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## An Exploratory Study of Embracing Digitalization and Artificial Intelligence within the Singapore Logistics Industry

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### **Abstract:**

*New technologies are fast transforming the modern world and redefining expectations from customers. This has enabled the business community to adapt in a bid to meet renewed customer expectations while changing their livelihoods and business work ethics. This phenomenon usually referred to as digital transformation is potentially changing consumer lives and creating more business value by unlocking benefits for the broader society. Understandably, every business sector has its own nuance and differences contextually, but they all have a common denominator to the change inhibitors. This study explores the practicability of embracing digitalisation and artificial intelligence in the locus of the logistics industry in Singapore. In doing so, a case study of the XYZ Logistics was conducted to evaluate how a Singaporean logistic company manages change resistance in the wake of digitalisation and artificial intelligence. Non-probability sampling methods were employed to isolate research participants from the entire population. Questionnaires and unstructured interviews were administered to collect primary data coupled with extant literature to enable triangulation. Hermeneutics and thematic data analyses approaches were used in this study. Findings reveal that, challenges were inherent in the transformation especially the perceived loss of jobs despite the application of various change management strategies such as company strategy re-alignment, education and training, employee involvement, cultivating trust and interpersonal relationships, stress, burnout and social support in work. The study further reveals that, the tactical application of motivational and change theories was quite rewarding in the bid to embrace digitalisation. These included, Lewin's theory, Kotter's theory, Bridges' theory, McClelland's Acquired Needs theory, Maslow's hierarchy of needs and above all Vroom's Expectancy Theory. It is however recommended that principles of emotional intelligence, transactional leadership, and use of feedback surveys after training should always be applied as important vehicles for easy and smooth transformation.*

**Keywords:** Digitalisation, transformation, artificial intelligence, logistics industry, Singapore

### **1. Introduction**

Digital transformation is bound to affect all economic sectors in one way or the other. It also provides windows of opportunity in terms of possibilities for networking and cooperation among various actors. Business models of digital transformation present numerous success opportunities although to some extent negatively impacting on individual employees who risk having their duties curtailed or the employees completely made redundant. Although digital transformation has been a subject of discussion for many years there is an apparent absence of clear business models giving direction to how businesses can be transformed digitally together with artificial intelligence (Schallmo, Williams & Boardman, 2017). The terms digitisation and digitalisation are often interchangeably used while there is no agreement on the definition of digital transformation (BDI & Berger, 2015). The following current definitions have informed this study;

- "Digitisation stands for the complete networking of all sectors of the economy and society, as well as the ability to collect relevant information, and to analyse and translate that information into actions. The changes bring advantages and opportunities, but they create completely new challenges" (BMW, 2015, p.3)
- "DT is the deliberate and ongoing digital evolution of a company, business model, idea process, or methodology, both strategically and tactically." (Mazzone, 2014, p.8)

Digitalisation within a company may encompass the use of digital tools, or else, it is viewed as the digital transformation to the company itself. For instance, it could be the company's business processes involving some reorientations and modern changes within. The process of digitalisation is a reflection of a company adopting digital technologies for its business activities and the changes associated with the connectivity of objects, individuals and other organizations (Gartner, 2016; Gimpel, et al, 2018). The assertion by Legner et al. (2017) is that, although digitization includes the technical aspect of transfiguring analog forms into a digital signal, the diverse socio technical processes of embracing digital technologies broadly in the contexts of society all refer to digitalization. In the olden days, telephone heavy hardware communication

and information technologies needed almost 75 years to access 100 million users, yet recent lightweight applications like Instagram access the same number in slightly over 2 years today (Statista 2017). Digital technologies include but not limited to block chain or the Internet of Things (IoT), social media, mobile computing, cloud computing (SMAC) and advanced analytics (Fitzgerald et al. 2014; Gartner, 2017). These technologies can be categorised additionally with respect to whether they involve people passively or actively, data treatment, mode of data output or input whether it is physical or purely digital and if they serve application-oriented or infrastructural needs (Berger et al. 2018). Whichever way they serve, in sum, the digital technologies enable autonomous products, platforms, analytical insight generation, sensor-based data collection and analytical and augmented interaction. This study explored how digitalisation is embraced in the logistics industry in Singapore.

## 2. Background to the Study

A radical change as opposed to 'incrementalism' is akin to transformation that is a step below full-blown metamorphosis, where the underlying assumptions about the function of how an organization operates and conducts its business are being modified which is different from its predecessor (Anderson, 2011). According to Anderson (2011), wide assortments of resistance behaviours are part of nature's response to organizational change and transformation. Therefore, it is necessary for organizations to understand how people and teams work together in an interdependent manner with the tools and information required. This is the only way to win as one goes through the journey of digital transformation (Gale & Aaron, 2017). Many companies have benefited from digital investment including P&G which saved more than \$1 billion in a year (Gale & Aaron, 2017, p.84). As noted by Gale and Aaron (2017), Telstra which is an Australian major telecom business suffered a fixed voice revenue which dipped from \$5.4 billion to \$4.4 billion from 2011 to 2013. Hence, it revolutionized the way it relates to and services its customers through digital transformation and reduced the company's cost and provided a better customer experience at the same time (Gale & Aaron, 2017).

Nevertheless, not all industries would be as ready to embrace digital transformation. As observed by Pessutti (2018), the transportation industry (or logistic industry) has traditionally been providing their customers with cheap and reliable service using established product and performance definitions and metrics. Despite that, the players changed, higher customer expectations and the industry conducted 'business as usual' with neither high initiatives to innovate nor investment in technology in this industry (Pessutti, 2018). On the contrary, (GTA- Singapore, 2017), Mr Chris Leck, Director of the future division at the Ministry of Transport had announced on 05 Oct 2017, that autonomous vehicle (AV) is the natural solution to our future urban mobility challenges. The different sentiments by Pessutti (2018) and Government Technology Agency (GTA-Singapore) address the gaps and conditions to which the research question and related research objectives were derived from.

