

Mediating effects of resistance to change to successful lean transformation

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ABSTRACT

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A Shipyard in Malaysia has been trying to change, but facing employee Resistance to Change (RTC). Resistance is attributed to the poor coupling of tasks to its technical core, creating bad habits leading to thoughtlessness and neglect. Lewin's Field Theory and Festinger's Theory of Cognitive Dissonance was used to understand and identify the underlying behaviour of the employees. Lean principles were used as an in-depth intervention to understand how context provoked or shaped reactions. A Dual Imperative Action Research (AR) with the author as a participant researcher was conducted not only to create knowledge but also, change. To position the Shipyard in its historical context, face-to-face interview was conducted with managers to get thick description of the RTC and archaic documentations was reviewed. A survey using tested questionnaire was conducted to gauge the employees RTC disposition. Resistance is due to incoherency of a person's belief to establish standards, giving rise to cognitive dissonance. These dissonances hidden as non-conscious behaviour, social habits or norms, lead the organisation to deterioration. Lean intervention reduce dissonance, creating psychological flow in the workforce and momentum for change. Thereby, the Shipyard managed to recover the delay of a ship undergoing a ship-life extension program and avoided liquidated damages amounting to RM63 million. The Shipyard also managed to reduce its average delay for ship repair from 17 to 6 months. The knowledge on how the researcher can gain utility from RTC and mediate through the application of Lean principles would be of considerable benefit to 'change managers'.

Keywords:

Resistance to change, Action research, Theory of cognitive dissonance, LEAN

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1. Introduction

The Shipyard has been trying to change since it was taken over in 2006 but to no avail. The Shipyard has been in existence since 1984 and its people are resilient to change. Many believed that

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the inability to change is due to the attitude and behaviour of the employees. Cognitive rigidity disposition is high at all levels particularly middle managers depicting a collective culture. Lawson and Price [1] posits that cultural change is the third and deepest level of change. The resilience of these 'deep structures' as a source of RTC need to be identified, to avoid sole reliant on subjective interventions such as 'top managerial leadership'. A dual imperative AR where the researcher was also a participant, was carried out with the purpose to: 1) identify the source of RTC and implement interventions to facilitate change and, 2) AR as the researcher's abled function for a PhD study. Action Research conceptualised the change process, identifies the intervention, and observe the effect of such behaviour on attitude to change.

Many previous research stress that reasons for failure of many change initiatives can be found in employees RTC [2-12]. Organisational realities as a source of RTC is described by researchers as socially constructed realities [8], culture [1,13-15], shadow organisation [2], and subjective change [5]. Heracleous [16] argues that effective change management is not just about the 'hard' structural aspects of organisations; but, an in-depth appreciation of the human aspects of organisations, and taking actions based on this understanding. Researchers argued that, to understand the subjective experience of change, there is a need to focus on the context of the organisation [5,6,17,18], or management systems [19]. Kotter and Cohen [20] argues that trying to shift culture, norms and values before creating the new way of operating does not work. Braganza [21] posit that organisations need to put in place programs that are meant to realign the culture to be more receptive to the changes being proposed. Researchers has also conceptualise the source of RTC as contextual discourse, which should be utilised to understand and influence change [5,10,22]. Mabin *et al.* [17] argued that change management literature highlights vision, mission, culture, communication, strong leadership and participation as prerequisites for successful change, but not how there are achieved. Mabin suggested that, without any of these prerequisites change will fail due to resistance, therefore, the need to identify resistance, define strategies and create action plans for a complete and successful implementation.

