

Article

# Self-efficacy and means-efficacy as a strategy for reducing resistance to change—Transition from frontal learning to asynchronous learning

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**Abstract:** Modern organizations often face challenges implementing initiatives due to the rapidly changing business landscape and encountering internal obstacles like resistance and delays. This research examines the application of the internal and external efficacy model and its effect on resistance to change in work organizations by raising self-efficacy and means-efficacy (a person's belief in the ability of the tools available to him to perform the task). Raising the two types of efficacies creates a Pygmalion effect in which high expectations for successful performance encourage the investment of efforts; therefore, ultimately, they will lead to more successful performances. In addition, since individuals with an external locus of control place a higher emphasis on resources that are external to them, the moderating effect of the degree of locus of control on the relationship between means-efficacy and resistance to change was studied. The study that included 138 participants was conducted in a logistics and international forwarding company in Israel and examined a change in learning method from face-to-face learning to an asynchronous learning module. During the study, the level of self-efficacy and means-efficacy of participants was raised, and the level of resistance to change and the level of locus of control as a personality trait were measured. The study showed a distinct effect of increasing self-efficacy on the degree of resistance to change ( $t = -1.66, p < 0.05$ ), but no significant effect of increasing means efficacy on resistance to change was found ( $t = -0.87, p > 0.05$ ). The effect of means-efficacy on the degree of resistance was found to be moderated by locus of control ( $t = -2.3, p < 0.05$ ), meaning that those who had an external locus of control were more impacted by the increase in means-efficacy. This means that people with an external locus of control are more affected by means-efficacy than by self-efficacy.

**Keywords:** means-efficacy; self-efficacy; resistance to change; locus of control

## 1. Introduction

Many organizations today are confronted with frequent changes in the dynamic organizational environment. Although the changes can benefit the organizations where they are implemented, they frequently run into roadblocks, hold-ups, and resistance when attempting to put their long-awaited implementation into action (Jones et al., 2016). Organizational managers are seeking various approaches to mitigate the adverse effects of work environment modifications, which are reflected in employee discontent (Amiot et al., 2006), turnover intentions (Srivastava and Agrawal, 2020), work-related stress (Fløvik et al., 2019), and other related manifestations.

The integration of new technologies and information systems has been one of the primary changes that organizations have been implementing recently (Peppard, 2020). While every new system has the potential to benefit the company and its employees, these modifications may also raise demands and, in the eyes of the

workers, cause harm to them (Kumar et al., 2021). According to Chen et al. (2009), new systems accelerate work and put employees under pressure to respond quickly. This can potentially undermine their self-confidence and ability perception at work, as well as lead to stress.

One of the factors that was examined in a very broad way in past studies regarding its ability to reduce resistance to organizational changes is the concept of self-efficacy (Martin et al., 2005; Wanberg and Banas, 2000). Self-efficacy is a person's belief in his ability to perform a certain task (Bandura, 1997). A number of research studies have demonstrated a robust positive correlation between self-efficacy and performance (Akmalia et al., 2023; Caliendo et al., 2023). Research has indicated that in relation to resistance to change, elevated levels of self-efficacy correlate with favorable attitudes toward change (Wanberg and Banas, 2000), preparedness for change, participation in change (Cunningham et al., 2002), and commitment to change (Herold, 2007).

Self-efficacy has a variety of effects on how well people adjust to change. First, self-efficacy gives workers "the ability to move", which enables them to modify their performance to fit the needs of the task at hand (Schunk and DiBenedetto, 2021). Furthermore, research has demonstrated the importance of self-efficacy in circumstances that an individual views as novel, unanticipated, and stressful since a high level of self-efficacy enables an individual to cope with pressure better (Schunk and DiBenedetto, 2021). Research has even demonstrated that self-efficacy is a valuable tool for coping with job loss and career transitions (Alisic and Wiese, 2020; Holmes and Werbel, 1992).

In accordance with the above it was hypothesized that:

H1: Increasing self-efficacy in the context of changing learning methods from frontal learning to asynchronous learning will reduce resistance to change.

However, self-efficacy is only one aspect of the concept of efficacy. The structure of the efficacy can be seen as broader. The internal-external efficacy model (Eden, 2001) is an extension of the efficacy model in that it includes within the concept of efficacy a person's subjective assessment of all the resources available to him to perform a task—external and internal.

The internal resources include talent, abilities, desire, intelligence and resourcefulness or any other attribute that the person thinks has the ability to assist a person in completing the task (Agars and Kottke, 2021). In addition to internal resources, a person also has external resources that can help him perform the task (technology, other people, work tools, etc.). The fundamental idea that underpins these beliefs is "Means Efficacy", which is defined as a person's belief in the ability of the tools available to him to perform the task (Eden, 2001).

