

Title	A review of the success and failure factors for change management
Authors	Dempsey, Mary;Geitner, Lisa;Brennan, Attracta;McAvoy, John
Publication date	2021-11-26
Original Citation	Dempsey, M., Geitner, L., Brennan, A. and McAvoy, J. (2021) 'A review of the success and failure factors for change management', IEEE Engineering Management Review. doi: 10.1109/EMR.2021.3130989
Type of publication	Article (peer-reviewed)
Link to publisher's version	10.1109/EMR.2021.3130989
Rights	© 2021, IEEE. Personal use of this material is permitted. Permission from IEEE must be obtained for all other uses, in any current or future media, including reprinting/republishing this material for advertising or promotional purposes, creating new collective works, for resale or redistribution to servers or lists, or reuse of any copyrighted component of this work in other works.
Download date	2025-06-06 22:58:36
Item downloaded from	https://hdl.handle.net/10468/12295

A Review of the Success and Failure Factors for Change Management

Mary Dempsey, Lisa Geitner, Attracta Brennan and John McAvoy

Keywords/Index Terms — Change Management, Organisational change, Success Factors, Failure Factors, Dealing with Failure

Abstract— In order to stay competitive and relevant in the business environment, companies need to embrace and address internal and external change and understand how to deal with it. It is necessary for them to develop knowledge about the success and failure factors of handling change and how the latter can be resolved. The aim of this study was to identify change management success and failure factors and provide a method dealing with failure factors.

In the systematic literature review, 38 success factors and 23 failure factors from 2006 to 2021 were identified. In comparing the frequency of the occurring factors, four main success and three failure factors emerged. The success factors included: communication, create a vision/change message, early active participation of all individuals and top management commitment. The failure factors included; resistance to change, standardised concepts and viewing change initiatives as short-term. Complementarity and dependency links between failure factors and success factors were highlighted. Solutions for resolving three failure factors were found using Ishikawa-Diagrams and applying root cause analysis.

Identifying key factors that affect project success is part of handling change. To support any necessary change a consistent change management framework that is adaptable to individual organisations is also recommended.

I. INTRODUCTION

OVER the last six decades, stability and certainty have been the core values underpinning structured organisations [1]. Since then, change has become a constant element in organisations and its importance has increased significantly. The pace of change in the current business environment is as high as it has ever been before [2]. Organisations need to adapt, otherwise they will get left behind. Hence, good change management is needed and vital for success. This can be supported by an appropriate change management framework [1]. Change management is primarily a strategic and tactical matter which can serve organisations in their control of and adaptation to change to enhance their resilience to an increasingly competitive environment. Change management can be defined as “the process of continually renewing an organisation’s direction, structure and capabilities to serve the ever-changing needs of external and internal customers” p. 294 [3]. Those ever-changing needs have their roots in the changing

business world. Externally they include; technological developments, expanding markets, innovations, increasing globalisation, climate change, shifting social and demographic needs as well as deregulation [2, 4-6]. Internally, change results from project implementations, changes in corporate strategy, continuous improvement processes and/or restructuring initiatives [3, 5]. Companies generally identify three to six areas in which to perform well [7]. Success factors enhance the likelihood of reaching the related performance targets resulting in success with the inverse recognised as failure. On the basis that the definitions of success and failure are relatively consistent, studies indicate that around 70% of change initiatives fail [2, 6, 8, 9]. The question therefore arises, which factors lead to this failure and which lead to success? Success factors are essential aspects for a favourable outcome of a program and if they are not achieved, then the initiative can subsequently fail [10]. Apart from success factors, it is also significant to consider the failure factors and how they can be resolved. The aim of this study is to identify and discuss the success and failure factors for change management that are most frequently mentioned academic literature and how the latter can be dealt with.