This Action Research attempts to: 1) identify the source of RTC by focussing on the context of the organisation (objective) and its subjective change by using Meyer and Allen [23] Behavioural Perspective on Organisational Commitment model as the framework, 2) explore the relationship between contextual change and and its impact on behaviour and attitude using principles from Theory of Cognitive Dissonance and 3) investigate how Lean, Kaizen are used as interventions to identify and resolve conflict, thereby creating a new way of operating for a successful change. The research method shall include review of secondary data, semi-structured interviews using open-ended questions, participants observations, field analysis and survey to reveal hidden assumptions. To sustain, the Shipyard will be put into a series of iterative AR projects aimed at proselytizing democratic-participatory values into normative and attitudinal belief, towards Lean. Lean behaviour when repeated will develop into habits and eventually a new organisational culture.

The are several contributions from this research; 1) contextual discourse is embedded as institutionalised habits creating cognitive dissonance, 2) dissonance was only realised through in-depth intervention using Lean and Lewin's field theory to establish a state of psychological disconfirmation, 3) implementing action research to gain in-depth knowledge on how ship repair projects were successfully delivered through change, 4) importance to focus on the context that provoked or shaped RTC rather than individual's reaction, 5) findings supports Meyer and Allen [23] behavioural perspective model in identifying conditions under which a behaviour, once exhibited tends to be repeated, as well as the effects of new behaviour on attitude change. When people believe in its overall purpose, they will be happy to change their individual behaviour to serve that purpose, if they don't, they will suffer from cognitive dissonance and subconsciously slip into

organisational deterioration [24-26]. The purpose of this research is to; 1) identify the source of RTC, 2) examine the effectiveness of the change initiatives implemented and 3) understand how the interventions influence behaviour. AR was adopted to apply a constant and iterative reflection as part of the change process and to create new knowledge. A theoretical framework that conceptualise change as part of an ongoing organisational discourse based on theory of cognitive dissonance was used as a communication strategy to understand the conditions required for organisational change. Lean is demonstrated as a control intervention responsible to create the condition for contextual change and Lean behaviour.

2. Literature review on resistance to change

2.1 An overview of employee RTC

Literature on RTC mainly discussed resistance within three perspectives; 1) constructed reality or organisational culture [1,2,13,14,15,22,26-30], 2) organisational context [6,17,20], management systems [19] or techniques [18] and 3) both, culture and context [3,5,26,31,32].

2.1.1 RTC in the organisational culture

Organisational culture is defined as a set of shared values, beliefs, norms, and practices that shapes and guides members' attitude and behaviour in the organisation [1,29,33]. There are many arguments as to what causes RTC. Ford *et al.* [8] argued that RTC is not to be found "in the individual", but in the constructed reality in which the individual operates. People do not resist change per se; rather they resist the uncertainties and the potential outcome that is caused by change [34]. Researchers agrees that the realities resides in the culture, values, norms and basic assumptions [13,24,28], and the effect of RTC on performance can only be inferred. There is a need to adopt a new perspective towards change by focusing on individual attitude and behaviour [12,13,22,23,26,29,35-37]. Therefore, change drivers tend to focus on individual's reaction to change rather than how context provoked or shaped that reaction [17,32,38].

2.1.2 RTC in organisational context

Researchers argued that to understand the subjective experience of change, there is a need to focus on the context of the organisation in terms of its history and prevailing discourse [6,10,16-20,39-46]. Mabin *et al.* [17] emphasised the importance of understanding organisational context by quoting Pascale; "to transform itself an organisation need to tackle its very core - its context - the underlying assumptions and invisible premises on which its decisions and actions are based". Stone [47] quoted Swanson and Holton, "Deming estimated 90 percent of the problems that might be blamed on individuals in the workplace were a result of having them working in bad processes or systems". The predilection of choosing between focusing on organisational culture and context was further argued by Skrudupaite and Jucevicius [18] by quoting Edgar E. Schein; "Never start with the idea of changing culture. Always start with the issue of organisation culture, only when those business issues are clear should you ask yourself where the culture aids or hinders resolving the issues. Always think of the culture as your source of strength". Kotter [20] reiterated that, trying to shift the norms and values before you have created the new way of operating does not work. He further suggested that a culture truly change when a new way of operating has been shown to succeed over some minimum period of time. Graves and Crute [40] forwarded, those traditional companies which recognised the gap between current and a later culture which promotes Lean

thinking and continuous improvement may still choose to focus on culture change rather than the context. In other words, Burnes [12] suggested to examine the depth of intervention, since change itself is the cause of resistance rather than any innate propensity in individuals.

