974) and this is an indication that component or factor analysis will be useful for these variables.

Bartlett’s test of sphericity tests whether the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate. A significant result, as it is our case, (shown in Table 4.2) indicates that the matrix is not an identity matrix and the variables do relate to one another enough to run a meaningful EFA. The overview of the results for tests can be seen in Table 4.2.

Our next step is to identify the number of factors explained via our available dataset and investigate if other additional factors than the ones we hypothesized in our model exist. We use the Kaiser (1960) rule to determine the
number of components which is the most common method used in practice (Fabrigar et al., 1999).

Table 4.3: Total variance explained

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Extraction Method: Maximum Likelihood.

We have conducted an EFA using Maximum Likelihood with Promax rotation to see if the observed variables loaded together as expected, were adequately correlated and met the criteria of reliability and validity. Max-
Table 4.4: Pattern matrix

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<td></td>
</tr>
<tr>
<td>T3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.497</td>
<td></td>
</tr>
<tr>
<td>R3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.786</td>
</tr>
<tr>
<td>R1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.713</td>
</tr>
<tr>
<td>R4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.685</td>
</tr>
<tr>
<td>R2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.647</td>
</tr>
<tr>
<td>L1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.742</td>
</tr>
<tr>
<td>L2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.642</td>
</tr>
<tr>
<td>L3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.631</td>
</tr>
<tr>
<td>L4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.630</td>
</tr>
</tbody>
</table>


Maximum Likelihood estimation was chosen in order to determine the unique variance among items and the correlation between factors. We also wanted to be consistent with the CFA that will follow in the next step, which also
uses Maximum Likelihood. Promax was chosen because it can account for the correlated factors.

Kaiser (1960) recommends that only eigenvalues that are at least equal to 1 are retained. As we see in Table 4.3 we identify 8 factors with eigenvalues greater than 1. These 8 factors explain 64% of the total variance. We also note that these 8 factors are in-tandem with the number of factors in our proposed model, which derived them from the theoretical investigation. The reproduced matrix had 20 (3%) non-redundant residuals with absolute value greater than 0.05, further confirming the adequacy of the variables and an 8-factor model.

Table 4.5: Factor correlation matrix

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.000</td>
<td>.422</td>
<td>.414</td>
<td>.349</td>
<td>.408</td>
<td>.446</td>
<td>.404</td>
<td>.361</td>
</tr>
<tr>
<td>2</td>
<td>.422</td>
<td>1.000</td>
<td>.182</td>
<td>.221</td>
<td>.218</td>
<td>.241</td>
<td>.143</td>
<td>.181</td>
</tr>
<tr>
<td>3</td>
<td>.414</td>
<td>.182</td>
<td>1.000</td>
<td>.207</td>
<td>.212</td>
<td>.305</td>
<td>.219</td>
<td>.178</td>
</tr>
<tr>
<td>4</td>
<td>.349</td>
<td>.221</td>
<td>.207</td>
<td>1.000</td>
<td>.049</td>
<td>.082</td>
<td>.247</td>
<td>.194</td>
</tr>
<tr>
<td>5</td>
<td>.408</td>
<td>.218</td>
<td>.212</td>
<td>.049</td>
<td>1.000</td>
<td>.260</td>
<td>.274</td>
<td>.211</td>
</tr>
<tr>
<td>6</td>
<td>.446</td>
<td>.241</td>
<td>.305</td>
<td>.082</td>
<td>.260</td>
<td>1.000</td>
<td>.280</td>
<td>.122</td>
</tr>
<tr>
<td>7</td>
<td>.404</td>
<td>.143</td>
<td>.219</td>
<td>.247</td>
<td>.274</td>
<td>.280</td>
<td>1.000</td>
<td>.179</td>
</tr>
<tr>
<td>8</td>
<td>.361</td>
<td>.181</td>
<td>.178</td>
<td>.194</td>
<td>.211</td>
<td>.122</td>
<td>.179</td>
<td>1.000</td>
</tr>
</tbody>
</table>


In Table 4.4 we witness a very clear loading on factors. The factors demonstrate sufficient convergent validity as their loads are above the minimum recommended threshold of approx. 0.45–0.5 for our sample according to Hair et al. (2010). We note that T3 is near to the threshold, however still above the 0.45, and therefore we have decided not to exclude it from our further analysis. The factors demonstrate sufficient discriminant validity as the correlation matrix (in Table 4.5) shows no correlations above 0.700 and there are no problematic cross-loadings.

For reliability we also measure the Cronbach’s alpha (Cronbach, 1951) which is a coefficient of internal consistency. For the extracted factors the Cronbach’s alphas are shown in Table 4.6. We attest that all of them are over 0.7, while most of them are also over 0.8, which indicates good internal con-
Table 4.6: Cronbach’s Alpha

<table>
<thead>
<tr>
<th>Survey questions</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee EM1,EM2,EM3,EM4</td>
<td>.846</td>
</tr>
<tr>
<td>Leadership L1,L2,L3,L4</td>
<td>.754</td>
</tr>
<tr>
<td>Training &amp; Development T1,T2,T3,T4</td>
<td>.826</td>
</tr>
<tr>
<td>Reward &amp; Recognition R1,R2,R3,R4</td>
<td>.789</td>
</tr>
<tr>
<td>Culture C1,C2,C3,C4</td>
<td>.883</td>
</tr>
<tr>
<td>Politics P1,P2,P3,P4</td>
<td>.841</td>
</tr>
<tr>
<td>Information Systems I1,I2,I3,I4</td>
<td>.930</td>
</tr>
<tr>
<td>Effective Change Management ECM1,ECM2,ECM3,ECM4,ECM5</td>
<td>.944</td>
</tr>
</tbody>
</table>

Consistency; some of them are even above 0.9 which indicates excellent internal consistency (George and Mallery, 2013).

We note also that removing variables could enhance Cronbach’s Alpha in some cases. For instance removing T3 could increase it for Training & Development from .826 to .865, and removing I1 would increase Information Systems from .930 to .938. However we have not done so since Cronbach’s Alpha is already at adequately high level and the gains are moderate.