The belief that a certain tool can help in performing a task causes an investment of effort, while a lack of faith in a certain tool will result in a lack of investment of effort. Expectations are the psychological mechanism that acts as a mediator between efficacy—whether internal or external—and performance. High expectations for a successful performance encourage the investment of efforts, which will ultimately lead to more successful performances, according to the theory of expectations (Lokman et al., 2022; Vroom, 1964).

Similar to how self-efficacy alters a person's belief about their capacity to perform more successfully rather than their actual ability, means-efficacy alters a person's belief about the ability of the tool rather than the tool itself. Consequently, increasing means-efficacy will boost performance by reinforcing performance standards without actually altering the tools or their fundamentals (Eden et al., 2010).

Past studies have shown that there are two types of efficacies: self-efficacy and means-efficacy. These two types of efficacies have distinct effects from one another (Agars, 2010), and a change in one of them does not lead to a change in the other (Chen et al., 2009; Eden et al., 2010). The inherent potential in improving performance by increasing means-efficacy is evident in several field studies. For instance, the performance of social workers and students improved in a new computer system in an experiment where the means-efficacy was raised (Eden et al., 2010); workers' willingness to use a new information system increased (Chen et al., 2009). According to Strin et al. (2012), the modifications in these studies were accomplished without affecting self-efficacy. According to other research, means-efficacy is crucial when deciding whether to quit a job, pursue a career, and maintain employment (Agars and Kottke, 2021; Schmierer et al., 2009).

One of the key takeaways from the means-efficacy research is that managers can improve employee performance without spending time or money, but only if they understand their role and know what managerial actions need to be done to boost employee performance within the organization (Stirin et al., 2012). In other words, means-efficacy significantly influences employees' success expectations, which in turn motivates them to put in more effort and, eventually, perform better. In addition, simply strengthening the employees' sense of competence results in their greater readiness to try and face new challenges.

Therefore, it was hypothesized that:

H2: Raising means-efficacy in the context of changing learning methods from frontal learning to asynchronous learning will reduce resistance to change

However, does means-efficacy have the same effect on everyone? One of the personality variables that can moderate the effect of the types of abuse on resistance to change is locus of control. This concept could be defined as a person's perceived level of control over their surroundings (Rotter, 1966). Individuals with an external locus of control feel that other forces or external factors, like luck, control their lives, whereas those with an internal locus of control feel that they have control over their surroundings and their own achievements and failures.

Because people with an external control focus place more emphasis on resources that are external to them, while people with an internal control focus place more emphasis on internal resources like their abilities, personality traits, and past experiences dealing with similar situations, this variable can act as a moderating factor on the degree of influence of the type of efficacy (external or internal) (Padilla and Agars, 2014).

Eden et al. (2010) looked at the connection between means-efficacy and locus of control. According to this study, participants with an external locus of control performed better when their means-efficacy increased, but participants with a high internal locus of control saw little change in their performance. This showed that

increasing means-efficacy will have a greater impact on those who place a higher emphasis on the influence of outside forces on their lives and who have an external focus on control.

Accordingly, it was hypothesized that:

H3: The positive relationship between means-efficacy and resistance to change in the context of changing learning methods from frontal learning to asynchronous learning will be moderated by a locus of control so that raising means-efficacy will have a stronger effect the more external the locus of control.

## **2. Method**

### **2.1. Procedure**

Before the study was carried out, it received ethics approval from Jerusalem University (authorization number 6166). The research hypotheses were tested as part of a field study carried out in a Logistics and international forwarding company in Israel with approximately 600 employees. This organization requires a frontal training session on driving safety once a year. Approximately 100 car owners or company drivers who are required by the organization to complete this training are given this training in multiple cycles. The study was conducted in conjunction with a pilot project to investigate the feasibility of switching from in-person instruction to online learning (asynchronous learning module).

Study participants were sent a Blind Carbon Copy (BCC) email, so they didn't know who else was in the group with them. Each group was given an explanation by e-mail regarding the transition to learning according to the following breakdown:

- 1) Control group: Participants in this group received a link to the system and an explanation of the transition from face-to-face lectures to learning and what is expected of them in terms of activity requirements and the required time frame. The wording of the email appears in Appendix A. The control group received neither means-efficacy nor self-efficacy manipulation.
- 2) Means-efficacy: In this experimental group, the means-efficacy was activated by adding a short paragraph in the body of the email that described the change of the transition to learning as a positive change. Specifically, it was noted that the system is easy to operate, instructive and the activity itself is very enjoyable. The wording of the email appears in Appendix B.
- 3) Self-efficacy: In this experimental group, self-efficacy was activated by explaining to the participants that they were chosen for being opinion leaders in their departments. The wording of the email appears in Appendix C.

Participants in groups 1 and 2 were referred from the list of vehicle owners and company drivers, and the participants were randomly assigned to either the control group (group 1) or the means-efficacy group (group 2). This was achieved by using a random number generator implemented in Excel. Regarding group 3, this group could not be from the group of vehicle owners because it is not possible to tell the vehicle owners that they were chosen as opinion leaders (because the pilot was done among all vehicle owners and there is no way to exclude a certain group without the experimental manipulation being obvious). Because of this, the participants were told that they were nominated by their managers for being opinion leaders in their

departments, when in fact they were randomly selected from among the company's employees.