2.1.3 RTC in both culture and context

The third perspective of RTC argues that, resistance occurs at two levels simultaneously, organisational context and culture [3,5,21,31]. Mdletye et al. [32] surmised that, systemic resistance emanates from the lack of relevant knowledge, information, skills, competencies and managerial capacity; while, behavioural resistance originates from perceptions, reactions and assumptions of individuals or groups of people within the organisation. Therefore, it is critical for change drivers to understand, how human elements influence change [3,5], and to evaluate them as the prime source of RTC [32]. Burnes and James [26] suggested that, this is done by evaluating the context of the cultural disruption and cognitive dissonance generated.

2.2 The theory of cognitive dissonance

Change challenges the attitude and behaviour of individuals, giving rise to a high degree of cognitive dissonance. The relationship between organisational culture and individual attitudes and behaviour is clearly linked, and it is important to understand what this link is and how it affects the change process [26]. Canning and Found [48] provided an example of dissonance, where a survey shows respondents support change, however, in reality there exist a weak relationship between involvement and support. Dissonance also occurs when organisation talks about process change but has difficulties changing norms. These are shadow organisations that, focus on results-only biased type of model rather than process [24]. They promote a maverick type culture where, 'if it works use it', or 'ends justify the means' as standard behaviour [25]. The culture give rise to complacency, resignation, cynicism, thoughtlessness and neglect; realities to which people are blind [8]. Managers are no longer tolerant of paradoxes and ambiguities. Managers avoid conflicts, being associated with wounded egos, harmed relationships and turf wars [17]. Contention is often mistaken as an indicator of mismanagement and the theory of cognitive dissonance proves extremely influential to understand the largely invisible patterns of thinking and behaviour [17], to manage and support employees who are affected by the change [32]. Researchers finds it important to explore how psychologist attempted to understand and explain human behaviour, thereby the need to understand the Theory of Cognitive Dissonance [12,22,25,26,37,43,49].

2.3 Behavioural perspective towards change

Kotter *et al.* [20] argued that the core problems in implementing change is "changing people's behaviour". What people do are surface manifestation of the deep level values they hold and much of firm's is tacit, a reflection of general habits and strategic orientation coming from firm's past [50]. To understand how actions can be improved, we need to tap our deep tacit knowledge and raise it to an explicit level of awareness [51].

The theoretical framework in Fig. 1 was adopted from [23] and used to; 1) understand the tacit nature and governing assumptions of RTC, 2) use Lean principles as an intervention to reduce the level of dissonance, and 3) understand the effects of the intervention on behaviour and 4) ensure that the new behaviours, values, and beliefs are aligned with the final process [22]. Thereby, changing the psychological state [52]. The behavioural perspective towards change, provides a deeper level of

understanding of the effects of the intervention and identifying conditions under which a behaviour, once exhibited tends to be repeated [23,44].