### 2.1. Gap analysis

It could be a simplistic conviction that an organization's change can achieve win-win benefits for both employees and the organization. Employees' interpretation of the change can be misinterpreted as resistance by the organization, particularly when their opinions or viewpoints are received without the needed coherence from the change agent's stand point or when most of the attention is given to the external rather than the internal. Consequently, excluding a good communication during the implementation phase and bearing in mind communication factors for a learning organization, the receptivity concerns and communication strategies working altogether present a research gap. There is need to evaluate the nexus between implementation of the digital transformation in the logistics industry and its acceptance by those likely to be affected profoundly. This is a gap between management and employees which this study seeks to bridge. This brings to the fore a research question which the researchers sought to address.

The research question was, "Do employees in the logistics industry, reject the claim of embracing digitalization and artificial intelligence?" Informed by this research question the following were the attendant research objectives.

### 2.2. Research Objectives

- To identify the resistance and employee interpretation of change
- To identify whether the resistance from the employees are caused by ineffective implementation of change due to lack of proximity and communication factors.
- Identify whether the employees felt being valued, empowered and willing to take accountability as well as responsibility during the change.
- To explore whether the leadership executed an all-round communication and its employee had the same values toward the change as the management.

In order to address the research question and directed by the research objectives above, there is need to first discuss the theoretical framework underpinning this study followed a review of related literature.

## 3. Theoretical Framework

It is important to identify theories on resistance and managers need to understand them in order to manage successful change successfully. According to Wood et al (2016, p.535), Kurt Lewin is a famous psychologist and recommended that a change effort should be observed as shown below:

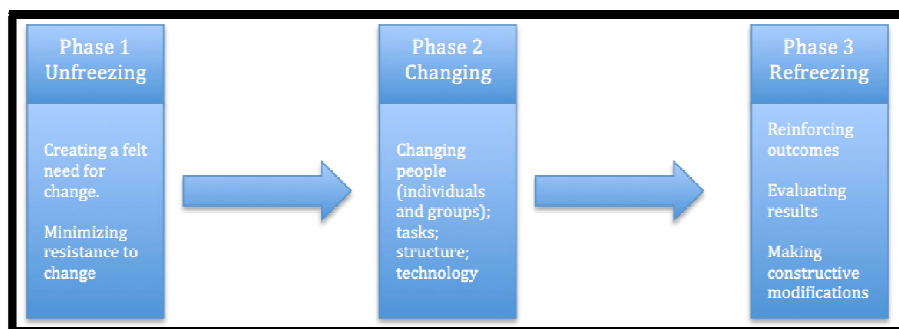


Figure 1: Lewin's Three Phases of Planned Change  
Source: Wood ET (2016, P.535)

As mentioned by Bennett and Bush (2014, p. 153), the framework was developed emphasizing that change requires action and that successful action is based on analysing the situation in a correct manner, identifying any possible solutions and selecting the most appropriate one. Bennett and Bush (2014) also commented that Lewin's view is that this process delivers understanding and learning for individuals and groups concerned then feed into changed behaviour. The strength of this framework as complemented by Bennett and Bush (2014) is that it places the individual at the heart of change, and it addresses the psychological and social impacts of change. This theory was widely accepted as popular, and the participative approach to behavioural change that Lewin discovered has been proven remarkably relevant over time. However, as criticized by Bennett and Bush (2014) Lewin's conception of an organization as an ice cube was simply too linear and static. They also commented that Lewin's approach leaned heavily on the organizational or whole-systems participation, and that he has to adopt some of his other theoretical frameworks (such as action research, field theory, and group dynamics) in order to make change successful and sustainable, but it may be cumbersome to manage in large complex organizations.

Therefore, it is viewed that this framework offers a directive of steps, an idea of identifying resistance and offers vision and strategy, then takes steps towards results, very similar to John Kotter's eight step framework as shown below in figure 2. From both frameworks, we can see that leaders must communicate the vision with the people first, then only after that, one may be able to move forward to the next stage or level. However, we contend that both theories have neglected the emotion part of human beings as they go through change. It is not as effortless nor undemanding as presented in Lewin's phases of planned change described, after "unfreeze" then spontaneously enter the next stage - "Change" stage neither as Kotter's described as " Empower broad-based actions and generate short wins" after communicating change vision.

Kurt Lewin	John Kotter
<i>Unfreeze</i>	1. Establish a Sense of Urgency 2. Create the Guiding Coalition 3. Develop a Vision and Strategy 4. Communicate the Change Vision
<i>Change</i>	5. Empower Broad-Based Action 6. Generate Short Term Wins 7. Consolidate Gains & Make More Change
<i>Refreeze</i>	8. Anchor New Approaches in the Culture

Figure 2: Kurt Lewin and John Kotter Theories Comparison  
Source: Adapted from (Bennet & Bush, 2014)

As observed by Bennett and Bush (2014), Bridges's concept of managing transition (in Figure 3 below) has a great significance factor in successful change, which cannot be overemphasized. It is easily understood and accessible. The difference in Bridges' with Lewin's and Kotter is that it took a further step of incorporating the personal, psychological journey of change and grief process into considerations. Bennett and Bush (2014) also highlight that Bridges' work helps leaders to understand the complexity of change and the psychological dynamics of change that may require longer time than expected for the change to take place. This theory is applicable at all levels in working with change: individual, group, and system, or organization (Bennett & Bush, 2014). Especially, the psychological aspects of transition correspond best to the individuals, and leaders are able to address the impact and manifestations of transition even at group and organization levels. Most importantly, this framework can be used with other frameworks to support the understanding of change

process (Bennett & Bush, 2014). Therefore, we suggest that when an organization is going through a change process, it is critical to consider the psychological dynamics of change as emphasized by Bridges. Bridges draws the relationship of the level of productivity during transition against time. There is always a correlation between time, trust, psychology and relationship in this context that either brings these 4 elements together reduces resistance or if not factored in this may cause more resistance and more barriers to change.