4.4 Structural Equation Modeling

Structural Equation Modeling (SEM) comprises of several statistical methods including Confirmatory Factor Analysis (CFA). CFA is used to investigate the model fit, i.e., how well the proposed model (depicted in Figure 2.1) of the factor structure accounts for the correlations between variables in the dataset.

Table 4.7: Relative Chi square (CMIN/DF)

<table>
<thead>
<tr>
<th>Model</th>
<th>NPAR</th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CMIN/DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>73</td>
<td>544.762</td>
<td>488</td>
<td>.038</td>
<td>1.116</td>
</tr>
<tr>
<td>Saturated model</td>
<td>561</td>
<td>.000</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independence model</td>
<td>33</td>
<td>3236.846</td>
<td>528</td>
<td>.000</td>
<td>6.130</td>
</tr>
</tbody>
</table>
Table 4.7 depicts the Chi square (CMIN) divided by the degrees of freedom (DF) which leads to the computation of the relative Chi square (CMIN/DF). Several researchers have suggested the use of this ratio as a measure of fit. Carmines and McIver (1981) note that: “Wheaton et al. (1977) suggest that the researcher also computes a relative chi-square . . . They suggest a ratio of approximately five or less “as beginning to be reasonable”. In our experience, however, to degrees of freedom ratios in the range of 2 to 1 or 3 to 1 are indicative of an acceptable fit between the hypothetical model and the sample data”. Marsh and Hocevar (1985) point out that “…different researchers have recommended using ratios as low as 2 or as high as 5 to indicate a reasonable fit”. However, Byrne (1989) concludes that “…it seems clear that a ratio > 2.00 represents an inadequate fit”. Therefore the calculated relative Chi square with a value of 1.116 for our model indicates a good fit.

Table 4.8: Goodness of Fit Index (GFI)

<table>
<thead>
<tr>
<th>Model</th>
<th>RMR</th>
<th>GFI</th>
<th>AGFI</th>
<th>PGFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>.201</td>
<td>.817</td>
<td>.789</td>
<td>.710</td>
</tr>
<tr>
<td>Saturated model</td>
<td>.000</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independence model</td>
<td>.380</td>
<td>.293</td>
<td>.249</td>
<td>.276</td>
</tr>
</tbody>
</table>

Other fitness measures include the Goodness of Fit Index (GFI), and the GFI adjusted for degrees of freedom (AGFI) as devised by Jöreskog and Sörbom (1986) and generalized by Tanaka and Huba (1985). Both GFI and AGFI should be less than or equal to 1, where a value of 1 indicates a perfect fit. These measures are affected by sample size and therefore the current consensus seems to tend towards not to using them (Sharma et al., 2005). In any case, both GFI and AGFI are less than 1.

The Comparative Fit Index (CFI) is introduced by Bentler (1990), and values near to 1 indicate a very good fit. Generally values >0.9 indicate an acceptable fit, and this is also our case as depicted in Table 4.9.

The Root Mean Square Error of Approximation (RMSEA) measures the discrepancy between the fitted model and the covariance matrix in the popula-
Table 4.9: Comparative Fit Index (CFI)

<table>
<thead>
<tr>
<th>Model</th>
<th>NFI</th>
<th>RFI</th>
<th>IFI</th>
<th>TLI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>.832</td>
<td>.818</td>
<td>.979</td>
<td>.977</td>
<td>.979</td>
</tr>
<tr>
<td>Saturated model</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Independence model</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 4.10: Root Mean Square Error of Approximation (RMSEA)

<table>
<thead>
<tr>
<th>Model</th>
<th>RMSEA</th>
<th>LO 90</th>
<th>HI 90</th>
<th>PCLOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>.028</td>
<td>.007</td>
<td>.041</td>
<td>.999</td>
</tr>
<tr>
<td>Independence model</td>
<td>.187</td>
<td>.181</td>
<td>.94</td>
<td>.000</td>
</tr>
</tbody>
</table>

Browne and Cudeck (1993) note that “Practical experience has made us feel that a value of the RMSEA of about .05 or less would indicate a close fit of the model in relation to the degrees of freedom”. MacCallum et al. (1996) have used 0.01, 0.05, and 0.08 to indicate excellent, good, and mediocre fit, respectively. As shown in Table 4.10, our RMSEA value is 0.028 which indicates a very good to excellent fit of the model.

4.5 Hypotheses Testing

The IBM AMOS tool was used as it enables to specify, estimate, assess and present models to show hypothesized relationships among variables.

Our model is depicted in Figure 4.2. All factors are depicted and the values on the arrows represent the path coefficients (standardized estimates) which depict the weight of the links in the path analysis. We can see that all 7 factors (as hypothesized) have a positive contribution to Effective Change Management.

The calculation of the Critical Ratio (CR) which is the division of the regression weight estimate by the estimate of its standard error, and tests for
loading significance is also calculated (as depicted in Table 4.11). According to Hox and Bechger (1998) a CR higher than 1.96 (or lower than -1.96) indicates two-sided significance at the customary 5% level.

Straub, Gefen and Boudreau (2004) point out that in Quantitative Positivist Research a “theoretical hypothesis is supported [...] but not proven, because theory in the positivist philosophy cannot be proven, strictly speaking”. As we see all hypotheses have a CR > 1.96 and therefore all hypotheses are supported by the empirical data we collected. An overview of the results is depicted in

Figure 4.2: Structural Equation Model
Table 4.11: Testing of hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Path</th>
<th>Path Coefficient</th>
<th>CR Value &gt;1.96</th>
<th>Support Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Employee → Effective Change Management</td>
<td>.243</td>
<td>3.061</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>Leadership → Effective Change Management</td>
<td>.243</td>
<td>2.849</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>Training &amp; Development → Effective Change Management</td>
<td>.269</td>
<td>3.485</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>Reward &amp; Recognition → Effective Change Management</td>
<td>.202</td>
<td>2.441</td>
<td>Supported</td>
</tr>
<tr>
<td>H5</td>
<td>Culture → Effective Change Management</td>
<td>.235</td>
<td>3.104</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>Politics → Effective Change Management</td>
<td>.213</td>
<td>2.733</td>
<td>Supported</td>
</tr>
<tr>
<td>H7</td>
<td>Information Systems → Effective Change Management</td>
<td>.227</td>
<td>3.013</td>
<td>Supported</td>
</tr>
</tbody>
</table>
5 Discussion