As part of the pilot, the participants were asked to pass one asynchronous learning module from a group of five, each of whom covers a different topic (for example, speed, driving under the influence of alcohol, distractions, etc.). Each asynchronous learning module includes six activities where for each activity they can accumulate between one and three stars depending on the degree of success in the activity or the degree of investment (for example, the percentage of correct answers in a trivia quiz, finding differences, etc.). Participants were required to score a minimum of ten stars out of a possible eighteen. The data regarding the degree of performance of the employees was automatically recorded in the dedicated LMS (Learning Management System).

After receiving the results, an additional e-mail was sent to the research participants who took part in the activity, and they were asked to fill out two short questionnaires (resistance to change and locus of control) that were defined as part of an academic study (see Appendices C and D).

## 2.2. Participants

138 company employees took part in the study: 78 men (56%) and 60 women (44%). The average age of the participants was 38.52 years ( $SD = 8.87$ ). The average seniority of the participants was 6.07 years ( $SD = 5.98$ ). The number of participants in each experimental condition

- The control group— $N = 46$  (the response rate was 90.7%);
- Means-efficacy group— $N = 47$  (the response rate was 87.8%);
- Self-efficacy group— $N = 45$  (the response rate was 79.4%).

This sample size maintains feasibility and cost-effectiveness while offering enough statistical power to identify significant relationships between the variables. The sample size was determined through a priori power analysis using G\*Power 3.1. For detecting medium effect sizes ( $d = 0.5$ ) in the independent samples  $t$ -tests with  $\alpha = 0.05$  and desired power of 0.80, the analysis indicated a minimum required sample size of 128 participants. For the multiple regression analysis with 3 predictors, to detect a medium effect size ( $f^2 = 0.15$ ) with  $\alpha = 0.05$  and desired power of 0.80, the analysis indicated a minimum sample size of 119 participants. Our final sample size of 138 exceeded both these thresholds, ensuring adequate statistical power for our analyses. Additionally, sufficient subgroup analyses and investigation of moderating variables are made possible by this sample size.

## 3. Measures

### 3.1. Resistance to change

Resistance to change was measured by Oreg's (2006) questionnaire. The questionnaire includes six items, four of which examine cognitive resistance to change and two examine emotional resistance. The options for answering the questionnaire range on a six-level scale, from 1 "totally disagree" to 6 "totally agree". Five items were taken from Oreg's original questionnaire and one more was

compiled by the author. The reason for adding a dedicated item to the questionnaire stems from the fact that the original questionnaire refers to a change that is relatively central to the employee’s life, while the change within the scope of the research is relatively minor and does not have a major impact on the employee’s life (so that item such as “I presented my objections to management” is less relevant). The item added is “I think that the transition to the use of the learning curve will improve the level of driving safety of the people who have passed it”. Cronbach’s alpha of the questionnaire in the current study was 0.76. The complete questionnaire is presented in Appendix D.

In addition, the resistance to change was measured by examining the number of stars they obtained using the study. As mentioned, participants were instructed to perform a minimum of 10 stars out of a possible 18. It can be assumed that the more employees resist the proposed change, the more they will adhere to the minimum necessary to go above and beyond their duty, while employees who resisted less and enjoyed the use of the study will try to obtain a greater number of stars.

### 3.2. Locus of control

The variable of locus of control was measured using Levenson’s (1981) questionnaire. The questionnaire has eight items and can be used to measure locus of control on a six-level scale ranging from 1 “totally disagree” to 6 “totally agree”. Cronbach’s alpha of the questionnaire in the present study was 0.82. The complete questionnaire is presented in Appendix E.

## 4. Results

Descriptive statistics and correlations are presented in **Table 1**.

**Table 1.** Descriptive statistics and correlations.

	Mean	SD	Locus of Control (Loc)	Resistance to Change (RTC)	Stars	Seniority (years)	Age (years)
LoC	5.01	0.64	1				
RTC	4.78	0.66	0.12	1			
Stars	11.29	2.07	0.17	-0.01	1		
Seniority	6.07	5.98	-0.01	0.1	0.21*	1	
Age	38.52	8.87	-0.09	0.03	0.05	0.53**	

\* $p < 0.05$ , \*\* $p < 0.0$ .

Descriptive statistics according to the experimental groups are presented in **Table 2**.