II. METHODS

A systematic literature review is defined as “a review using a systematic method to summarise evidence on questions with a detailed and comprehensive plan of study” (p. 1) [11]. The key characteristics of literature reviews are validity, reliability, repeatability, and a structured method [12]. The methods used in this review followed five basic steps: (i) Framing the research question, (ii) Identifying relevant literature, (iii) Selecting studies based on a quality assessment, (iv) Summarising the evidence and (v) Gathering, summarising, and reporting the findings [11, 13]. The PRISMA-P 2015 checklist and reporting recommendations helped in developing the research protocol [14]. The research questions for this study are; “What are the key failure and success factors of change management in general, uncategorised by sector?” and “How can the identified failure factors be resolved by an organisation?”

M. Dempsey, A. Brennan and L. Geitner are with National University of Ireland, Galway (Rep. of Ireland), (e-mail: mary.dempsey@nuigalway.ie; attracta.brennan@nuigalway.ie; l.geitner1@nuigalway.ie).

J. McAvoy, is with University College Cork (Rep. of Ireland), (e-mail: J.McAvoy@ucc.ie).

A. Identifying relevant articles & studies

All articles and studies from Google Scholar and the ScienceDirect database published between 2006 and 2021, concerning change management; were of interest for this review. This timeframe was chosen to include classic and current success and failure factors. To obtain enough relevant literature resources, a period of 15 years was considered an adequate timeframe for this systematic literature review although it results in the exclusion of older literature. Search criteria included “change management”, “change management success factors”, “change management failure factors”, “successful change” and “organisational change”. In addition to the standard keyword search, backward and forward citation tracking was used to identify further references. Citation tracking was re-iterated until no new research works could be added.

B. Selecting articles

Titles and abstracts were first screened for inclusion. The full texts of the remaining articles were screened, eliminating those papers which did not meet the eligibility criteria i.e. reference to success and failure factors for change management. The search and selection process is outlined in Fig. 1. As can be seen, the database and hand-search along with the backward and forward citation tracking yielded 85 references. After removing duplicates, the keywords, and abstracts of 62 articles were screened. This resulted in 34 items, whose full texts were reviewed for suitability for inclusion in this study. The resulting 10 references deal with success and failure factors. The database search yielded seven sources, four from Google Scholar and three from Science Direct. The citation tracking process provided two sources whilst the hand search resulted in one research work.

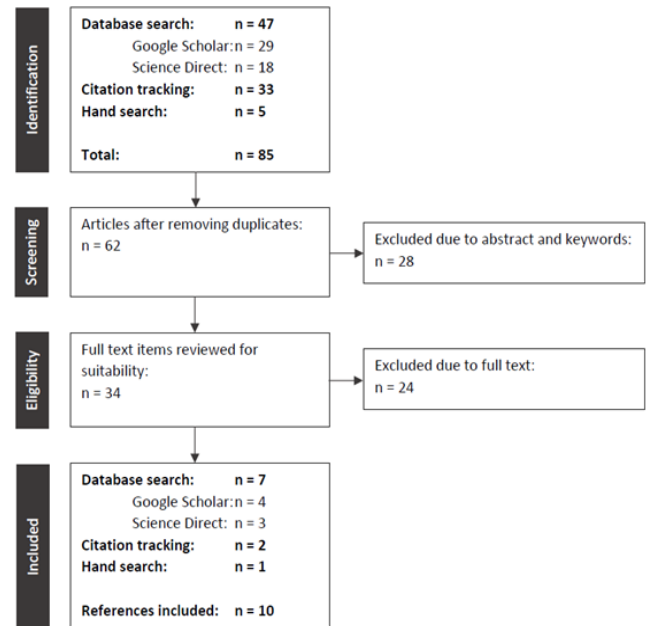


Fig. 1. Search and Selection Process

III. RESULTS

A. Success Factors in Change Management

Based on the systematic literature review, 38 success factors were identified from which the top four most important success factors is based on the criteria of seven appearances out of 10 publications. All success factors are summarised in Table 1.