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5.1 Hypotheses Analysis & Implications

The first hypothesis (H1) posed, was that change measures related to employee aspects can have a positive contribution to Effective Change Management in modern enterprises. As we can see in Table 4.11, the path coefficient is .243 and the CR value of 3.061 is significantly above the 1.96 threshold. As such, there is significant contribution from the employee factor to the effective change management in modern enterprises. This is inline with the theoretical framework and as the change affects inevitably people and their needs and impacts need to be taken into consideration. The role of employees is also in literature seen as central to any change; Smith (2005) and Strebel (1996) point out that gaining their support is pivotal to the success of the change process. Hiatt and Creasey (2003) have already pointed out that it is a common
error to focus only on business, and that the focus should be both on business and people (the employees). We also note that all of the commonly used change management strategies, e.g., Kotter (1996); Hiatt (2006); Waterman et al. (1980); Clarke and Garside (1997); Burke and Litwin (1992) also put the individual, i.e., the employee in the central position. Our result here reaffirms these positions, as employees are seen as a significant contributor to effective change management. As such, the multi-faceted aspects related to gaining his trust, having him acquire a clear understanding of the change process and overall vision, dealing with the potential emotional aspects, etc. have to be considered in full, independent of the potential costs involved.

The second hypothesis (H2) posed was that change measures related to Leadership can have a positive contribution to Effective Change Management in modern enterprises. As indicated in Table 4.11, the path coefficient is .243 and the CR value of 2.849 is above the 1.96 threshold. As such, there is significant contribution from the leadership factor to the effective change management in modern enterprises, something that was expected, as in literature it is pointed out the critical role of leaders throughout the process. The role of leadership is considered in all major change management strategies, e.g., by Kotter (1996); Hiatt (2006); Waterman et al. (1980); Clarke and Garside (1997); Burke and Litwin (1992) etc. In addition, Pearce and Sims (2002) point out that there is support for leadership in team performance and that especially shared leadership can be a better predictor than the vertical leadership. As our findings also support the pivotal role of leadership, clear investments towards building up leadership skills in the workforce have to be realized. The latter is critical, not only because such skills are scarce as Beer et al. (1990) point out, but also because these skills are not fully understood (Armenakis and Harris, 2002). The leaders can act as guides towards inspiring, motivating and guiding employees in the change management process and to do so they must be able to communicate effectively a clear vision, and anticipate if any parts of it are not fully-understandable by the employees. It is also of utmost importance that they are compliant and practice what they speak, by being the first to embrace the change and utilize the new proce-
The third hypothesis (H3) posed was that change measures related to Training & Development can have a positive contribution to Effective Change Management in modern enterprises. As indicated in Table 4.11, the path coefficient is .269 and the CR value of 3.485 is well above the 1.96 threshold. As such, there is significant contribution from the training and development factor to the effective change management in modern enterprises. This was expected, as changes require the further development of the employee capabilities and knowledge, and therefore training on the new aspects is seen as mandatory. As we also have a positive indication about the significant contribution of the Training & Development, we are in the same line of thought with what most strategies, e.g., Kotter (1996); Hiatt (2006); Waterman et al. (1980); Clarke and Garside (1997); Burke and Litwin (1992) attempt to achieve. Failure to provide adequate training, may result to inability to utilize the new tools (Jarrar et al., 2000) and defeats the purpose. This can have wide-ranging effects on the organizational performance, and what is worse, it might impact the self-confidence of the employees and create strong resistance to future changes as Self and Schraeder (2009) point out. Enterprises need to invest also at large scale on training & development, in order to avoid the “del the delegate” problem (Jashapara, 2004) which will inhibit progress. Especially in modern enterprises where the workforce has a high degree of familiarity with modern IS, that should be relative easy, and as such mass-scale trainings, e.g., online can be realized.

The fourth hypothesis (H4) posed was that change measures related to Reward & Recognition can have a positive contribution to Effective Change Management in modern enterprises. As indicated in Table 4.11, the path coefficient is .202 and the CR value of 2.441 is above the 1.96 threshold. As such, our empirical assessment shows that indeed reward and recognition has a significant contribution to effective change management in modern enterprises. This is understandable, as when employees witness rewards or recognition, they are less likely to oppose changes. Such actions have been realized often, and Will (2014) points out how with incentives Ford managed to revolution-
ize his company’s processes. The same holds true also in modern enterprises, and therefore the management should invest towards reward and recognition schemes. By doing so, as Beardwell et al. (2004) point out, the employee satisfaction and subsequently the commitment can increase. Enterprises should also pay attention towards celebrating short-term wins, as these can provide tangible benefit for the progress and success of the process, as well as potentially help turn neutrals to supporters once they see the evidence (Kotter, 1996).

The fifth hypothesis (H5) posed was that change measures related to Culture can have a positive contribution to Effective Change Management in modern enterprises. As indicated in Table 4.11, the path coefficient is .235 and the CR value of 3.104 is above the 1.96 threshold. As such, culture has a significant contribution to effective change management in modern enterprises, something that is inline with the literature. Culture is very powerful and it can be seen as an “organization iceberg” (Senior and Fleming, 2006) where only the easy to control aspects are seen on surface, with the major ones and more difficult to manipulate being below the surface. As our research also re-affirms the impact of culture, modern enterprises should predominantly focus their efforts to the soft and intangible aspects of culture (i.e., the ones below the surface), such as attitudes and beliefs. Clarke and Garside (1997) have identified several social and cultural issues which can be targeted. Especially for large multi-cultural enterprises, Kirsch et al. (2012) have investigated more cross-cultural dynamics that should be considered. However, culture is not relevant only for the planning or the execution of the change process, but maybe even more importantly, for the role it plays once the process is over and towards institutionalizing it (Kotter, 2014).