**Table 2.** Descriptive statistics according to the experimental groups.

	N	Mean Resistance to Change CRT	Mean Star	Mean Locus of Control LoC	Mean Age (years)	Mean Seniority (years)
Control Group	46	4.76	11	4.29	39.28	5.77
Means Efficacy Group	47	4.87	11.36	5.04	38.65	6.31
Self-Efficacy Group	45	4.98	11.51	5.06	37.6	6.12

#### 4.1. Hypothesis 1

In the first hypothesis, it is suggested that increasing self-efficacy would lessen resistance to the suggested change. Hypothesis 1 was tested by performing a *t*-test for unpaired samples where the independent variable was belonging to the group (control group vs. self-efficacy) and the dependent variable was tested using two measures: a resistance to change questionnaire and the number of stars earned by each participant. The results of the hypothesis appear in **Table 3**.

**Table 3.** Results of statistical tests for hypothesis 1.

	<i>t</i>	df	sig	Mean Difference
Resistance to Change (RTC)	-1.66	89	0.049*	-0.22
Stars	-1.22	89	0.112	-0.51

\* $p < 0.05$ .

As can be seen, a significant difference ( $t = -1.66$ ,  $p < 0.05$ ) was found in the resistance to change variable between the group of self-efficacy ( $M = 4.98$ ) and the control group ( $M = 4.76$ ). In other words, the employees in the group that self-efficacy was increased tended to resist less than those in the control group. In the index of star earnings, there were indeed differences between the experimental group ( $M = 11.51$ ) and the control group ( $M = 11.00$ ) according to the direction of the hypothesis, but this difference was not found to be significant ( $t = -1.22$ ,  $p > 0.05$ ).

#### 4.2. Hypothesis 2

Hypothesis 2 suggested that raising means-efficacy would result in lower resistance to the proposed change. Hypothesis 2 was tested by performing *t*-test for unpaired samples when the independent variable was the group (control group vs. means-efficacy) and the resistance variable was tested using two measures: a resistance to change questionnaire and the number of stars each participant earned. The results of statistical tests for hypothesis 2 are presented in **Table 4**.

**Table 4.** Results of statistical tests for hypothesis 2.

	<i>t</i>	df	sig	Mean Difference
RTC	-0.81	91	0.20	-0.12
Stars	-0.87	91	0.19	-0.36

As can be seen, even though the results were in the direction of the hypothesis in both dimensions, no significant differences were found between the group of mean-efficacy and the control. In the index of the resistance to change questionnaire, the control group ( $M = 4.76$ ) resisted the change more than the experimental group ( $M = 4.87$ ); however, as mentioned, this difference was not significant ( $t = -0.81$ ,  $p > 0.05$ ).

In the index of star earning, there were indeed differences between the experimental group ( $M = 1.36$ ) and the control group ( $M = 11.00$ ), but this difference was not found to be significant ( $t = -0.87$ ,  $p > 0.05$ ).

### 4.3. Hypothesis 3

Hypothesis 3 proposed that the relationship between self-efficacy and resistance to change would be moderated by locus of control so that raising self-efficacy would have a stronger effect the more external the locus of control.

This hypothesis was tested by performing an interaction test using a linear regression test. The test was done in two stages: The first time the interaction between the control group and the means-efficacy group was tested. This interaction was found to be significant ( $p < 0.05$ ). The second time, the interaction was performed between the self-efficacy group and the means-efficacy group and was statistically significant ( $p < 0.01$ ). The test results appear in **Tables 5** and **6**.

**Table 5.** Results of statistical tests for hypothesis 3 (first step-interaction between the control group and the means-efficacy group).

	Standardized coefficients-Beta	<i>t</i>	Significance
Centered Locus of Control (LoC)	0.51	3.43	0.01
Group	-0.07	-0.67	0.49
Interaction	-0.34	-2.3	0.02

**Table 6.** Results of statistical tests for hypothesis 3 (second step-interaction between the self-efficacy group and the means-efficacy group).

	Standardized coefficients-Beta	<i>t</i>	Significance
Centered Locus of Control (LoC)	0.51	3.86	0.00
Group	0.11	1.12	0.26
Interaction	-0.53	-3.97	0.00

As can be seen there was an interaction. That is, locus of control moderated the relationship between self-efficacy and resistance to change so that increasing self-efficacy had a greater effect the more external the locus of control.

### 5. Discussion

This research examined how the external-internal efficacy model (Eden, 2000) was applied. This model encompasses a person’s subjective evaluation of all the resources at his disposal—both internal and external—to complete a task. Although this issue was demonstrated in the study regarding raising self-efficacy only, and although the results were in the direction of the hypothesis, no significant effect was found for raising means-efficacy, the study is another example of how raising self-esteem creates expectations in people that cause them to invest efforts and change attitudes in a way that reduces resistance to change.

Additionally, the study showed how the locus of control variable has a moderating effect, meaning that those with an external locus of control were more affected by the increase in means-efficacy. This is because individuals with an external locus of control place more value on resources that are external to them, whereas those with an internal locus of control place more value on internal



resources like their skills, personality traits, and past experiences dealing with similar situations.