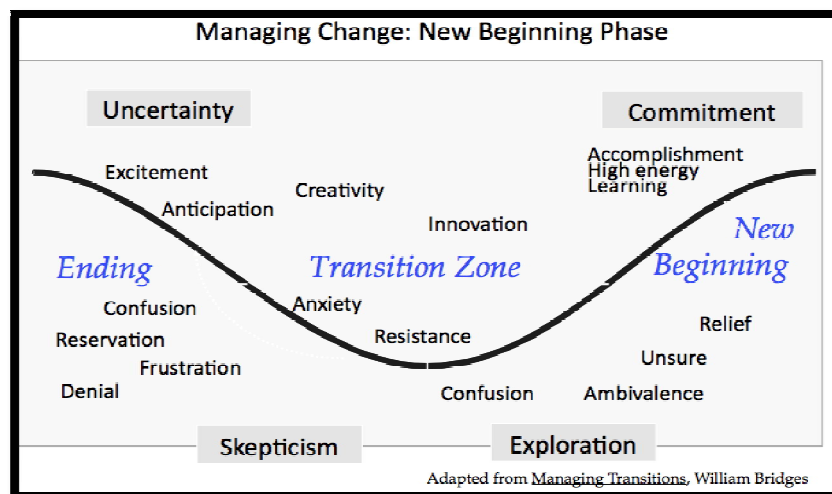


Figure 3: William Bridges' Transition Model

Source: Bennett & Bush (2014, P. 156)

### 3.1. Communication Strategies

Notably there is always a significant overlap between the function of a good communication strategy and what change management is meant to do (Green, 2007). Since there is a significant overlap, the earlier theoretical framework (Bridges's Transitional Model) has addressed the psychological process over the change journey, it is also important to understand the communication strategies in order to execute and convey a smoother change process. Palmer, Dunford and Buchanan (2017) identified key important points in change communications strategies.

Firstly, they indicate the key elements for the change and communication process that could cause an impact on financial performance and organizational effectiveness. Second, they develop methods that could improve operational efficiency, cost reductions, improvement on the quality products and services suggestions (Hodges, 2016). One example cited by Cornelissen (2009, p. 103) was an international electronics firm called Philips when they announced the new slogan as a vision "Sense and Simplicity" in 2004. It became recognized as a market-driven company well known for the simplicity of its products, processes and communications. It was not only a brand promise to its customers but also a potential distinguisher among its competitors.

Number two, the gender, emotion and power may affect the change communication process. Tannen (2013) explained the difference of how a man and a woman would behave differently in the communication process. Women often want to do 'one down' by asking more questions while men may misinterpret that as a lack of knowledge. On the reverse, the men would want to do 'one up' to uphold their powerful and confident image by minimizing doubts from asking. It is definitely a challenge to generate a culture based on mutual understanding and eliminate stereotype, where both men and women could complement one another by utilizing their differences and opinions in a positive manner to support each other (Roebuck, 2012, p.35).

Third point, the importance of understanding the power of language in influencing responses to change a proposal, as the way the conversation was either formally or informally constructed is crucial to reflect the stage of change process. Classic examples like strategic maps or road maps offer a very effective method to communicate a complex strategy to large numbers of people and explains a clear idea of where and how to get there with hope and magic (Jones, 2008).

Fourthly, the need to explain and assess appropriate strategies for communicating change. Connolly and Rianoshek (2002, p.176) clearly illustrated that personal blame utterly destroys the solution system by catalysing "disagree-defend-destroy" instead of "align-act-adjust" where align imply (intersect, invent, invest), act conveys as (engage, clarify, close) and adjust means (review). These are the seven steps which state the communication catalyst views of adjustment through the lens of conversation.

Fifth point; adjust the kind of communication process in accordance to the stage of organization change. Particularly, the leadership and communication style should be adjusted according to the stage of the change process appropriately. For instance, top-down communication is also essential to include the opportunity for employees to engage and express their opinions or doubts (eg: building in feedback loops) and that reveals a virtuous circle of communication and improves all-round communication (Smith & Mounter, 2005). While Redmond (2004) emphasized that, while feedback increases mutual understandings and that O'Rourke (2010) shared the same sentiment, it is so vital for any organization that is committed to improving itself, not to contain it within a part of an employee's behaviour but a part of the entire organization's culture.

Final point, there is need to consider the utility of different change communication channels including the applications of social media, such as utilizing mobile technologies which are information rich and are able to allow two-way communications, motivate information sharing plus networking and collaboration (Timm & Bienvenu, 2002).

#### 4. Literature Review

The literature review is based on the studies relevant to the research topic, that is, what the other researchers who studied the behaviour of people with respect to embracing change had to say. The purpose of the review was to assist in finding similar areas or sources that could guide our research process. In doing so, we assessed and compared the objectives, solutions, and arguments by other researchers.

##### 4.1. Introduction

It is evident that logistics companies have been compelled to embrace digitalization and artificial intelligence so as to keep pace with the environmental challenges. In order to embrace the challenge, organizations need to adopt transformation strategies which apparently (Smith & Mounter, 2014) have addressed and that many surveyed organizations may have had regarded internal communication as a necessary component during transformation. But it was often not a priority with most attentiveness and concentration given only to the external and not internal. Herein, we explore how a successful change could take place and create mutual benefits during integration, by borrowing from Will (2015) who believes that change managers can create mutual benefits for successful organizational change. We also borrow from Kulkarni (2016) who reinforced our belief that where resistance is a bound it is viewed that the organization may be having a hidden and biased agenda. Thereafter, we offer a holistic view on resistance to change, and spell out the importance of communication in mitigation for the resistance to change. Additionally, we highlight the importance of communication factors for a learning organization to progress, the influence of a change receptivity and the communication strategies as vitally required in an organizational change, raising the question: "Do employees in the logistics industry, reject the claim of embracing digitalization and artificial intelligence"

##### 4.2. Successful Organizational Change

According to Will (2015), in order to obtain a win-win change management, there are three important conjectures. Foremost, solutions for cooperation and competition to organize interactions within companies and this perspective primarily recognizes two types of interactions: (a) Cooperation is the vital crux in creating benefits for both firm and its employees. (b) Competition (internally), which is believed to create mutual benefits for both organization and employees.