The sixth hypothesis (H6) posed was that change measures related to Politics can have a positive contribution to Effective Change Management in modern enterprises. As indicated in Table 4.11, the path coefficient is .213 and the CR value of 2.733 is above the 1.96 threshold. As such politics have a significant contribution to effective change management in modern enterprises. As mentioned, our focus on the politics is not on the negative side
(Bouckenooghe, 2012), but the positive one, i.e., how one can actually use politics in the wider sense, to build up support and powerful coalitions that will assist towards an efficient change process. Our empirical assessment reaffirms the opinions in literature. Politics are often neglected, or not given enough attention, but do have a sizable impact. As such ramping-up teams with the right mix of people and positions, without team-sabotaging elements as advised by Kotter (1996), one can effectively ease the change process and minimize resistance. Politics are more intense when the changes are more complex as Buchanan et al. (1999) and Bouckenooghe (2012) note, and skills have to be acquired to utilize them towards effective change management and not the opposite.

The seventh hypothesis (H7) posed was that change measures utilizing Information Systems can have a positive contribution to Effective Change Management in modern enterprises. As indicated in Table 4.11, the path coefficient is .227 and the CR value of 3.013 is above the 1.96 threshold. As such, Information Systems have a significant contribution to effective change management in modern enterprises. Our research not only reaffirms that IS do play a significant role, but increases the importance of it by putting it on the same level with other predominant factors, e.g., employees, leadership, training etc. This has several implications, especially for the modern enterprises we investigate, which use widely IS systems both internally and externally in all their interactions with the various stakeholders. Change management processes need to be measured, understood and assessed, and the IS could very well support with such tasks (Clarke and Garside, 1997; Moran and Brightman, 2001). IS can be used both to ease the change processes as well as monitor them and provide proof of tangible benefits which can subsequently act as positive effect multipliers to the change process as we already discussed in subsection 2.4.7. The role of technology and more specifically IS is gaining momentum as it is becoming the backbone of modern enterprises active in digital economies. In addition though IS can act as enabler to empower employees to utilize their skills (Guimaraes and Armstrong, 1998), as well as act themselves as catalyst for change (Hammer and Champy, 1993).
5.2 Additional Qualitative Findings

In the survey, apart from the Likert scale questions, each section had an additional field where text feedback can be provided by the respondents in order to capture additional aspects we have missed when constructing the survey as already indicated in chapter 3. Although only a few left such feedback, some of it points us to additional directions.

Some respondents indicated that they were very pessimistic about the change processes, and although several of them had happened in their department, it looked like the management had not really learned anything from previous failures; even worse many of these were declared as Pyrrhic victories although in the eyes of the employees these were not even close. As such, some people pointed out that there was a gap between what academics point out and what the practice reveals, or otherwise put, it looks like people implementing change management processes have only partial knowledge of the key aspects of it from literature and tend to repeat mistakes others have already done in the past (no learning or storage of lessons learned in the corporate memory). Some of these views are also seen in the responses of the survey, and have an effect on the overall sample, which is considered potentially a limitation as we discuss in section 5.3.

Another issue emerging from the comments was that especially in large multi-national enterprises additional factors come into play, e.g., the employee representatives who may guide internal actions against the management (or support them), the lessons learned from other change processes (i.e., promise vs. reality), employee mentality (“us”, i.e., subordinates against “them”, i.e., management) etc. We consider that some of these are tackled already in the factors that we have selected. However, indeed such fine-grained considerations provide new directions for follow-up research as we indicate in section 5.3.

Overall we can say that our findings are compliant at large with the literature. However, as we analyze also in Critical View & Limitations (section 5.3), this compatibility is at high level. More research needs to be done in-depth in order to investigate potential deviations within the different factors that
were assessed. Generally our work shares common ground, but also clearly differentiates from the existing state of the art. Also as extensively analyzed in section 5.3

5.3 Critical View & Limitations

The results point out that all of the selected factors considered in the proposed model have a significant contribution towards effective change management. The empirically acquired data indeed statistically via SEM support the model hypothesized from the literature analysis. Although this is a positive indication on the direction of the targeted research, it should be interpreted with a grain of salt, and by no means consider that the area is terminally or adequately investigated. We have identified several considerations and limitations to it, which should be taken into account when interpreting and utilizing these results. The critical views expressed here and limitations identified, can serve as a starting point for follow-up actions and continuation of this research.

5.3.1 Theory

Taking a critical view on the literature review carried out in this work, which resulted to the factor selection (as shown in chapter 2) we can see several critical points and limitations.

Our research has considered state of the art research and theories, however this can be seen in no way as exhaustive. Surely several other journal articles & PhD theses that are available could have been studied, and more light could have been shed to specific aspects of the factors. However, due to the time constraints we had to construct the theoretical framework and select the factors based on the works identified. As the later is not exhaustive, more interesting work might have been unknowingly omitted from this research, which may impact the number of specific factors selected. Such limitations are understood, and therefore more wider research is needed, in order to
have a better and more holistic view (horizontal research) on the key factors that impact effective change management.

On the semantic level, the research carried out is not always exactly used in the same way by all researchers. As such, the boundaries of the definitions are sometimes fluid and may result in variances. For instance, researchers might use different keywords to describe similar (but not quite the same) entities (e.g., “People”, “Personnel”, “Employee”), others may use the same terminology but understand it differently in different contexts, e.g., Leadership is sometimes not distinguished from management etc. As such there is some fuzziness underlying with the scope of all factors and how these are perceived. Additional research is needed to better understand the boundaries and potentially provide more clear separation of them.

The factors we have identified and investigated, are by their own nature complex. As an example, Leadership is seen in literature as important for effective change management, however, there are several leadership types as Pearce and Sims (2002) point out, i.e., aversive, directive, transactional, transformational, empowering and shared, which may have different impact on effectiveness. However, this work does not distinguish such fine-grained details, which may impact on the capturing of the factor and its importance in effective change management. In addition Armenakis and Harris (2002) point out that leadership is one of the least understood skills of leaders. As such, research towards each one of these should be done, with the aim to better understand them and capture their impacts (vertical research). Although a certain level of confidence exists for the selection of the specific factors based on the literature review, it might be that still these factors are too general and fuzzy and a more clear distinction would be needed. To that sense more research is needed to operationalize each factor and identify its core characteristics. This is seen as being of critical importance, as it is exactly these key characteristics upon which we subsequently derive the survey questions that try to capture the respective factor.