The first hypothesis demonstrated that there was a significant difference between the self-efficacy group and the control group in the resistance to change variable. This finding complements other studies that focused mainly on the self-efficacy of the person administering the change (e.g., George, 1996; Paglis and Green, 2002). This means that raising a person's self-efficacy lessens that person's resistance to change, which can ultimately assist organizations in assimilating changes. Self-efficacy has been particularly relevant in work environments experiencing organizational change. If individuals perceive their capacity to manage change in a given circumstance and to function effectively at work, in spite of the demands of the change, they will cope better with the change and show less resistance (Wanberg and Banas, 2000). On the other hand, when individuals are not confident in their skills, they may not perform well in changing environments (Connor, 1992). As a result, they might shy away from activities they feel are beyond their capabilities (Armenakis et al., 1993). As an alternative, people are more likely to engage in activities that they believe they can do well.

The second hypothesis was not confirmed. There was no significant difference between the control group and the means-efficacy group. Although the results were in the expected direction of the hypothesis, the effect wasn't significant. This result contradicts past studies that found that raising means-efficacy can increase performance (Eden et al., 2010), creative performance (Simmons et al., 2014) and also can reduce resistance to change (Coleman-Oliver, 2018). These studies have shown that when employees believe that the new tools, systems, or processes being introduced are useful and effective, they're more likely to embrace rather than resist the change. Also, Means-efficacy affects how much effort people will invest in using new tools or systems. When means-efficacy is high, people are more likely to persist in learning and mastering new processes because they believe these tools will ultimately help them succeed (Eden et al., 2010). Conversely, Low means-efficacy can be a major source of change resistance. If employees don't believe in the utility of new tools or processes being introduced, they may actively or passively resist adopting them, regardless of how confident they feel in their own abilities (Eden et al., 2010).

This non-significant finding can be a result of two main reasons: First, because the change was not important enough for the participants. This was a routine obligation that the participants do not care too much about and have very minor bearings over their day-to-day work. The second reason is that the manipulation was too weak (i.e., the text in the base of the manipulation did not raise enough means-efficacy to influence the participants).

The third hypothesis was also confirmed. Locus of control indeed moderated the association between resistance to change and self-efficacy, meaning that the more external the locus of control, the greater the impact of increasing self-efficacy. This is in line with Padilla and Agar's (2014) research, which found that Locus of control moderated the relationship between self-efficacy and performance as well as the relationship between means-efficacy and performance. The current study emphasizes that LoC also moderates the relationship between the type of efficacy

and resistance to change. This result is in line with Eden's (2001) internal-external model of efficacy. The Internal-External Efficacy model (Eden, 2001) defines overall efficacy as an individual's subjective evaluation of all the resources that can be used to successfully complete a task. Both internal and external resources are considered in this comprehensive evaluation of the individual. The skill, talent, knowledge, willpower, endurance, intelligence, resourcefulness, and any other qualities that the person may think necessary for successful performance are all considered internal resources and are related to self-efficacy. However, one's subjective evaluations of any task-relevant external resources that may be used to enhance performance are a supplement to these internal sources of efficacy beliefs, which do not make up the entirety of overall efficacy. This result is also in line with Ashagi and Beheshtifar's (2015) research. Their results showed that there was a direct relationship between internal locus of control and self-efficacy beliefs. However, there was not a significant relationship between external locus of control and self-efficacy. Therefore, in order to have employees with high self-efficacy, locus of control is considered a factor affecting self-efficacy.

## **6. Limitations**

The current study's main strength is that it provided a relatively rare opportunity to examine the role of self-efficacy and means-efficacy in an experiment so that a causal relationship could be determined. However, as with all research, this study has several limitations. One of the limitations of the study lies in the way the participants were selected for the self-efficacy group. Due to the research setup, it was not feasible to get in touch with some of the car owners and inform them that they were selected because of a unique factor that is related to them, as they would be aware that the other participants received the same information, and the reference would be viewed as untrustworthy and possibly even cynical. As a result, employees who were not required to complete the task were chosen for this group from among the organization's employees (unlike the first two groups, which were randomly assigned). This led to several issues that require attention. Despite being chosen at random, the employees differ from the other two groups in a few ways. Even though there were no differences in the seniority or age parameters, the members of this group were not managers. It's crucial to remember, though, that roughly one-third of car owners are also not managers. Second, completing the task was required of both the control group and the means-efficacy group. Beyond boosting self-efficacy, the self-efficacy group may also experience decreased resistance to change because of the employees' received information about the change's objectives, which may lessen resistance to change on its own (Wanberg and Banas, 2000). This problem has also been illustrated in the particular setting of employee resistance to technology change, as the adoption of an information system hinges on the change being forced upon or made available to staff members (Bumes, 2015). Also, because the sampling was done at random, employees in this group who were suggested as "opinion leaders" might be skeptical about being asked to participate in the learning test for a number of reasons. These could include situations where they feel undervalued by

their managers or that they don't value themselves as opinion leaders or tech-savvy people.