Secondly, the acceptance of cooperation and competition. It is believed that through cooperation or competition the employees can arrive at a collective outcome that is of greater benefit than the sum of individuals since both employer and employees, complement each other. Will (2015) suggests that with both incentives for individuals and binding mechanisms, this permits staff to believe that it is good for additional effort and to their interest for innovation to exist. Thirdly, change management from a perspective inspired by new institutional economics, implies that an optimization within the bounds of current restriction is sufficient to enlarge mutual benefits and enact change management as a more comfortable way to be accepted. The enlargement of mutual benefits by optimizing cooperation allows employees to have a strong self-interest in organizational change (Will, 2015).

##### 4.3. Resistance and Employee Interpretation of Change

Mai and Akerson (2003, p. 128) argue that, a psychologist Robert Goldberg observed employees who often viewed change as a threat for various reasons that were significant to them such as job securities, sense of competence, feelings of controls and cited him as saying "We are on the outside and might view the expression of that core as resistance, but on the inside it is experienced as the need to preserve something precious and worthwhile". A research by Kulkarni (2016) on change resistance in an Indian organization, focused on the interpretation of change by the employees through interviews with fifty-four such employees. Kulkarni qualitatively interpreted the employee perspective whilst separating the change-agent perspective. Detailed investigation revealed that, employees disagreed that their actions were towards resistance. Instead, they explained that their conduct was based on ideological reasons and that their actions were assumed to be out of a sense of responsibility or obligation, and in the long run benefited the organization. They were concerned, predicted and anticipated that the change might cause organizational-level issues (values or potential) or team level issues (member of staff welfare and sense of inequality). It was addressed by Franklin (2014) noting that it was very critical for every person in the change team to work collaboratively as there is always so much interdependence between the systems, processes and information exchange during a change process. Franklin (2014) also highlighted that one of the principles of good change management is to constantly assess each change for its ability to create unintended consequences. This enables the knock-on effects to be addressed and amendments to be made, so as to bring down the risk of disruption and also increasing the awareness for everybody to optimize the opportunities that it may bring.

Poor communication such that the way in which the change is being transmitted or lack of input solicitation during planning of change can doubtlessly cause pessimistic response, anxiety and uncertainty towards the change, even if the employees might not view that the proposed change could be problematic. Kulkarni (2016) also articulated that, instead of believing that resistance needs to be curbed in the absence of understanding its causes or implications, it should be of high importance to investigate on the resistance of employees so as to generate contextually well-founded knowledge concerning implementation of planned change.

#### 4.3.1. Different Viewpoint between Will (2015)'S Win-Win Concept and Kulkarni (2016) Employee Interpretations of Change

According to Leonard, Hynes, Smetlzer(2001) although competition might be able to stimulate workers to achieve more, but as technology is increasingly becoming more complex and as people are also becoming more specialized in delivering their work, the interdependence would be practically required. As such, we believe that the 3 conjectures by Will (2015):(i) Solutions for cooperation and competition to systematic interactions within companies, (ii) The acceptance of cooperation and competition, where the employees can eventuate at a collective outcome through cooperation or competition and (iii) change management conceptualization from a perspective motivated by new institutional economics, are basically more of an idealistic or a desirable outcome of a change management. In fact, we also agree with Kulkarni (2016), that competition (even if it is a healthy competition with rewards internally) might adversely build up conflicts, resistance and affect cooperation between team members and teamwork quality as a side effect. Especially, when messages or information flow is not properly conveyed or communicated within the team. Moreover, different priorities, goals and objectives that cause dysfunctional conflicts, turf wars and reworks are the manifestation of poor communication within the organization (Booher, 2007). Although, little about resistance was mentioned by Will (2015) in his work, however only a brief presentation of employees' resistance was raised as change resistance encountered by the company and hence it was unable to develop or implement change management strategies. Nevertheless, in the view that these resistances could be purely assumptions of the organization itself on the surface when communications were undermined. Our opinions of managing resistance should never be a reactive approach but pro-actively planned approach at every progressive step. Similarly, it was addressed by Kulkarni (2016) that investigation of resistance should not be a top-down perspective but to be executed through the ground and emergent dimension instead.

#### 4.3.2. Overcome Resistance during Implementation Stage

According to Fisher and Rhoode(2013) from his research at a large utility company, the methods to overcome resistance during implementation stage includes: always schedule implementation with specific completion dates, or else it will lose its vitality and avoid having too many implementations at one time but break them into different phases or manageable parts so that it may not overwhelm employees. Be mindful to increase efforts for testing, piloting ideas and cost-benefit analysis as soon as there are technical failures or over-run cost or budget. Managers who have failed or have poor performance in the implementation of projects, assign change management training programs to help them. Organizations also have to make sure that innovation as part of the organization's culture is being supported by the managers that they are being motivated themselves to execute it in a timely manner so that the organisation maintains the motivation to the employees in embracing the innovation program. Similarly, White (2017) commends that, communicating authentic appreciation among colleagues, promotes positive liveliness and neutralizes resistance.