Capturing the factors has been realized in this work via selected questions that stem from the literature review. However, in the effort to boost the re-
response rate, we have limited our survey to four questions per factor. This trade-off is seen as a limitation, as the selected questions may not capture adequately the full spectrum of the factor as intended, but capture a part of it, potentially a partially significant one, which may result to false positioning of the factor and its contribution to the effective change management. As such more research is needed to verify that the selected factors are adequately captured by the selected questions, or potentially extend their number or nature to better capture the selected factor.

5.3.2 Methodology

The methodology we follow is quantitative as we already discussed in chapter 3. The main motivation was to quantify data and measure various views and opinions in a chosen sample. To that end we have used structured techniques and statistical data analysis. Our motivation was to derive and recommend a course of action, i.e., have a valid model that can be relied upon to investigate the impact of various factors in change management. Although we have achieved our goals, the usage of only Quantitative Research is seen as a limitation. Ideally it should be followed by Qualitative Research to explore and understand some of our findings further. Qualitative Research could also be utilized towards better understanding the factors (and not base our work solely on the literature review), and potentially better fine-tune their capturing via the survey questions in the “lingua franca” of the sampling frame, so that they are fully understood in the way the researcher assumes. As Myers (1997) points out, some researchers have already suggested combining one or more research methods in the one study (called triangulation).

Our unit of measurement throughout this work has been the individual employee. However, especially in large enterprises, the employee is part of one or more groups, which also have an effect on its behavior and affect him differently during a change process. As such, another limitation of this work is the lack of focus on the dynamics of groups and their relationship with the individual employees, as well as the dynamics among constellations of groups. As modern enterprises are seen as complex ecosystems, some more detailed
research towards the groups may reveal additional factors and emergent behaviors that impact effective change management.

The proposed model we have considered, assumes that all factors are independent from each-other and contribute to the common one, i.e., the effective change management in modern enterprises. However, there might be dependencies among these. As such, complementary models with correlations among the factors could be investigated and assessed. The result could be a refined model of the one presented in Figure 2.1, which may reveal additional insights. Our research has resulted in a second order factor model proposal. However, a more detailed literature analysis as well as considerations on the factors might result in a higher-order factor models with more than two levels.

The capturing of the results has been done using a 7-level Likert scale, where the respondents note their level of agreement or disagreement. The correct utilization of the Likert scale is challenging and has to be done with care overall as Carifio and Perla (2007) point out. Although we have taken extra care to formulate appropriately the questions, in this line of thought, it might be that these are not seen so by other researchers, or they might not be understood as such in the respondent’s view. A more thorough process and research in that direction could provide more clarity. The selection of a Likert scale as such, bears the risk that the respondents might fall in the leniency and severity errors, i.e., tend to assign predominantly high or low ratings on a scale, or the “central tendency” error, i.e., avoid assigning extremes and assign mostly ratings in the middle (Schwab, 2004).

In addition, the items in Likert scale are assumed to be replications of each-other and therefore all have the same weight in the sum procedure, however, other approaches, e.g., the Rasch model, consider that the items are differentiated by difficulty (van Alphen et al., 1994). There are several differences (as well as pros and cons) between Likert and Rasch, e.g., the Rasch model takes into account fluctuations in human responses, is sample-free etc. as van Alphen et al. (1994) point out, and therefore we consider that it is worth investigating as an alternative method, which could yield new insights.
Finally, we had promised complete anonymity to the respondents and no provision of fine-grained data (i.e., the dataset) to the enterprise, management or any other entity, in order to guarantee that they will answer truly to the questions. We have also paid attention to formulate all questions appropriately and complying to these considerations. However, we have no means of verifying if this has happened. Some of the respondents might still have answered in some questions according to what is “politically correct” and therefore some bias may exist.

5.3.3 Operationalisation

The sampling group has been randomly selected from the population. Although it is proven adequate for the analysis in the specific model, the 147 results received correspond only to a small fraction of the overall employee base, which is tens of thousands on the surveyed enterprise. As such, the results of the individual questions may not be globally indicative of the whole enterprise, especially if that enterprise is highly heterogeneous and distributed globally. Therefore, the results need to be verified with larger simple random sampling groups or other sampling groups, e.g., coming out of a proportional stratified sampling, where the precision can be higher than simple random sampling. Larger sample size might also be beneficial to derive some more confident results. Ideally though, since the sampling frame is the employee list of the enterprise, a census should be carried out instead of resulting to a sample. However, the later may be difficult and time-consuming, especially for large enterprises.

In addition, we have to point out that this work has acquired its sample from a single large multi-national enterprise. Although this is considered adequate for providing initial indications, it is clear that the survey needs to be carried out to additional companies that can fall in the category of “modern enterprises” as analyzed in this work. This work has undertaken all possible actions to make the research easy to replicate in other contexts and larger scales, so that it can be followed up in the future.

The results derived have not taken into consideration several aspects of
the respondents, which may inject bias, and result that the sampling group is not representative of the population. Such aspects include the enterprise history, employee career level, department, culture, geographical aspects, IT knowledge, personality, corporation domain, learning readiness etc. All of these may impact the responses or create bias towards a specific direction or lead to failure towards capturing & identifying certain phenomena. For instance if the last major change process has failed due to unfulfilled leadership promises and actual implementation, those employees might be biased towards rejecting the role of leadership towards an effective change management process, which may skew the results. Future efforts could better capture these aspects in a large and diverse population, and take them into consideration both when constructing the sampling group as well as use them to analyze the empirical results.

Assuming that the factor selection and their capturing via the selected questions are valid, this does not guarantee that these are understood by the respondents as the researcher intended which may create unforeseen bias. It might be that the employees do not share the same interpretation of the context (e.g., terminology) in which each question posed by the researcher operates, and therefore the answers may not capture objectively the intended factor. More research is necessary towards this direction in order to avoid such problematics.