A further constraint on the study is that, in addition to the actual format change, the owners of the vehicles who are required to complete the training also benefit from the learning process. The in-person training was scheduled after work hours, which is probably less convenient for the participants. Additionally, approximately 15% of the participants had to travel to another branch in order to attend the training. In contrast, the online activity is more flexible and shorter in terms of execution hours. It is therefore fair to assume that there won't be much resistance to the change itself.

Finally, it is important to remember that in the context of technological change, it is often a change that fundamentally changes the nature of the work of the people undergoing the change, while the change in this case is relatively minor and affects a very small aspect of the workers' work lives. It's possible that the group with the increased means-efficacy would have seen different outcomes if the change had required the employees to make significant adjustments to a system that affects many facets of their daily work.

### **Practical applications and directions for further future research**

Although no significant effect was achieved for the means-efficacy, the study still illustrates the significance of the effect of actively creating expectations in employees in order to obtain the Pygmalion effect in which expectation creates reality. The study's findings imply that lowering resistance to change is a result of elevating self-efficacy and setting high expectations. As the experimental setup demonstrated, increasing self-efficacy was accomplished quickly and easily without the need for organizational resources.

Because employees may be resistant to a variety of changes, employers would benefit from learning how to implement these fundamental ideas for increasing employee self-efficacy.

As mentioned, the technological change made in this study had a relatively minor effect on the lives of the employees. The driving safety training is an activity that is done once a year, and apparently, the people who take part in it do not see it as a central aspect of their work. It will be interesting to see the implementation of the operation of the effect in the framework of major changes in the lives of the employees, such as a central information system that directly affects the employees (e.g., the ERP system). It is possible that due to the importance that the employees attribute to a central information system, there could be a higher impact on the operation of means-efficacy.

## **7. Conclusions**

The findings of this research contribute significantly to our understanding of change management in organizational settings, particularly highlighting the differential impacts of self-efficacy and means-efficacy on resistance to change. While self-efficacy emerged as a crucial factor in reducing resistance to change, means-efficacy did not have a significant effect on resistance to change. Also, in

accordance with Eden's (2000) internal-external model for efficacy, locus of control seems to moderate the relationship between the type of efficacy and resistance to change.

These insights have important practical implications for organizational change management, especially in the context of digital transformation initiatives like the transition to online learning. Future research could explore these relationships across different types of organizational changes and cultural contexts, potentially examining additional personality traits that might influence the effectiveness of efficacy-based interventions in reducing resistance to change.

**Data availability statement:** The data that supports the findings of this study are available from the corresponding author, upon reasonable request.

**Conflict of interest:** The author declares no conflict of interest.

## References

- Agars, M. D. (2010). Perceptions of resources matter: Means efficacy and career choices. In: Proceedings of the 25th Annual Conference of the Society for Industrial and Organizational Psychology; 6–10 August 2010; Atlanta, GA, USA.
- Agars, M., and Kottke, J. L. (2021). Development of a theoretical framework and a measure of general organizational means-efficacy. *Human Performance*, 34(1), 1–24. <https://doi.org/10.1080/08959285.2020.1821378>
- Akmalia, R., Nst, W. N., and Siahaan, A. (2023). Influence of Self-Efficacy, Organizational Culture, and Job Satisfaction on The Performance of Madrasah Aliyah Teachers. *Nidhomul Haq Jurnal Manajemen Pendidikan Islam*, 8(3), 437–453.
- Alisic, A., Wiese, B. S. (2020). Keeping an insecure career under control: The longitudinal interplay of career insecurity, self-management, and self-efficacy. *Journal of Vocational Behavior*, 120, 43–51. <https://doi.org/10.1016/j.jvb.2020.103431>
- Amiot, C. E., Terry, D. J., Jimmieson, N. L., Callan, V. J. (2006). A longitudinal investigation of coping processes during a merger: Implications for job satisfaction and organizational identification. *Journal of Management*, 32, 552–574. <https://doi.org/10.1177/0149206306287542>
- Armenakis, A. A., Harris, S. G., Mossholder, K. W. (1993). Creating readiness for organizational change. *Human relations*, 46(6), 681–703. <https://doi.org/10.1177/001872679304600601>
- Ashagi, M. M., Beheshtifar, M. (2015). The relationship between locus of control (internal-external) and self-efficacy beliefs of Yazd University of Medical Sciences. *International Journal of Engineering and Applied Sciences*, 2(8), 2–6.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman Publishing.
- Burnes, B. (2015). Understanding resistance to change—building on Coch and French. *Journal of change management*, 15(2), 92–116. <https://doi.org/10.1080/14697017.2014.969755>
- Caliendo, M., Kritikos, A. S., Rodriguez, D., Stier, C. (2023). Self-efficacy and entrepreneurial performance of start-ups. *Small Business Economics*, 61(3), 1027–1051. <https://doi.org/10.1007/s11187-022-00728-0>
- Chen, S., Westman, M., Eden, D. (2009). Impact of enhanced resources on anticipatory stress and adjustment to new information technology: A field-experimental test of Conservation of Resources Theory. *Journal of Occupational Health Psychology*, 14, 219–348. <https://doi.org/10.1037/a0015282>
- Coleman-Oliver, S. L. (2018). *A multi-dimensional analysis of leadership competencies and resistance to change [PhD thesis]*. North Carolina Agricultural and Technical State University.
- Conner, D. (2012). The dirty little secret behind the 70% failure rate of change projects. Available online: <http://www.connerpartners.com> (accessed on 2 December 2024).
- Cunningham, C. E., Woodward, C. A., Shannon, H. S., et al. (2002). Readiness for organizational change: A longitudinal study of workplace, psychological and behavioral correlates. *Journal of Occupational and Organizational Psychology*, 75, 377–392. <https://doi.org/10.1348/096317902321119637>
- Eden, D. (2001). Means efficacy: External sources of general and specific subjective efficacy. In: Erez, M., Kleinbeck, U., Thierry, H. (editors). *Work motivation in the context of a globalizing economy*. Lawrence Erlbaum. pp. 73–86.