Effective implementation (strategy and technology integration)

Machado and Davim (2016, pp. 8-9) highlight the factors belowfor effective implementation when an organization integrates a new technology. (1) Strategy and technology integration: Both external and internal factors are to be critically analysed and reviewed upon during the strategy formulation process as strategy is intended according to the organization's vision and mission. It hasbeen outlined by Kotter (2006) that, transformation efforts could give birth to a list of confusing and conflicting projects if it is not backed with a sensible vision. Similarly, Nah and Lau (2001, p. 291) stress that one of the critical factors for business success is certainly a strategy link with technology. However, while embracing the digital change within a company would never be a one-size-fits all approach, there are 3 different levels of organizational maturity and each requires different implementation approaches (Swaminathan & Meffert, 2017, p.203).

- Level 1: New digital unit that is generally autonomous and independent, unconnected with the core business.
- Level 2: Digital competence centre, the organization's intent is to strengthen its digital competency in stages.
- Level 3: Fully digital company, where an organization constructs or reconstructs according to digital principles.

As uniquely as these approaches are, they would require different implementation approaches individually. Somehow, the bottom-line is that as long as there is strategic focus to technology, it is not only able to increase commitment but also attain top management support to minimize resistance (Machado & Davim, 2016; Nah & Lau, 2001).

Effective implementation (Integration of technology with structure)

An organizational structure can be explained in detail as a set of steadfast ordering of organizational settings. The organizational design, its hierarchical levels and reporting lines are all an exemplification of an organizational structureof factors for grouping of jobs and its duty. Logically, changes would bring on re-designing of tasks; alter the way, sequence or even the layout of the work environment whenever integration of a new technology comes in between. Such changes can be physical setting, responsibilities and unfortunately even dysfunctional conflicts at times. Moreover, organizations are socio technical systems by which the necessity of employees should not be ignored, as the employees' fear of job or power loss and lack of knowledge about new technology can all build up barriers and resistance, from embracing adoption of new technology.

Distinctively, Taesung (2015) also highlight that innovation, communication and innovativeness associated with time and a social system are the major components of innovation diffusion theory which affect an individual's innovation-decision process. Therefore, it is quite a necessity to balance between the technical and social setting alignment in order to obtain a successful change.

#### 4.4. Communications

Sacolick (2017) advises that, having the perspective of technical communication and collaboration required to move or integrate an application into production, as a way of release planning by many organizations is inappropriate. He



argues that the moment a conversation about the theme for release, target delivery dates and an agreement to commence on it, then the release planning would have actually taken place already. He shows a figure below that indicates the release process displaying the major steps and communication stages (Sacolick 2017, p. 61).

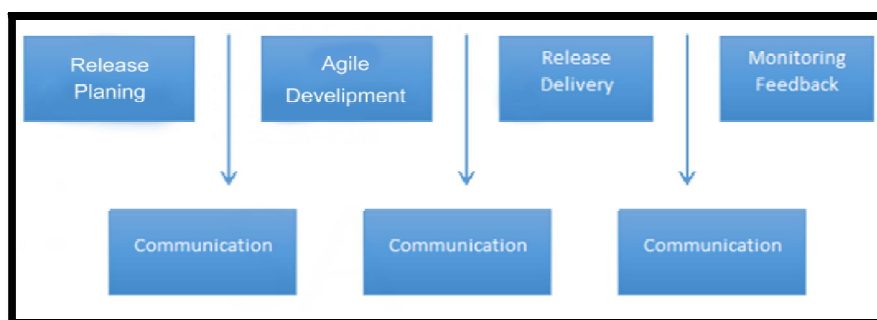


Figure 4: The Release Process  
Source: Sacolick (2017, P.61)

Correlatively, as Cheney et al (2004) explain, organizational communication includes containing a whole assortment of things, such as dialogues, interactions, relationships, networks and larger discourses. It plays such an important factor for success to overcome resistance in the change management process in its journey to achieve a win-win change management. In addition, Barker and Camarata (1998) also mention that mutual cooperation among fellow workers would only be achievable through communication and mutual trust during times where uncertainty and complexity grows. A notable point was also raised by Franklin (2014) where speed of change that takes place can be directly impacted by trust. Particularly, it means that when one is rushing through the process of change without taking time to create trust and build productive relationship, the effects can be counter-productive. This is illustrated in figure 5 below.

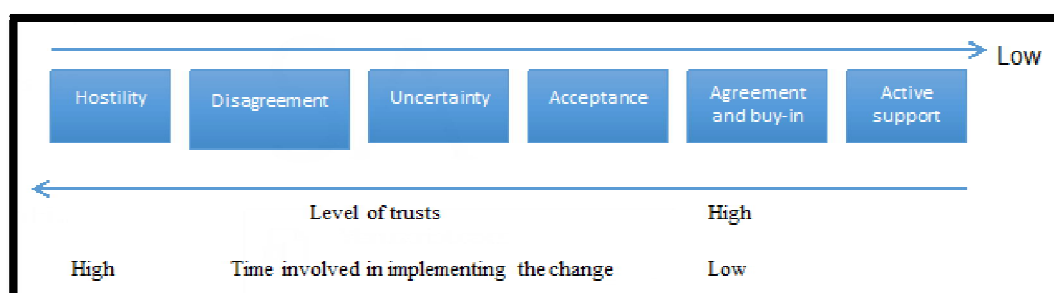


Figure 5: The Process of Change  
Source: Franklin (2014, P.170)

At this point we commend about Will (2015) conjecture of cooperation and competition in creating mutual benefits that it is adequate for a win-win change management to be too simplistic. If the key-link "Communication" is not present, it is doubtful that these 3 theories could offer the desired outcomes that they are indeed intended for. Moreover, Barker and Camarata (1998) have also indicated that 'Perceived Organizational Support' is one of the preconditions along with other two 'Trust and Commitment' necessary to build up the fellow workers' involvement with the organization and its goals by increasing the workers' connection with the firm. Additionally, Barker and Camarata (1998) also highlight that the employees' expectation of the organization's future behaviour under differing contingencies, can be greatly affected by their perception of the firm's treatment to them. In other words, the increase of the employee's effort-outcome expectancy and his/her affective attachment to the firm would also be positively impacted by the reliability, trustworthiness and consistency of the organizational communication.