Another issue with the 7-level Likert scale we have used, is that it allows respondents to cast a valid answer without paying attention to the content. In obvious cases, that can be detected and filtered out, and indeed as explained in section 4.1, three of the responses we received were removed from the sample exactly for that reason (because the respondent had selected the same level in all of the questions). However, if a respondent had pseudo-randomly clicked on the various selections, his data would be considered valid. This is considered a limitation in the operationalization, and it is impossible to detect in our case. Here potentially in the future, more advanced technologies could be used that monitor the time spend per question by the respondent prior to selecting the answer, and potentially provide some confidence if s/he has
read it or not – however this again does not mean that the question was also contextually correctly understood as we have already discussed.

This work is based on the usage of specific statistical approaches and methods, i.e., EFA, CFA, SEM. However the selection of these was done as (i) they are highly sophisticated and can adequately be utilized to evaluate the empirical results we obtained, and (ii) because the researcher is experienced in using these tools. However, these should not be seen as panacea and alternative approaches do exist. An alternative to SEM is Partial Least Squares (PLS), which constitutes a “soft modelling” approach and can be used as an alternative when the theory is weak and may not conform to a in-detail specified measurement model (Vinzi et al., 2010). Other SEM alternatives include Tetrad analysis (Gudergan et al., 2008) and Latent Class Analysis (Schmidt McCollam, 1998).

We have also performed CFA and EFA, however alternatives also exist here, e.g., Unrestricted Factor Analysis (Jöreskog et al., 1979), Item Response Theory (van der Linden and Hambleton, 1997), Principal Components Analysis (Jolliffe, 2002) etc. Selecting an alternative may also have significant impact on other parts of the process as, e.g., if Item Response Theory is selected, design, analysis and scoring are different and the distinction from the Likert scale is evident since in Likert all items are assumed to be replications of each-other but in Item Response Theory the difficulty of each item is integrated as information in scaling items (van Alphen et al., 1994).

5.4 Considerations on Factor Prioritization

The results of this work target primarily the management teams of organizations that deal with change management processes. However, other stakeholders might also benefit, e.g., the personnel and potentially the employee organizations (e.g., work council) in enterprise environments, as well as on the academic side the researchers in the domain of organizational development due to the proposed model and its assessment. The implications of our research for these groups, after the validation of the proposed model with em-
pirical data are clear. All of the factors should be considered significant when a change management process is planned, executed, and assessed. Since the proposed model delivered an indication that these factors strongly correlate to effective change management, it means that they should be all tackled, as failure to do so may result in ineffective change management processes.

Our initial aim was to also prioritize the key areas of the identified factors, ranging from the critical ones (with highest impact on the effective change management) down to the ones that were not supported by the empirical data, and which could be potentially neglected or put as low priority. However, the outcome of the empirical analysis as this is shown in Table 4.11, paints a rather uniform picture. Firstly, as we see all of the hypothesized factors do have a contribution to effective change management in modern enterprises. Secondly, all of them are in a narrow zone with paths ranging from .20 to .27, and therefore the differences among them are not seen as significantly differentiating.

A very draft prioritization purely from the technical viewpoint based on the descending path coefficient weights could be:

- **High Priority**: Training & Development, Employee, Leadership, Culture
- **Low Priority**: Information Systems, Politics, Reward & Recognition

However, as the differences among them for the specific sample are small, none of them should be omitted or neglected from any change process, as then the success potential might drop. Training and development has the highest impact, and this makes is evident that this may be the starting point in any change process. Similarly politics as well as reward & recognition seem to have the lowest impact (compared to the other factors), and therefore these can be considered as the factors that need to be tackled after the others have been considered.

As we have analyzed in our critical outlook of this work in section 5.3, there are several considerations which may impact the presented results. As such, the usage of the specific approach and tools, may have led to this result, which should be considered as an indication and will need to be further studied and verified by other researchers. In light of these considerations, we have to
reinforce, that all the factors have to be considered and this “soft ranking” discussed in this section does not exclude any but rather provides a starting point among them for the change management teams.

5.5 Scientific Contributions

This work is focused on the common area defined by enterprises, Information Systems and change management as shown in Figure 1.1. In that area we have done a literature review (chapter 2), and focused especially on promising factors that may impact effective change management (section 2.4). This investigation space, with focus on modern enterprises that highly depend on Information Systems, and considering all the factors that we have analyzed, to the best of our knowledge has not been directly covered, but only from more generalized areas (as also shown in Table 2.1). As such, we consider that our findings may provide interesting high-level insights.

Most of the works we have investigated, share some common ground with our work here, however, we consider that our approach is much more focused and covers the white-spot area of effective change management in modern enterprises, in a holistic manner. More specifically several researchers have identified factors that are relevant for (effective) change management, e.g., Kotter (1996); Hiatt (2006); Waterman et al. (1980); Clarke and Garside (1997); Burke and Litwin (1992); Năstase et al. (2012) just to name a few, however these models are more qualitative and the claims are based on empirical data without a rigorous statistical assessment on concrete use cases on their whole. Others have investigated quantitatively some of the mentioned factors in concrete cases, e.g., Pearce and Sims (2002) measure leadership aspects, however, to the best of our knowledge there is no study considering all the factors we do, and which validated them empirically via a rigorous statistical analysis. As such, these works are seen as complementary to our work here, and could be further used to tackle some of the limitations we have identified in section 5.3 towards more vertical research and deep-dives to the individual factors. In this light, we consider this approach as a progress
beyond the state of the art, in its tightly focused area, i.e., that of effective change management in modern enterprises.

A contribution of this work constitutes the review of the state of the art, with focus on the key factors that are commonly brought up in conjunction with the change management, and therefore pose as good candidates for the correlation with it. Although our review of the state of the art is not exhaustive and also several limitations have been identified (details in section 5.3), we consider that it provides a useful starting point for researchers and practitioners that look for introductory material on this specific area. Since several research works deal with change management, a clear focus on the factors is seen as beneficial, especially for newcomers.