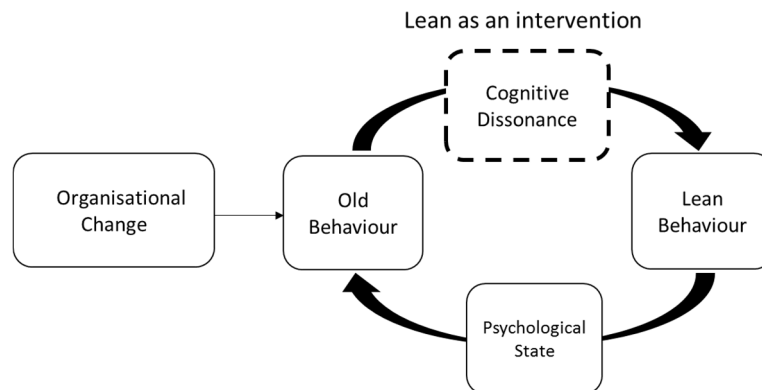


Fig. 1. Theoretical framework - Behavioural Perspective Towards Reducing RTC

2.4 Identifying the source of resistance

To identify the source of RTC hidden beneath the norm, organisations need to learn to disagree without being disagreeable and channel contentions as a self-questioning organisation [17], giving rise to the term 'let's celebrate the problem'. For successful behaviour change [20,26], management need to implement intervention strategies and techniques that firstly create self-awareness and secondly develop processes to eliminate irrational thoughts [3]. Bovey and Hede [53] described 11 cognitive distortions as follows; 1) tunnel vision, 2) selective abstraction, 3) arbitrary inference, 4) overgeneralisation, 5) polarised thinking, 6) magnification, 7) biased explanations, 8) negative labelling, 9) personalisation, 10) mind reading and 11) subjective reasoning. The result is local or widespread confusion, negative emotions, stress, frustration, defensiveness, and deterioration of the social structure. These dysfunctional and non-conformance practices consume psychological [54] and management resources [24]. Researchers have developed various instruments to identify these underlying behaviours with the intention to predict individual reaction to change. Oreg [6] and Oreg *et al.* [55] designed and deployed the RTC Scale to measure individual's dispositional inclination to resist changes based upon 4 reliable factors: 1) routine seeking, 2) emotional reaction to imposed change, 3) cognitive rigidity, and 4) short-term focus. Oreg [6] described the rigidity of the mental mode or mindset as cognitive rigidity a RTC disposition.

2.5 LEAN as an intervention to moderate RTC

Stone [47] delineates Lean terminology as follows; 1) Leanness; to describe the end state, 2) Lean thinking/operational philosophy; to describe the process that achieves the end state, and 3) Lean principles; to describe the tools used to execute the process. There are many facets of lean principles that contribute to successful Lean transformations. Stone [47] suggested Kaizen as fundamentally essential for Lean interventions. Based on Ohno's principle, Harada [56] theorised that "Kaizen is equals to going closer to the final process", and Emiliani [54] described Kaizen as "change for the better", where people continuously improve standardised work. Beal [43] forwarded that, Kaizen is striving for perfection, where employees at all levels are encouraged to constantly look for ways to eliminate waste. Kaizen is governed by constant and iterative reflection in change process and continual improvement, a principle consistent with the Action Research quality criteria [57]. To

enhance employee's willingness to adopt Lean behaviour, organisations need to create improvement projects and encourage employees to apply Lean principles in their work [43].

2.5.1 Applying lean philosophy to cultivate lean behaviour

Emiliani [54] theorised that self-defeating behaviour of individuals or groups has not been effectively recognised as 'waste' in Lean concept. Tasie [58] submitted that the African approach to management is much filled with conflicts, unhealthy politics, futile confrontation, bitter political manoeuvring, favouritism, persecution and many more. These 'fat behaviours' create crisis and managers who are reactive and passive in nature, living in the present and not the future. Emiliani [54] further suggested that, the same revulsion for waste developed in the context of poor interpersonal relationships should be accorded to improve behaviour and productivity. To address these subjective experience, researchers suggest to focus on the organisational context, [5,6,20] or management systems [19]. Lean management can change an organisation's mental model to reduce workplace confusion by designing work to be unambiguous and direct [54].