TABLE I
CHANGE SUCCESS FACTORS

No.	Success Factors	Chrusciel & Field, 2006	Zink, et al., 2008	Armenakis & Harris, 2009	Fritzen-schaft, 2011	Parker, et al., 2013	Lines, et al., 2015	Al-Haddad & Kotnour, 2015	Imran, et al., 2016	Lauer, 2019	Zala, et al., 2020	Total
1	Communication: Goals, processes and giving orientation	x	x	x	x		x		x	x	x	8
2	Create a vision/change message and communicate it throughout the organisation	x	x	x	x	x	x			x	x	8
3	Early, adequate, active participation of all individuals/groups affected	x	x	x	x			x		x	x	7
4	Top management: commitment, involvement, participation, support, attendance, presence	x	x		x		x	x	x		x	7
5	Train, educate and support employees and users	x			x		x	x		x	x	6
6	Project management	x		x	x			x		x	x	6
7	Consider scope, size, duration; set a realistic, clear implementation schedule/timeframe	x			x		x	x			x	5
8	Readiness to deal with change, change commitment, positive attitude	x		x	x			x	x			5
9	Communicate usefulness, need, areas of application of sudden changes to create a shared understanding and establish a sense of urgency	x	x	x	x							4
10	Integration		x	x					x	x		4
11	Performance: measure, evaluate, give feedback, monitor constantly	x			x			x			x	4
12	Personalisation: perception of personal gain/utility	x			x				x	x		4
13	Planning and analysis: Identify and evaluate gap where company is now and where it wants to be	x		x	x			x				4
14	Having and making necessary resources available (e.g., money, information)	x	x		x							3
15	Change leadership: visionary, purposeful, transformative, motivational, challenging							x		x	x	3
16	Consider human aspects, address the needs of employees directly				x	x		x				3
17	Consider the impact of company culture					x		x				2
18	Having patience, deploying a long-term strategy		x				x					2
19	Different change initiatives need to be coherent		x					x				2
20	Emphasise structures and behaviour	x	x									2
21	View change initiatives as evolutionary (permanent change) process		x							x		2
22	Involvement of the right personnel			x			x					2
23	Overall satisfaction, content people	x						x				2
24	Manage change initiative in a holistic process		x									1
25	Project prioritisation										x	1
26	Customer focus and involvement										x	1
27	Consider and capture lessons learned from previous change projects					x						1
28	Risk management: manage the exposure and mitigate against risks, benefits should outweigh risks	x				x						1
29	Align change management goals with organisational strategy					x						1
30	Adopt knowledge management strategies: deliver appropriate knowledge in the correct way								x			1
31	Reduce uncertainty			x								1
32	Identify the required environmental conditions							x				1
33	Empower and motivate others				x							1
34	Plan for and create short term wins				x							1
35	Flexibility				x							1
36	Determine competences and responsibilities				x							1
37	Establish confidence				x							1
38	Consultation: use professional consultants									x		1

These success factors are important to any type of organisation or industry. However, their weighting may change depending on the specifics of the sector and its environment. As an example, customer focus and involvement would be more relevant to service sector than manufacturing. The four success factors most frequently mentioned are; (1) communication: goals, processes and giving orientation, (2) create a vision/change message and communicate it throughout the organisation, (3) early, adequate, active participation of all individuals or groups affected and (4) Top management: commitment, involvement, participation, support and presence. The numbers 1, 2, 3 and 4 serve to distinguish the success factors from each other, they do not imply a hierarchy. However, success factors 1 and 2 have a slightly higher frequency of occurrence than 3 and 4.