- Eden, D., Ganzach, Y., Flumin-Granat, R., Zigman, T. (2010). Augmenting means efficacy to boost performance: Two field experiments. *Journal of Management*, 36(3), 687–713. <https://doi.org/10.1177/0149206308321553>
- Fløvik, L., Knardahl, S., Christensen, J. O. (2019). Organizational change and employee mental health. *Scandinavian journal of work, environment & health*, 45(2), 134–145. <https://doi.org/10.5271/sjweh.3777>
- George, G., Camarata, M. R. (1996). Managing instructor cyberanxiety: The role of self-efficacy in decreasing resistance to change. *Educational Technology*, 36(4), 49–54.
- Herold, D. M., Fedor, D. B., Caldwell, S. D. (2007). Beyond change management: A multilevel investigation of contextual and personal influences on employees' commitment to change. *Journal of Applied Psychology*, 92, 942–951. <https://doi.org/10.1037/0021-9010.92.4.942>
- Holmes, B. H., Werbel, J. D. (1992). Finding work following job loss: The role of coping resources. *Journal of Employment Counseling*, 29, 22–29. <https://doi.org/10.1002/j.2161-1920.1992.tb00148.x>
- Jones, S. L., Van de Ven, A. H. (2016). The changing nature of change resistance: An examination of the moderating impact of time. *The Journal of Applied Behavioral Science*, 52(4), 482–506. <https://doi.org/10.1177/0021886316671409>
- Kumar, P., Saxena, C., Baber, H. (2021). Learner-content interaction in e-learning-the moderating role of perceived harm of COVID-19 in assessing the satisfaction of learners. *Smart Learning Environments*, 8, 1–15. <https://doi.org/10.1186/s40561-021-00149-8>
- Levenson, H. (1981). Differentiating among internality, powerful others, and chance. In: Lefcourt, H. M. (editor). *Research with the Locus of Control Construct*. Academic Press. pp. 15–63.
- Lokman, A., Hassan, F., Ustadi, Y. A., et al. (2022). Investigating motivation for learning via Vroom's Theory. *International Journal of Academic Research in Business and Social Sciences*, 12(1), 504–530. <https://doi.org/10.6007/IJARBS/v12-i1/11749>
- Martin, A. J., Jones, E. S., Callan, V. J. (2005). The role of psychological climate in facilitating employee adjustment during organizational change. *European Journal of Work and Organizational Psychology*, 14, 263–283. <https://doi.org/10.1080/13594320500141228>
- Omieno, K. (2022). A Critical Review of Technology Adoption Theories and Models for E-Learning Systems, Kenya. *International Journal of Innovation Engineering and Science Research*, 6(2), 7-15.
- Oreg, S. (2006). Personality, Context, and resistance to organizational change. *European Journal of Work and Organizational Psychology*, 15, 73–101. <https://doi.org/10.1080/13594320500451247>
- Padilla, P., Agars, M. D. (2014). When self and Means-Efficacy affect performance: The tole of locus of control. In: *Proceedings of the 122nd Annual Convention of the American Psychological Association; 7–10 August 2014; Washington, DC, USA.*
- Paglis, L. L., Green, S. G. (2002). Leadership self-efficacy and managers' motivation for leading change. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 23(2), 215–235. <https://doi.org/10.1002/job.137>
- Peppard, J. (2020). Rethinking the concept of the IS organization. In: *Strategic Information Management*. Routledge. pp. 309–334.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80(1), 609.
- Schmierer, N., Jones, M. M., Agars, M. D., Kottke, J. L. (2009). Examining means-efficacy and turnover intentions in workers with disabilities. In: *Proceedings of the 24th Annual Conference of the Society for Industrial and Organizational Psychology, 2–4 April 2009; New Orleans, LA, USA.*
- Schunk, D. H., DiBenedetto, M. K. (2021). Self-efficacy and human motivation. *Advances in motivation science*, 8; 153–179. <https://doi.org/10.1016/bs.adms.2020.10.001>
- Simmons, A. L., Payne, S. C., Pariyothorn, M. M. (2014). The role of meansefficacy when predicting creative performance. *Creativity Research Journal*, 26(1), 53–61. <https://doi.org/10.1080/10400419.2014.873667>
- Srivastava, S., Agrawal, S. (2020). Resistance to change and turnover intention: A moderated mediation model of burnout and perceived organizational support. *Journal of Organizational Change Management*, 33(7), 1431–1447. <https://doi.org/10.1108/JOCM-02-2020-0063>
- Stirin K., Ganzach Y., Pazy A., Eden D. (2012). The effect of perceived advantage and disadvantage on performance: The role of external efficacy. *Applied psychology: An International Review*. 61 (1), 81–96. <https://doi.org/10.1108/JOCM-02-2020-0063>
- Vroom, V. H. (1964). *Work and motivation*. John Wiley Publishing.