Employees will be more favourable to adopt Lean behaviour, if they perceived that Lean enhances work experience and organisation prosperity [43]. Researchers asserted that TQM and Lean strategies are essentially effective for cultural transformation [12,43,51,54,59,60]. Lean methods can be tailored to address the level of dissonance at the macro-organisational and micro-level targeting resistance in the individual [59], within the system or force-field [12], or when change is out of step with attitude [26]. Jimmieson *et al.* [61] suggested that, attempts to change behaviours should focus on the positive outcomes of these behaviour rather than challenging feelings about the negative. Lean philosophy does not put the blame to individual's innate propensity to perform [12]. The greater the effect on the individual, especially in terms of psychological constructs and attitudes, the deeper the level of involvement is required [26]. Organisations should study how Lean behaviour can be cultivated by learning, and applying Lean philosophy [60]. Lean management practices have been an integral influence on organisational change success rates. However, the guiding framework for developing large-scale change efforts is still underexplored [59]. Therefore, mediating mechanisms through which specific techniques exert their effects on change-supportive behaviour would be worthwhile for future research [61].

3. Research method

The underlying factors or the dependent variables attributing to RTC will be presented as restraining forces preventing organisational change. Lean principles are the moderating variables; i.e., the driving forces towards change. Participatory Action Research is employed as one of the research method to explicitly develop praxis of relational participation between the researcher and employees. Iterative AR and Lean were used as interventions to rationalise what constitute as valid knowledge about behaviour and its social world, thus contributing towards the epistemology of the research.

3.1 Participatory action research

This research was built around a project team that was formed to address the issues confronting the organisation and work in an action learning mode [62]. A Dual Imperative Action Research [46] with the Shipyard as the source of data was commissioned to study and fill skills or knowledge gap preventing change. A single longitudinal study [63] of the Shipyard was undertaken from November

2013 to October 2016, to enable a thorough and in-depth understanding of the change processes and events that unfold over time. The researcher who is also the participant member of the change program was involved in the inquiry process itself [39,42,62-66], contributing to organisational change by taking an active role in the operation and studying the process [63,66]. The search for alternative change methods, documenting techniques applied and how managers gained utility from resistance through in depth action research is invaluable [34]. This is best way to achieve dynamic change [39]. A distinct feature of action research is that; it generates insight not only to explain but also to change [64].

3.3 Data collection and analysis

Primary data was collected from twenty-one recursive AR projects conducted in two cycles over a span of three years. In-depth face-to-face interviews with selected key personnel comprising of middle managers and supervisors [67,68] using open-ended questions were conducted for in-depth qualitative study. A RTC Scale developed by Oreg *et al.* [55] was used to measure individual's natural tendency to resist change based on four reliable factors: 1) routine seeking, 2) emotional reaction to imposed change, 3) cognitive rigidity, and 4) short-term focus. The findings were further triangulated, with secondary data from review of documents, to position the research in its historical and cultural context. These documents exist in a situation that they do not intrude or alter the setting in ways that the researcher might. The documents were also not subjected to human whims during interviews or through observations [69]. Data collected from archaic analysis of documentation, interviews, survey, observations and AR projects [64] was analysed using ATLAS.ti 7. These findings were then presented to all levels of management hierarchy to be validated in a consensual manner in meetings known as 'mirror-effect' session [70].

4. Findings

4.1 Source of RTC

The selective decoupling of formal structures from activities in the technical core is due to the contradiction between efficiency and legitimacy [71]. The Shipyard protected their technical activities through decoupling elements of structure from other activities and from each other when they respond to external institutional pressure or coercive pressure, thus, reducing their efficiency. Waiting time linked with materials, tools, personnel and information is acknowledged as a norm and in numerous cases, arising from requirements imparted by the customer, as a form of cognitive legitimacy. An analysis of the root cause and symptoms, shows that the technical and political/structural resistance are the root causes giving rise to non-conscious dysfunctional habits. Results from the independent group t-test (Table 1), shows that, cognitive rigidity has a higher level of position as compared to the other three for both groups. Thereby, predicting employees' reluctance to adopt new technology [6].