1) Communication: Goals, processes and giving orientation

Communication is contained in nearly all of the other success factors, which makes it fundamental to success and of utmost importance to change management. Communication is essential to creating transparency, informing and involving employees, selling the importance of the change, avoiding and overcoming resistance, resolving conflicts etc. [6, 15, 16]. Communication needs to be honest, timely and clear [5, 17]. Knowledge management strategies, such as personalisation and the codification strategy can help identify the right way to communicate. Personalisation is the exchange of information through physical interaction. For example, adapting the language to the target group [4, 6]. This approach is very personal, motivating, and effective and also less ambiguous, [6]. The codification strategy is an indirect communication tool and useful for providing general information [4].

2) Create a vision/change message and communicate it throughout the organization

It is important to create a clear, defined, executive vision for implementing change and communicating it effectively throughout the organisation [1, 5, 9, 17]. The more effective the delivery of the change message, the more that people can understand why change is necessary. This also increases the

likelihood of a successful change [8]. A vision is described as a realistic, but challenging picture of the future based on an extensive analysis of the organisation and its environment [6]. To be able to provide a basic orientation, set motivating goals and point the way, the vision needs to be formulated in a comprehensive, concrete and company specific way. Without this clear definition, uncertainty can grow among the employees which can in turn, lead to resistance [6].

3) Early, adequate, active participation of all individuals or groups affected

Early, adequate, active participation of all individuals or groups affected by the change can be summarised as user involvement. This is described as ownership in the hands of the end-users [17]. It is vital to ensure the early, adequate, and active participation of those affected by the upcoming change [5, 8]. Enabling participation, valuing contributions and suggestions, and improving the information flow supports employees in feeling necessary, trusted, and valued [5, 10, 16] [18, 19]. As a result, employee change resistance decreases and their motivation as well as commitment increases. In addition, the whole system can be understood better, and the change leaders can make use of existing knowledge. This leads to a better result in terms of content [6, 15].

4) Top management: commitment, involvement, participation, support and presence

Top management not only need to approve but support the change and commit to it [5]. This ensures that necessary resources are dedicated to the change and are made available in a timely manner [9, 10]. Engagement, presence, and the visible support of the executive leadership team, emphasises the importance of the change initiative [17, 20]. This is also beneficial for leadership and employee motivation [10].

B. Failures Factors in Change Management

Based on the literature review, 23 change management failure factors were identified, from which three failure factors occurred in at least four of the 10 included references (Table 2).

TABLE 2
CHANGE FAILURE FACTORS

No.	Failure Factors	Chrusciel & Field, 2006	Zink, et al., 2008	Armenakis & Harris, 2009	Fritzenschaft, 2011	Parker, et al., 2013	Lines, et al., 2015	Al-Haddad & Kotnour, 2015	Imran, et al., 2016	Lauer, 2019	Zala, et al., 2020	Total
1	Resistance to change			x		x	x		x	x	x	6
2	Standardised concept		x		x			x		x		4
3	View change initiatives as short-term program		x		x		x			x		4
4	Clash of values (organisation vs. change approach)					x		x		x		3
5	Insufficient sponsorship, resources					x		x			x	3
6	Consultant-/Expert-driven approach		x							x		2
7	Unmotivated employees		x			x						2
8	Unrealistic expectations						x	x				2
9	Lack of framework to successfully plan, implement, manage change				x	x						2
10	Lack of project management integration				x	x						2
11	Poor project/change leadership	x				x						2
12	No adequate employee participation		x							x		2
13	Manage the change initiative as isolated project		x									1
14	Poor training										x	1
15	Change cynism								x			1
16	Poor planning							x				1
17	Lack of commitment to change							x				1
18	Absence of dedicated and full resources teams				x							1
19	Inadequate process control									x		1
20	Change speed/pace too fast									x		1
21	Unclear objectives, lack of orientation									x		1
22	Fear of the unknown, ignorance									x		1
23	Bad experiences									x		1

These failure factors are; resistance to change, standardised concepts and viewing change initiatives as time-limited/short-term.