A key scientific contribution of this work is the proposal of a model, linking with several hypotheses the factors stemming from the literature review to effective change management in modern enterprises. Although some of these links have been hypothesized before (but more generally for any enterprise), and there are studies identifying some of them and linking them to change management, to the best of our knowledge there is no other model explicitly linking all of these together, and subsequently carrying out a validation of the model via empirical data. Especially the empirical validation is considered a key scientific contribution, as it provides tangible validation of the proposed model, and demonstrates that the selected factors may be strongly correlated with effective change management in modern enterprises.

Another scientific contribution of this work is also the explicit inclusion of Information Systems (IS) to the same level with other factors in the model, and validation of its contribution to effective change management via empirical data. Several works consider that the change management process should be measurable, and that technology could potentially help, however, to the best of our knowledge this was almost always assumed to be part of another factor (e.g., training & development) etc. However, our case here is not the general Enterprise, but specifically the modern Enterprise, which is characterized increasingly by the utilization of modern IT technologies both internally as well as externally in its stakeholder interactions. As such, we
have hypothesized that for the white space area we investigate, IS could play a pivotal role. The results of this work, validate that original hypothesis (H7), and we consider that this can be a promising starting point for further future research, in order to better understand the role of IS in effective change management, and specifically its whole lifecycle including planning, execution, measurement, assessment, and risk tackling.

Now that we have established some strong indications linking the Employee, Leadership, Training & Development, Reward & Recognition, Culture, Politics, Information Systems to effective change management, it is time to validate this model even more rigorously in varying settings (as analyzed in section 5.3) and tackle its limitations. This work could be used as a starting point based on our findings and critical discussions.

Overall the contributions of this work are expected to benefit the original target group, i.e., the managers and the change management teams, to better understand the key aspects at stake and manage more effectively change management processes in modern enterprises. However, beyond these groups, also the research community can benefit, especially via the proposal and validation of the model linking the factors to effective change management, as well as the promising role of the IS in modern enterprise change management processes. The produced results, in light with the identified and analyzed limitations, may provide starting points for follow-up research. Apart from these groups who are seen as mainly profiting, other groups may also profit from the results of this work. These could be employee work councils who want to better understand the upcoming changes, regulators who may want to empower the role of employees in change processes, etc.
6 Conclusions

Our contributions tackle directly the key research question, i.e., *What are the key factors that contribute to effective change management in modern enterprises?* Based on the literature review, several factors have been identified, i.e., Employee (subsection 2.4.1), Leadership (subsection 2.4.2), Training & Development (subsection 2.4.3), Reward & Recognition (subsection 2.4.4), Culture (subsection 2.4.5), Politics (subsection 2.4.6), Information Systems (subsection 2.4.7). Hypotheses have been formulated in order to link them and a model is proposed (section 2.5). Subsequently this model is assessed via empirical data.

The assessment of the empirical data acquired via a survey we carried out, provides valuable insights on the correlation of the factors to the effective change management, and validates the proposed model. Based on rigorous statistical analysis (as shown in chapter 4), all of the aforementioned factors are found to make a significant positive contribution to effective change management as hypothesized. The results of this work pose a strong indication of the correlation of the selected factors to effective change management in modern enterprises. The implications are clear (as discussed in chapter 5), especially for the management teams towards whom this research was primarily directed. The identified factors need to be considered when planning, executing and assessing change management processes within the enterprise, in order to increase the chances of success.

Apart from the factor identification and the proposed model, another key aspect in this work is the consideration Information Systems (IS) as a key factor linked to effective change management in modern enterprises. This factor is often considered as part of other factors, but in our approach we
have put it on the same level with the others, and this hypothesis has been supported. The support of the hypothesis is potentially significant as IS are increasingly playing a pivotal role in modern enterprises (which constitute the investigation focus of this work), both internally and externally.

The empirical data pertains a single multinational company, and although it provides some valid indications on the posed hypotheses, it should be considered as a starting point for further research. We have extensively discussed these limitations from multiple angles including theory, methodology and operationalization (section 5.3), upon which new research can start in order to further investigate the hypotheses in a more generalised context.

Overall we have to point out that it is evident that several multi-disciplinary factors come into play and have an impact to effective change management. Neglecting to consider some of these, may result in ineffective approaches that may hinder the purpose of the change process and create additional costs to the enterprise both on technology, people, and its overall goals. Therefore, such processes need to be planned and executed in a coherent and careful manner, by taking into consideration many of the aspects we have discussed extensively in this work.
References


# Appendix

## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AMOS</td>
<td>Analysis of Moment Structures</td>
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<tr>
<td>CFA</td>
<td>Confirmatory Factor Analysis</td>
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<td>CFI</td>
<td>Comparative Fit Index</td>
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<td>DF</td>
<td>Degrees of Freedom</td>
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<td>EFA</td>
<td>Exploratory Factor Analysis</td>
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<td>GFI</td>
<td>Goodness of Fit Index</td>
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<td>ICT</td>
<td>Information and Communication Technologies</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>IS</td>
<td>Information System(s)</td>
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<tr>
<td>KMO</td>
<td>Kaiser-Meyer-Olkin measure of sampling adequacy</td>
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<tr>
<td>RMSEA</td>
<td>Root Mean Square Error of Approximation</td>
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<td>SEM</td>
<td>Structural Equation Modelling</td>
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<td>SRS</td>
<td>Simple Random Sampling</td>
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<td>QPR</td>
<td>Quantitative Positive Research</td>
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Survey on: Effective Change Management in Modern Enterprises

Change is strongly interwoven with the fabric of modern enterprises, and is a highly complex undertaking. However, to have an effective change management in modern enterprises several factors need to be adequately considered and planned for. The aim of this survey is to empirically measure the impact of the identified factors in effective change management.

The survey is completely anonymous. No personalised data or other implicit info that could compromise anonymity and privacy are logged. Participation is done purely on voluntary basis and no individual data will be provided to any internal or external stakeholders, apart from the overall result analysis.

The survey is estimated to take 6-9 mins to complete. We would like to thank you in advance for your contribution.