Based on the findings, it is suggested that the dysfunctional behaviour is institutionalised in the Shipyard's values and norms creating bad habits through thoughtlessness and neglect, caused by the decoupling of tasks from its technical and structural core due to rationalised myth. Some of the rationalised myth identified through the findings of this research were: 1) urgent or unplanned work, cannot be planned due to its urgency, 2) it is a crisis, thus, requiring emergency action, 3) acceleration or ramification of plan required by the customer or management, 4) delay does not affect the Shipyard (profit/loss), 5) the importance of result rather than process, 6) the problem is with the people, and their personality, 7) failure of a project, put blame on the project management, a failure

attribution error. This supports the theory that people are generally not the root of the problem [8,12,52,72]. The source of RTC was found in the constructed reality in which the individual operates [8] or organisational context [6,17,20].

Table 1
 Independent group t-test

	Routine Seeking	Emotion Reaction	Short Term Focus	Cognitive Rigidity
Managers	$\mu = 2.8128$ $\sigma = 0.5844$	$\mu = 3.0420$ $\sigma = 0.7378$	$\mu = 2.3245$ $\sigma = 0.6855$	$\mu = 3.6117$ $\sigma = 0.6316$
Executives	$\mu = 2.839$ $\sigma = 0.6682$	$\mu = 3.2797$ $\sigma = 0.8464$	$\mu = 2.5061$ $\sigma = 0.8342$	$\mu = 3.6844$ $\sigma = 0.6753$

4.2 Lean principles

Action plan benchmark on best practices was developed to address the source of RTC. Action research investigates and document how the following tasks: Production Planning and Control, Production Engineering, Production and Supply Chain Management and behavioural elements was successfully amalgamated through Lean. Action-oriented projects based on Lean principles was used as the driving force (Fig. 2) to change work behaviour with favourable outcome. A ship undergoing ship-life extension program (SLEP) was facing a 6-months delay half-way through the program. Change intervention based on best practices recovered the project and delivered the ship on-time, avoiding liquidated damage amounting to RM63 million. The change intervention was extended throughout the Shipyard and managed to reduce average delay from 17 to 6 months. Thereby, creating an opportunity to increase revenue by RM80 million.

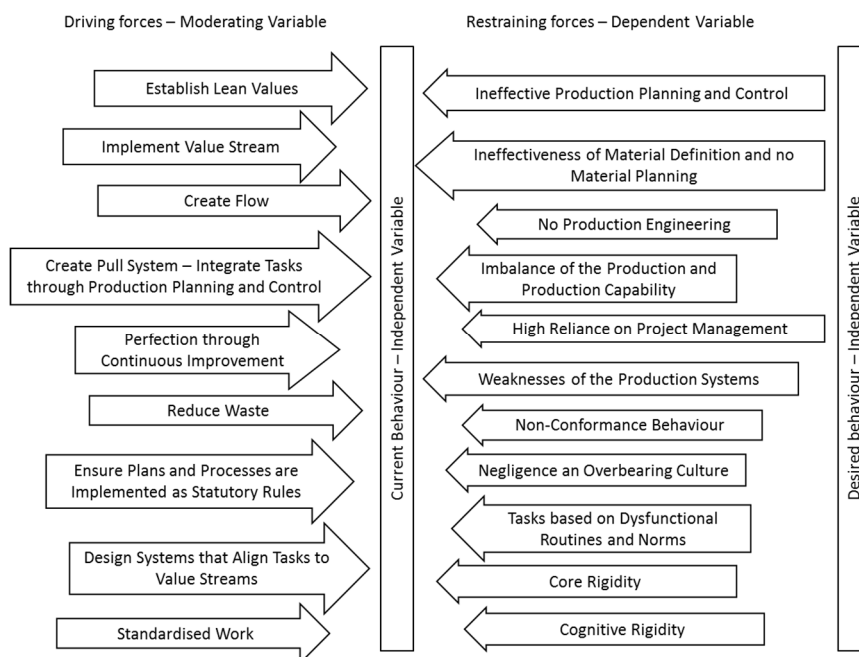


Fig. 2. Findings from the force-field analysis

Based on the evaluation of the outcome the researcher proposed that Lean principles (Fig. 3) reduces waste in the form of dissonance and add consonant factors by establishing values, creating