1) Resistance to change

Resistance to change is defined as “dissenting actions that slow, oppose, or obstruct a change management effort” p. 1171 [8]. There are three areas of resistance: cognitive, affective, and behavioural. Cognitive resistance addresses the way someone thinks about change. Affective resistance conveys the emotional and psychological reactions to change. Behavioural resistance refers to the employee’s action response and is the result of both the cognitive and affective resistances [8]. These action responses can be conveyed in various forms, such as; listlessness, opposition, discomposure, evasion, arguing, open criticism and/or spreading negative words [6, 8]. Most of these reactions are visible, but there are also some that are less obvious like reluctant compliance and delaying or misguided application [8]. According to [9], this type of resistance is more important, and difficult to foresee and manage.

2) Standardised concepts

A standardised concept can be referred to as a ‘one-size-fits-all’ approach. This means that a generalised method is used on a change project without being adapted to the specific environment in which the project finds itself such as the company’s culture and its business strategies [6, 9, 15]. Change leaders need to understand that “factors ensuring successful outcomes in one case do not have to lead to success in another case” (p. 62) [5]. There is no universal best way of managing and leading change, hence it cannot be viewed as one standardised procedure [5]. A consultant-driven, standardised process can result in a passive and negative attitude towards the initiative as well as a lack of integration [15].

3) Viewing change initiatives as time-limited/short-term

A change project has three phases. The first phase includes analysing, preparing, and planning the change initiative. In the second phase, the change is executed and implemented. The last phase concludes the project by consolidating the change [5]. It is important to take the time to go through each of these phases meticulously. Employees that are expected to implement a big change in a short amount of time can become unmotivated due to unrealistic and overwhelming expectations [8]. Hence, change initiatives should be “seen as an evolutionary process but not as time-limited programs” (p. 527) [15]

C. Resolving Failure Factors

In general, change failure factors can oppose change success factors. However, if this occurs, they need to be avoided or made un-harmful. Some change failure factors can even be turned into change success factors if handled correctly. To do so, the potential roots and causes of these factors need to be determined, after which, resolution actions can be identified.

Root cause analysis is a “systematic process that identifies the cause or causes that contribute to a focus event” (p. 12) [21]. The identified root causes need to be addressed in order to take

appropriate actions that result in more positive future outcomes. One technique that is commonly used for distinguishing the root causes is the Ishikawa Diagram [21]. This is a graphical technique that helps to identify, analyse, and display the relationship between an event and the factors that may influence it [22]. Because of its appearance, it is also called a ‘Fishbone-Diagram’. There are several steps that need to be taken to develop a fishbone diagram. First, the problem needs to be identified, after which, the main categories of causes need to be considered. In the organisational context, the four Ps (Policy, Place/Environment, People and Procedures) are best applicable. After considering the main categories of causes, the possible factors affecting the focus event can be identified, by brainstorming, or engaging in a review. As a final step, the main factors can be identified and analysed [21]. On this basis, corrective actions can be developed.

Fig. 2 shows the Ishikawa-Diagram for the change failure factor ‘Resistance to change’. Fig. 3 represents the Ishikawa-Diagram for the change failure factor ‘Standardised concept’ while Fig. 4 shows the Ishikawa-Diagram for the change failure factor ‘short term view’.

Fig. 2 shows the factors that influence the resistance from employees to change initiatives. Based on these aspects, actions have been developed. In order to avoid resistance to change, the change methods need to be adapted to the organisation’s culture [10]. In addition, the change’s merits and importance need to be communicated clearly, continuously, and directly to the affected employees [6, 16]. Planning the change systematically, involving the employees from the beginning and defining a realistic implementation schedule helps to reduce uncertainty and create readiness for change [8, 16]. However, if there is already resistance, it needs to be dealt with. Suppressing resistance or combating it with disciplinary measures will only reinforce the issue. Hence, it is crucial to address any issues directly and develop good human resource practices [6]. In conclusion, by creating readiness for change, the resistance of employees towards change can be minimised [16].