#### 4.4.1 Communication Factors That a Firm Is a Learning Organization

According to McCalman and Potter (2015) a cultural change is an integral part of a series of change or accomplished transformation of supposition, values and cultural themes established at a horizontal plane of the individual, the group, the inter-group and the entire firm. This cultural change process would certainly involve learning. Belasen (2000) proclaimed that their learning capacities are rooted in the communication processes to erect knowledge and make use of intellectual resources. Such that, the inspiration and keenness of the learning capacity of individuals and of a group within a management community is regarded as a leadership act (McCalman & Potter, 2015). Besides that, Barker and Camarata (1998) have also acutely pointed out that, an organization-employee relationship, valuing the employee, employee empowerment and employee ownership and acceptance of responsibility marks the clear evidence that a firm is a learning organization.

#### 4.4.1.1. Organization-Employee Relationship

The significance of acknowledging employees as associates, members, partners and fellow workers can build a sense of bond between the firm and its employees. A bond that is central and pivoted on relevant information sharing, credit sharing, and rewarding openness and honesty. It motivates progression on both horizontal and vertical partnering. Likewise, Argenti and Forman (2002) assert that increasing corporate communication which includes employee communication about a company's overall mission and strategy, would be able to encourage him/her to serve as a goodwill ambassador of the organization to its outside constituencies.

#### 4.4.1.2. Valuing the Employee

Employees' discernment of how the organization values them can be impacted by this ability to see fairness communicated by or within the organization. Positive effects on volitional, extra-role behaviours of employees are discovered from perceived fairness. It is not so much as a medium to control but as a way of life- a symbolic communication, when we respect the employees in the areas of their (eg: needs balancing/ personal career development/decision-making/listening) as the corporate body's social responsibilities to how we treat our employees (Gower, 1997,p.194).

#### 4.4.1.3. Employee Empowerment

Employees would advance an increased sense of self-efficacy as empowerment authorizes them. This could mean to allow them to have the liberty to act beyond their clearly classified area of responsibility and by entrusting an appropriate degree of control, which validates them to view themselves as making an impact in their work lives, and succeed in dealing with the weakness to take necessary action in accomplishing organizational goals (Barker & Camarata, 1998).

#### 4.4.1.4. Employee Ownership and Acceptance of Responsibility

As the fellow workers are ready to commit, they are also prepared to invest in a relationship, on which they can count on in the future, as they are constantly and consistently receiving messages that the organization values and cares for them. Thus, it is logical that they would reciprocate with the belief that responsibility and ownership for the mission of the firm will be part of their relationship with a readiness to convey the most honest information about organizational condition. In order to reinforce the learning organization, such communication must exist and coordination at the organizational, managerial, business and corporate levels working altogether (Barker & Camarata, 1998, p.450-451).

#### 4.4.2. Impact of Change Communication on Change Receptivity

It was suggested that good understandings of factors that are essential for positive learning encourage change receptiveness (Barker & Camarata, 1998). Simoes and Esposito (2015)) also state that the impact of change communication on change receptivity, indicates that there is a shift from a monologic to a dialogic communication. According to Salem (1999), a monologic approach introduces change that is perceived as a series of events occurring to the firm such as cutting cost/budget or reorganizing/restructuring rather than a protrusion of daily activities. Whereas, a dialogic approach is where both change and communication are very closely intertwined to such an extent that it could be almost indistinguishable. Receptivity to change are mainly dependent on the below five principles (Murray, 2014, p.93): (1) Mutuality and it requires a typical credit of collaboration and spirit of mutual equality: In other words, it means that members in a dialogue are regarded as persons neither objects nor "target for change". Particularly, the exertion of power and superiority should not exist in the dialogue. (2) Proximity is built on three features of dialogic relationships: "immediacy of presence", "temporal flow" and "engagement". Proximity can be grasped as a constant engagement in the process and there is a consistency of past, present and future discussions. Further to that Murray (2014, p.93) introduces an engagement ladder with 6 steps as follows: (Develop plan-Make aware-Understand-Build rapport-Win) as a tool for successful engagement with the employees.(3) Empathy, the environment of a potential to comprehend, trust, share and express compassion for another that welcome communal orientation, supportiveness and confirmation or acknowledgement, must occur for dialogue to succeed. (4) Risk is one of the key principles of dialogic communication, which refers to members in a dialogic communication that are able to confess very openly about any uncertainties or doubts as part of the process as well as the results. Employees need to feel a good sense of being secure and without fear of reprisals from top management before they provide questions or advice from their positions (Argenti, 2009). It was also highlighted by Charan (2007,p. 153) as "Candor" which is seen as a keenness to voice the unspeakable, revealing unfulfilled commitments and voice out the conflicts, which undermine apparent consensus. This factor is considered as one of the most distinctive characteristics listed in social operating mechanisms of decisive cultures featured behaviours'. It prevents and avoids unnecessary rework and reconsiders decisions that gradually weaken productivity. (5) Commitment can be perceived as genuineness, quality of dedication to interpretations and state of dedication to conversation. A conversation between two can be honest and forthright, where working together toward common understanding is the essence of dialogic relationships. This would require a continuous fine-tuning language and exert efforts to grasp the positions, beliefs and values of others before their positions can be fairly and impartially evaluated. Our analysis is that, the relationship between factors that are essential for a positive learning organization, and the impact of change communication on change receptivity presented by Barker, Camarata (1998) and Simoes and Esposito, Mark (2015)) respectively are correlated and intertwined which requires each other to coexist. Therefore we conclude that the factors would be better achieved with the others as summarized in Table 1 below.