*Required

General Info - Demographics

1. Gender *
   Mark only one oval.
   - Female
   - Male

2. Age *
   Mark only one oval.
   - 18-30
   - 31-49
   - 50+

3. Employee Role *
   Mark only one oval.
   - Manager
   - Subordinate
4. **Education Level** *
   *Mark only one oval.*
   - High School
   - Bachelor
   - Master / PhD

5. **Professional Experience** *
   *Mark only one oval.*
   - 1-5 years
   - 6-10 years
   - 10-20 years
   - 20+ years

6. **Number of Change Processes subjected to** *
   Please indicate the number of change processes that have taken part in your professional live within the company
   *Mark only one oval.*
   - 0
   - 1-3
   - 4-9
   - 10+

**Employee aspects**
Please indicate the level to which you agree or disagree.

7. **A change has to consider the emotional aspects of employees involved.** *
   *Mark only one oval.*
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8. **Employees are more likely to commit to the change even if they disagree as long as the process is fair** *
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9. If employees are actively involved in the various stages of a planned change, that increases the chances accepting it *

Mark only one oval.

1 2 3 4 5 6 7

disagree agree

10. Employees are more probable of embracing the change if it is in tandem with the organizational and personal values *

Mark only one oval.

1 2 3 4 5 6 7

disagree agree

11. Comments


Leadership

Please indicate the level to which you agree or disagree.

12. Employees are more willing to accept changes if they see a clear vision, the goals and associated benefits *

Mark only one oval.

1 2 3 4 5 6 7

disagree agree

13. Having a common understanding on the vision company-wide makes it more probable to accept change *

Mark only one oval.

1 2 3 4 5 6 7

disagree agree
14. **Employees are more willing to accept changes if a sense of urgency prevails** *

Mark only one oval.

1 2 3 4 5 6 7

| disagree | | | | | | agree |

15. **Witnessing enterprise leaders and managers adopting first the new changes, makes it more probable that employees will also follow and accept them** *

Mark only one oval.

1 2 3 4 5 6 7

| disagree | | | | | | agree |

16. **Comments**

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**Training & Development**

Please indicate the level to which you agree or disagree.

17. **Employees are more willing to embrace change if sufficient training is provided** *

Mark only one oval.

1 2 3 4 5 6 7

| disagree | | | | | | agree |

18. **Employees find it easier to embrace the change if his peers have undergone the same training and are on the same page** *

Mark only one oval.

1 2 3 4 5 6 7

| disagree | | | | | | agree |
19. **Employees are more willing to embrace change if it linked with the personal career planning processes** *

*Mark only one oval.*

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20. **Employees are more willing to embrace change if it linked with the overall organizational goals** *

*Mark only one oval.*

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21. **Comments**

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**Reward & Recognition**

Please indicate the level to which you agree or disagree.

22. **Employees are more likely to embrace change if they get monetarily rewarded** *

*Mark only one oval.*

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23. **Employees are more likely to embrace change if it will increase their performance and therefore also increase the associated benefits** *

*Mark only one oval.*

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86
24. Employees are more likely to embrace change if they get recognition (internal or external) *
   
   *Mark only one oval.

   1  2  3  4  5  6  7
   disagree ○ ○ ○ ○ ○ ○ ○ agree

25. Employees are more willing to embrace change if they see tangible positive short-term results *
   
   *Mark only one oval.

   1  2  3  4  5  6  7
   disagree ○ ○ ○ ○ ○ ○ ○ agree

26. Comments

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27. Employees are more likely to stick to the new changes if everyone else also adheres to them *
   
   *Mark only one oval.

   1  2  3  4  5  6  7
   disagree ○ ○ ○ ○ ○ ○ ○ agree

28. Employees are more likely to stick to the new changes if there the connection between the new behaviors and organizational success is demonstrated *
   
   *Mark only one oval.

   1  2  3  4  5  6  7
   disagree ○ ○ ○ ○ ○ ○ ○ agree
29. Employees are more likely to stick to the new changes if the top-level management and leadership show their commitment by practicing them actively *

Mark only one oval.

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30. Employees are more likely to stick to the new changes if it is part of the organization policies *

Mark only one oval.

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31. Comments

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Politics
Please indicate the level to which you agree or disagree.

32. Employees are more likely to embrace change if they are supported by influential managers and leaders. *

Mark only one oval.

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33. Employees are more likely to embrace change if enough people with good reputation in the enterprise (credibility) support it *

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34. Employees are more likely to embrace change if it eases my interactions and collaboration with others *
   
   * Mark only one oval.

   1 2 3 4 5 6 7
   disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ agree

35. Building internal alliances and coalitions, as well as group pressure for employee conformity increases the chances of embracing change *
   
   * Mark only one oval.

   1 2 3 4 5 6 7
   disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ agree

36. Comments

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37. Employees are more likely to embrace the change if supported by information systems and new technologies that make it easier than the old approach *
   
   * Mark only one oval.

   1 2 3 4 5 6 7
   disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ agree
38. **Employees are more likely to embrace change if proper knowledge management actions have been undertaken to enable the transition**

*Mark only one oval.*

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39. **Employees are more likely to embrace change if it is tangibly measured and assessed with the help of information systems**

*Mark only one oval.*

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40. **Employees are more likely to embrace change if it codified and its details are available in common knowledge repositories**

*Mark only one oval.*

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41. **Comments**

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**Effective Change Management**

Please indicate the level to which you agree or disagree.

42. **Is effective change management constantly improving enterprise’s competitiveness?**

*Mark only one oval.*

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43. Has effective change management made the enterprise more flexible and responsive to market needs? *
Mark only one oval.

1 2 3 4 5 6 7

disagree agree

44. Has effective change management made the enterprise more agile to internal needs? *
Mark only one oval.

1 2 3 4 5 6 7

disagree agree

45. Are employee skills and readiness to handle change constantly increasing? *
Mark only one oval.

1 2 3 4 5 6 7

disagree agree

46. Appropriate measures are taken to make sure that changes are enforced in the long run *
Mark only one oval.

1 2 3 4 5 6 7

disagree agree

47. Comments

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