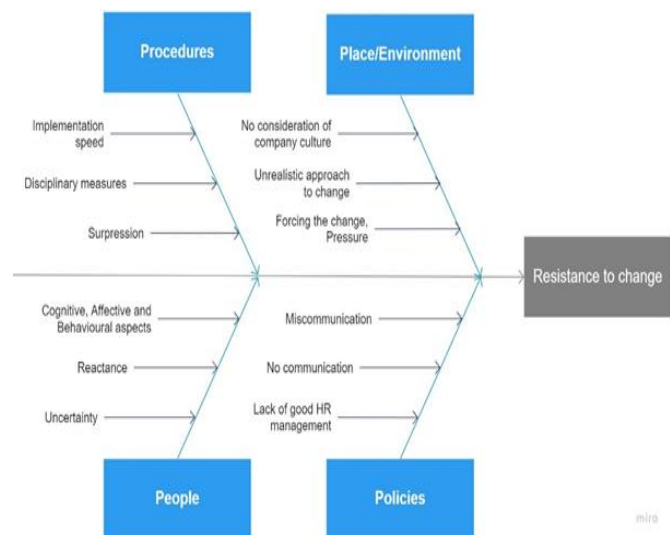


Fig. 2. Ishikawa Diagram: Resistance to change

Fig. 3 shows that there are several actions that can be identified quickly to resolve the problem of a standardised concept. Including external consultants can be helpful because of their expertise in handling change, in addition to their neutrality and persuasiveness. However, they are only beneficial if they tailor their solutions individually to the organisation [6]. Regardless of whether or not the change project is led by an external consultant, it needs to be adapted to the organisation's culture and business environment as well as aligned to the organisation's strategic goals and business strategies [5, 9, 15]. In this manner, a customised approach can be developed that fits the organisation's needs [15]. In addition, the leadership approach needs to focus on the role of leaders as managers of change and on a sustainable and quality enhancing employee participation [15]. "There is no universal theory of corporate change. Therefore, managing, and leading change successfully cannot be seen as a single, standardised process" (p. 61) [5]. However, a standardised framework can give

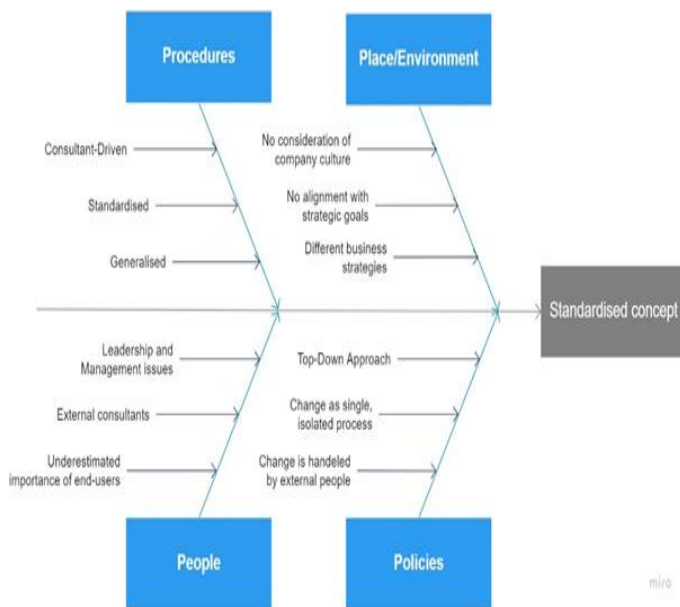


Fig. 3. Ishikawa Diagram: Standardised concept

guidance when managing change. To be successful with a change initiative, it is important to adapt the provided strategies and theories to the individual situation. If this is not the case, change initiatives will further fail.