value stream, flow, pull and continual improvement towards perfection. Thereby, establishing Lean principles as the mediating variables towards reducing RTC. Lean self-efficacy reduces the distressing mental state when people's beliefs are inconsistent with their action causing dissonance. When people believe that, they have control over a positive outcome or 'psychological flow', they will be happy to change their individual behaviour to serve that purpose. The individuals' 'psychological flow' will in turn create a belief, changing the psychological state, thus creating a new social norm.

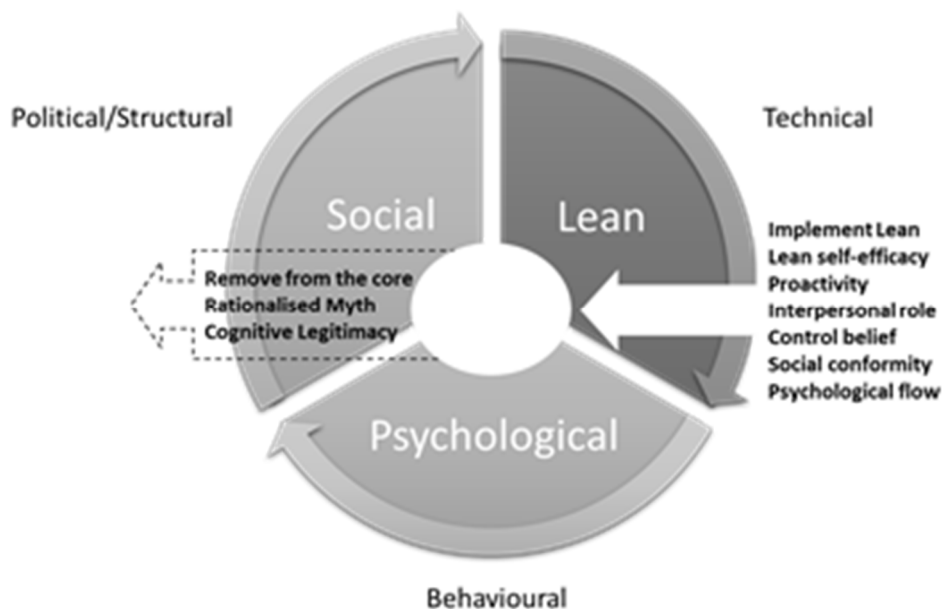


Fig. 3. Lean improves self-efficacy

5. Conclusion

This research was a collaboration between the employees and researcher to identify the source of RTC. The outcome is both, insights to create change and knowledge. The respect the researcher has for the complexity of the Shipyard and the knowledge gained through the process was an impetus to understand how the person thinks and want, creating praxis of relational participation. Hence, a quality unique to AR [57]. The research draws power from the promise of pragmatism, i.e. beliefs we can know only through doing [42], and from the knowledge of individuals and group behaviours [54]. Employees will most likely be more supportive with change projects that are aligned with individual and organisational beliefs and behaviour.

Therefore, meaningful context driven actions such as Lean, is useful to encourage the more reticent employees to embrace change, and happily change their individual behaviour. The struggle for congruency between espoused and enacted values can only be achieved when dissonance is clearly identified and mediated. Otherwise the organisation will suffer the effects from its non-conscious habits and subconsciously slip into organisational deterioration.

The significance of this study is the realisation of how individual and group past behaviour can subconsciously challenge the existence of the organisation and that better methods live within the study of subject such as Psychology, Lean, Action Research and Resistance to Change. The knowledge on how the researcher gained utility from resistance and mediate through the application of these techniques would be of considerable benefit to leaders of change management.

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