<b>Communication Factors that a firm is a learning organization</b> (Barker, Camarata (1998) Pg450-451)	<b>Impact of change communication on change receptivity</b> (Simones, Esposito, Mark (2015))
Organization- Employee Relationship	Mutuality
Valuing the employee	Mutuality & Empathy
Employee Empowerment	Commitment, Propinquity, Open dialogic communication (Risk)
Employee Ownership and acceptance of responsibility	Commitment & Propinquity, Open dialogic communication (Risk)

*Table 1: Summary of Change Correlation Factors  
Source: Researchers' Own*

#### 4.4.3. Improving Receptivity and Communication

According to Doz and Wilson(2012, p.111) knowledge sharing tool is a very effective way in forcing culture change through practice. However, these are the vital points to be taken note of when embarking on this approach:

##### 4.4.3.1. It Is About People, Not Technology

The process of knowledge sharing and the culture change required to implement it are about the people and not the technology. The focus is communicating the message and educating people about the benefits of learning and receiving it. The employees would only recognize advantages and alter their behaviours by using the new system. The moment people find out that they have benefited or learned from the community (take example of communities practice) of the new system, they are more readily to participate (Doz & Wilson, 2012).

##### 4.4.3.2. Senior Managers Need to Support the Effort

Engaging users might be the key to bringing about culture change, but this would definitely need the clear and visible senior management to provide legitimacy support. Wood et al (2016) explains that legitimate power not only confers an individual with the rights to influence the employee but also the legal authority to control and use organizational resources to accomplish organizational goals.

##### 4.4.3.3. Changing Culture Will Take Time.

Like any change program, you need time to build a new culture around the knowledge sharing, and receptivity requires a lot of time. The bigger the organization the more time it may require, in some large organization it is more likely to be years than months.

## **5. Research Methodology**

Kumar (2014) contends that it is an obligation for any researcher to deploy an appropriate methodology within his knowledge base in accomplishing a study. A research methodology is the philosophy and science behind the research which enables the researcher to understand and know how knowledge and response to research questions can be created, then being put into a position to interpret what might be wrong with it (Adams, Khan, Raeside & White, 2014).

### *5.1. Research Design*

A qualitative research is designed to understand or explore meaning and the ways people make meaning to the research, rather than proving a theory (Braun& Clarke, 2013) or determine a relationship between factors. An exploratory research is explained as a study to commit with the objective to explore or investigate an area where little is known of undertaking a particular research study (Kumar, 2014). This substantiates that an exploratory research design is an appropriate one for this research.

### *5.2. Methodology*

We conducted a case study which we regarded as the most relevant and significant way, to generate meaningful data regarding the research question under investigation. A case study is complimented by Gilbert (2008) for its advantage and can be much more detailed. Kumar(2014) asserts that besides this, it is a very effective design to explore an area when little is known and additionally offering a holistic knowledge and understanding of ascertain situation or phenomenon.

#### 5.2.1. Unit of Analysis

This study was conducted with a local Singapore logistics company that provided a total logistics services since 1975. For purposes of confidentiality, we named this company as XYZ Logistics so as to protect its identity from the public with the outcome of the research done. XYZ Logistics services offers two main areas which are Integrated Logistics Management that comprise container depot management, container trucking management and warehousing and inventory management. The other one is project logistics management, which comprises heavy haulage, heavy lift and

positioning and installation, specialized movers, conventional trucking and marine logistics. Apart from Singapore, XYZ Logistics has regional presence in Cambodia, Malaysia, Indonesia and Vietnam and manpower of over 200 employees. XYZ Logistics adopted the ECTS (Electronic Container Trucking System) in Singapore since early 2017. The ECTS was then a new generation platform to support the logistics and transportation industry. A platform with the telecommunication system that was supported by both 3G and 4G compatibility, which uses the tablets to enhance the hauliers' container trucking operations. Some of the benefits include communications and notifications visibility with the drivers, automated entry into empty depot (aka e-gate), real time records of transactions and work safety compliance recording. Communication with depot gates and port for drivers' arrival automatically and update on activity status, electronic acknowledgement of taking over and handing over of container at port. These are all achievable simply with a quick and easy installation of one tablet in the driver's truck. The proposed focus of this research was on container trucking management, where we explored how the employees actually felt and if they embraced the adoption of ECTS in their Singapore headquarter.

We used purposive sampling for this research with the guidance from one of us who had more than 17 years of working experience in this industry and had a good understanding of the work flow process in a container-trucking department between its customer and the port facility. The sample size was 7 although 2 of the prospective participants were unable to take part due to circumstances beyond their control. In this study, 20 operation truck drivers participated in the pre-test as they are the ones directly facing the "digital change" on daily basis. Thereafter, 3 operational truck drivers were purposely selected out of the 20, for an operational level unstructured interview and largely credited for their proficiency in English conversational abilities. Furthermore, their 20-30 years of working experience with deep understandings of the change in this industry and their long service with this company ranging from 6,13 and 16 years. The sample included a tactical manager, whose job requires him to mitigate the resistance (if any) from the operational level on daily basis. The manager had more than 30 years of experience in industry and his job as an Operation Manager, who was also the key person spearheading the adoption of digitalization change from the beginning of the proposal, planning, implementation and release delivery stages. Also considered as the change agent primarily responsible for the tactical change of the project implementation activity including strategy, design, deployment and evaluation of the change. There was also an unstructured interview with the CEO from the strategic level, enabling the researchers to obtain data from the top management. All interviews were unstructured as it was extremely useful in exploring both intensively and extensively, where digging deeper about a situation or phenomenon, issues and problems was needed (Kumar,2014).Ethical considerations were informed by the Nuremberg code.

### 5.3. Data Collection

The research methods included both primary and secondary data. The primary data was collected using questionnaires while secondary data came from journals, archives, magazines and company documents. The questionnaire was administered to truck drivers in order to obtain primary data. Here we intended to mine data from the truck's drivers about their experience, opinions, feelings and knowledge about the change through digitalization. The questionnaire was designed according to themes with the Likert scale format, so that it would illuminate the 'dark side' of relationships which manifest conflict and stress experiences at the operations levels. Unstructured interviews were also used to collect primary data from the selected operational drivers (3 of them) and interviews with the operational manager at the tactical level separately. Tracy (2013, p.132) suggests that interviews provide opportunities for discovery, understanding, reflection and explanation through a path, which is organic, adaptive and usually energizing.