The factors displayed in Fig. 4 not only cover the reasons for a short-term view but also its consequences and associated corrective actions. If top-management pressures its employees in implementing a big change in a short amount of time, it can result in the employees being unmotivated and overwhelmed. Hence, it is essential to be patient and make the change a long-term project that includes an evolutionary process [8, 15]. However, long term projects can also be demotivating. Therefore, it is helpful to plan and create short-term wins that show a rapid implementation success as they can help to build momentum and support for the change. This can then motivate employees and facilitate the effort to expand inside the organization [5, 6, 8]. The setting of a clear and realistic timeframe can be beneficial in monitoring progress and

supporting the taking of corrective action as soon as possible [9, 17].

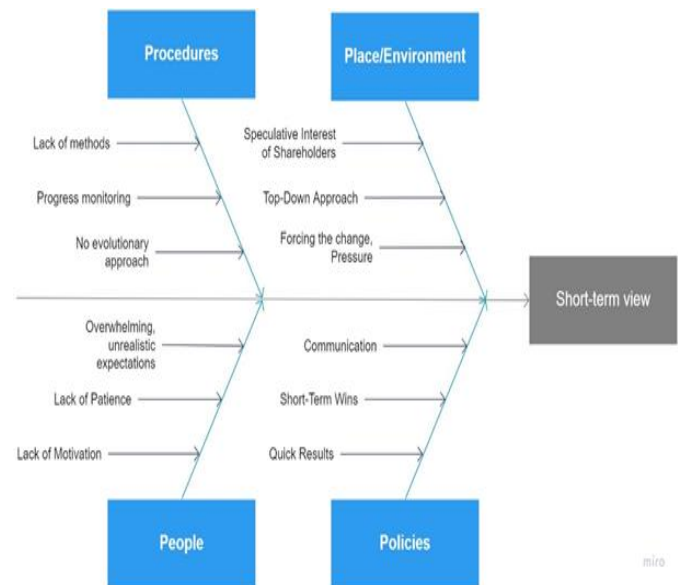


Fig. 4. Ishikawa Diagram: Short term view

IV. DISCUSSION

The analysed publications revealed many success and failure factors from different areas of change management. These factors can often influence each other or result from each other. Factors can be interconnected in their nature and/or interdependent.

There is factor dependency between the failure factors and success factors. For example, to mitigate the 'resistance to change' failure factor requires the organisation to prioritise success factors including; 'communication: goals, processes and giving orientation', 'create a vision/change message and communicate it throughout the organisation', 'early adequate, active participation of all individuals/groups affected', 'top management: commitment, involvement, participation, support, attendance, presence', 'train educate and support employees and users'.

There is also complementarity between the failure factors and success factors. For example, the top three failure factors have their inverse in the identified success factors as follows;

- The 'Resistance to change' failure factor has an opposite impact on change management compared with the 'Readiness to deal with change, change commitment, positive attitude' success factor.
- The 'Standardised concept' failure factor has the inverse effect on a number of change management success factors including; 'Consider scope, size, duration; set a realistic, clear implementations schedule timeframe', 'View change initiatives as evolutionary (permanent change) process', 'Flexibility' success factor.
- The 'View change initiatives as short term program' failure factor has an inverse impact on

change management compared to the ‘Having patience, deploying a long term strategy’ success factor.

The change failure factor ‘resistance to change’ for example, is one result of not creating readiness for change among the employees [16]. The identified change success and failure factors that are shown in Tables 1 and 2, are not always referred to as such in the literature. ‘Recommendations on how to succeed at a change initiative’ or ‘What are the sources of change failure’ are two examples for synonyms to change success and failure factors used in publications. To enhance understanding and communication, it would be useful to have universal and clear terminology when referring to change management in literature.

Everything that affects the outcome of a change initiative can be turned into either a change success or a change failure factor. In addition, critical success factors can be distinguished. These are “important aspects which are essential for the success of any program, in the sense that if objectives associated with the factors are not achieved, the output of the program will fail catastrophically” (p. 4501) [10]. Identifying these factors are for future work.