Wanberg, C. R., and Banas, J. T. (2000). Predictors and outcomes of openness to changes in a reorganizing workplace. *Journal of Applied Psychology*, 85, 132–142. <https://doi.org/10.1037//0021-9010.85.1.132>

## **Appendix A**

### **The e-mail to the control group**

Hello,

As you know, every year there is mandatory training for all car owners on driving safety. This year we will pilot the implementation of the activity through an asynchronous learning module.

Attached to this e-mail is a link to conduct a study on the topic of distractions.

The asynchronous learning module includes six activities, each activity can earn three stars. Out of the total of 18 possible stars, you are asked to score at least 10 stars to complete this training.

The activity should take about 20 min and can be done on any computer.

Please complete it until 14 August 2024.

Human Resources Department.

## **Appendix B**

### **The e-mail to means-efficacy group**

Hello,

As you know, every year there is mandatory training for all car owners on driving safety. This year, we will pilot the implementation of the activity through an asynchronous learning module.

The idea behind the project is fun learning through interactive means on a variety of topics related to driving safety: alcohol, seat belts, distractions, vulnerable road users and speed. The activity is a light, fun, and easy-to-operate activity that has received very positive feedback in several organizations that have already experienced it. In addition, feedback was received from several organizations that the study is effective in improving the level of driving safety.

Attached to this email is a link to conduct a study on the topic of distractions.

The asynchronous learning module includes six activities, each activity can earn three stars. Out of the total of 18 possible stars, you are asked to score at least 10 stars to complete this training.

The activity should take about 20 min and can be done on any computer.

Please complete it until 14 August 2024.

Human Resources Department.



## **Appendix C**

### **The e-mail to the self-efficacy group**

Hello,

As part of the driving safety training, I invite you to take part in a new and fascinating project designed to improve driving safety. The owners of the company's vehicles go through face-to-face training on road safety every year and this year we are considering carrying out this activity through an asynchronous learning module .

I am contacting you after your managers recommended you as employees who are opinion leaders in the departments to which you belong or who have a high technological affinity to value this experience. Later I will ask for your opinion on the experience .

Attached to this email is a link to conduct a study on the topic of distractions.

The asynchronous learning module includes six activities, each activity can earn three stars. Out of the total of 18 possible stars, you are asked to score at least 10 to complete this training.

The activity should take about 20 min and can be done on any computer .

Please complete it by 14 August 2024.

Human Resources Department.

## Appendix D

### Resistance to change questionnaire

**Table D1.** RTC questionnaire.

Item	Totally Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Totally Agree
I think that the transition to the asynchronous learning module is good	1	2	3	4	5	6
The transition to the asynchronous learning module is good for the organization	1	2	3	4	5	6
I think that the transition to the asynchronous learning module will improve the level of driving safety	1	2	3	4	5	6
The transition to the asynchronous learning module annoys me	1	2	3	4	5	6
I'm kind of excited from the transition to the asynchronous learning module	1	2	3	4	5	6
I tend to object to the transition to the asynchronous learning module	1	2	3	4	5	6

## Appendix E

### Locus of control questionnaire

**Table E1.** LoC questionnaire.

Item	Totally Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Totally Agree
My ability is the one that determines if I will be influential	1	2	3	4	5	6
My driving level is mainly the one that determines whether I will be involved in a car accident or not	1	2	3	4	5	6
When I make plans, I am almost certain that they will come true	1	2	3	4	5	6
The number of friends I have is determined mainly by how nice I am	1	2	3	4	5	6
I am quite capable of determining what will happen in my life	1	2	3	4	5	6
am usually able to look after my personal interests	1	2	3	4	5	6
When I get what I wanted it's usually because I worked hard to get it	1	2	3	4	5	6
My life is determined by my actions	1	2	3	4	5	6