### 5.4. Data Analysis

The response rate was 71.4%. It could not be 100% as anticipated because other 2 prospective participants were assigned duties away from the site by management even though they had accepted to participate. Table 2 below shows the demographic data of those who participated. According to Baruch and Holtom (2008), 52.7 % stands as the average level of response rate by way of a standard deviation of 20.4 when they were analysing 1607 surveys from the period 2000 to 2005 involving 4000,000 participants.

Participant	Level	Age	Experience by year
A	Top Management	43	5
B	Middle management	55	28
C	Operative	Not given	30 +
D	Operative	Not given	33
E	Operative	Not given	36

Table 2: Demographic Data of Participants: (N=5)

Participant B has been in the industry for 28years and joined the company under study about three years ago in the middle management level. At the time of joining the company among others, the ECTS digitalization adoption could have been the participant's first initiative. Participant C has been with the company for over 30years while participant D has been at the same level in this particular company for over 13 years with over 20 years elsewhere in the same industry. Participant E joined this company 6 years ago at the time when this study was carried out but has been in the logistics industry for close to 30 years.

The secondary data collected from the operational level was analysed with the probability method, which provided us with the platform to obtain further data through the next stage of unstructured interview with all operational, tactical & strategic levels. Since all questions from all 3 levels were constructed around the themes focus, hermeneutics and thematic analysis were the most applicable and useful ways to characterize relationships between variables (Boyle & Schmierbach, 2015). Thus, by focusing on the recorded words spoken from the participant's verbatim and thematic analysis as supported by the grounded theories, this helped to comprehensively interpret meaning for the research objectives.

## 6. Discussion of Results and Main Findings

Results indicated that there was a good alignment in terms of the company's vision and strategy that had been communicated. Moreover, during the interview with the operational level participants there were about 8 positive comments that they understood the company's vision/strategy and alignment. There was a consistent alignment throughout all three levels, that embracing digitalisation would improve productivity and efficiency. Management not only created an awareness but fulfilled two of the four major characteristics of transformative leadership needed: (1) created a compelling vision, with an image or vision of an attractive and credible future for the organization (2) Positioned the organization in the outside world, which described the process by which the organization establishes a viable niche in its environment, where it encompasses everything that must done so as to align the internal and external environment of the organization. Despite this, there was still some stress and anxiety at both the operational level and tactical level. These stress levels appeal to Lewin and Kotter's theories which did not incorporate the psychological journey of change. It is of paramount importance to consider Bridge's theory which took a further step of incorporating the personal, psychological journey of change and grief process into considerations during change phases or change management. The organization had conducted adequate and continuous training for the operational drivers, in enabling them to be both competent and well-confident to take the responsibility given to them with respect to the digitalization change. The CEO had actually fulfilled the human needs explained in McClelland's Acquired Needs and Wood et al (2016) in satisfying the need for achievement, power and affiliation by showing his appreciation and sharing of the successes within the group of his employees. The drivers' were more negative to accepting the autonomous trucking (artificial intelligence) mainly due to fear of losing their jobs before the motivation factor had been introduced. According to Maslow Theory of Need Hierarchy it can be explained that if the jobs are affected, there are two most basic needs in the hierarchy (physiological needs and safety, security needs) which are directly affected thus causing them to be negative at this moment. Both the traffic controller and the administrator were not able to participate in the study due to their tight schedules, otherwise more data could have been extracted for better analysis. Vroom's Expectancy Theory was engaged to validate the company's motivational intent in the change process.

## 7. Conclusions and Recommendations

Digitalisation is inseparably associated with economic and societal forces. At the same time, digitalisation can shore up three pillars upon which it is built namely; environmental protection, promoting equitable growth and the improvement of the quality of life. What is evident and clear is that the world is indeed at crossroads where digitalisation is opening up new economic growth opportunities, at the same time promoting exclusivity and inequality through job losses. However, this study presented some challenges and opportunities identified with a logistics industry in Singapore. Findings reveal that, challenges were inherent in the transformation phase especially the perceived loss of jobs despite the application of various change management strategies such as company strategy re-alignment, education and training, employee involvement, cultivating trust and interpersonal relationships, stress, burnout and social support in work. The study further reveals that, the tactical application of motivational and change theories was quite rewarding in the bid to embrace digitalisation. These included Lewin's theory, Kotter's theory, Bridges' theory, McClelland's Acquired Needs theory, Maslow's hierarchy of needs and above all Vroom's Expectancy Theory. With regards to artificial intelligence (autonomous trucking) embracement, the strategic level devised a 10 year plan for execution. Significantly, they knew that both motivation and communications are imperative factors for a smooth transformation embracement in this context. Nevertheless, the study revealed that good change planning alone may not be adequate. This suggests that similar effects of such a successful experience should also be shared among those who participated in the embracement of digitalization transformation. It is however recommended that principles of emotional intelligence, transactional leadership, and use of feedback surveys after training should always be applied as important vehicles for easy and smooth transformation. The tactical manager could have administered a feedback questionnaire survey after the training instead of just holding face-to-face meetings, because the drivers may not have been as vocal enough to voice their true views due to lack of an open dialogic communication. The organization should consider doing a formal project closure with three major deliverables (1) wrap-up closure activities (2) performance evaluation and (3) retrospectives. Retrospectives not only keep records of the past lessons learnt from this or current project, but they also serve as a valuable manual for future projects to avoid same mistakes. Further research should explore any distinct heterogeneous factors that may be required or impediments for the embracement of artificial intelligence from digitalization milieu.

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