Change is complex and change management tends to be reactive and discontinuous [2, 23, 24]. As many publications state, the pace of change has never been as fast. It is however possible that this pace of change is going to increase further in the future. Hence, organisations need to be prepared and have a useful framework at hand that helps them achieve success and avoid failure. There is no clear framework that provides orientation for managers [2, 25]. Hence, a guide similar to the Project Management Body of Knowledge (‘PMBOK’) would be useful [1].

Some organisations treat change initiatives as simple projects and therefore use project management tools and methodologies. According to [1], these are not sufficient as they avoid many issues that are crucial in change management. The issues that are being ignored may coincide with the change factors mentioned in this study. This includes for example motivation and communication issues, resistance to change, project leadership and company politics [1]. This observation stresses the importance of understanding what drives change and what hinders it.

V. Conclusion

This study provides an important insight into the change success and failure factors of project initiatives. The most significant change success factors are communication, creating a vision and spreading it [26], the early and active involvement of affected groups and top management commitment, involvement, support, and participation. The most mentioned change failure factors include; resistance to change, standardised concepts and viewing change initiatives as time-limited/short-term. This study highlights a factor dependency and complementarity between change failure factors and change success factors. It also highlights that the existing change management literature focuses primarily on change success factors, with limited studies on change failure factors. In addition, there is a paucity of research addressing how to find a solution for dealing with failure factors in change

management. This is crucial in today’s ever-changing organisational environment.

There are a number of limitations regarding this review. Firstly, the systematic literature review did not categorize success and failure factors by sector but adopted a general overview. Secondly, the screening process included only two databases and was conducted manually. This increases the margin of error. Thirdly, the literature review process spanned a period of 15 years and did not consider literature outside the timeframe 2006-2021. Furthermore, the considered literature is often specific to particular industries (e.g. IT, automotive, health). However, most change success factors are mentioned in multiple references, which implies that they are valid overall. It is still possible, that some factors are not applicable to individual industries. Only 10 articles and books were considered in this review to determine the order of importance of the change success and change failure factors.

To identify the real significance of change management success and failure factors an in-depth analysis of their interdependency and complementarity is recommended. Furthermore, additional case studies and/or company surveys would be helpful. Further research is also needed to provide a useful framework to guide change managers and provide them with helpful tools and techniques. This framework could be an equivalent to the “PMBOK” (Project Management Body of Knowledge) which is the main guidance document for project managers.

It is recognised that organisations will face additional challenges in managing current and future hybrid models for their permanent, temporary and part time employees. In implementing successful change management, it is critical that the success factors identified in this review are prioritised and the failure factors are recognised, linked to the success factors and addressed. For example, improving company culture by creating an environment with an open communication climate where the employees develop high levels of trust and collaboration is valued [23-25, 27].

REFERENCES

- [1] D. Parker, J. Charlton, A. Ribeiro, and R. D. Pathak, "Integration of project-based management and change management," *International Journal of Productivity and Performance Management*, vol. 62, no. 5, pp. 534-544, 2013, doi: 10.1108/ijppm-10-2012-0108.
- [2] R. T. By, "Organisational change management: A critical review," *Journal of Change Management*, vol. 5, no. 4, pp. 369-380, 2005.
- [3] H. A. Hornstein, "The integration of project management and organizational change management is now a necessity," *International Journal of Project Management*, pp. 291-298, 2015.
- [4] M. K. Imran, C. A. Rehman, U. Aslam, and A. R. Bilal, "What's organization knowledge management strategy for successful change implementation?," *Journal of Organizational Change Management*, vol. 29, no. 7, pp. 1097-1117, 2016.
- [5] T. Fritzenschaft, *Critical Success Factors of Change Management - An Empirical Research in German Small and Medium-Sized Enterprises*. Heilbronn: Springer Gabler, 2011.
- [6] T. Lauer, *Change Management - Fundamentals and Success Factors*. Aschaffenburg: Springer, 2019.
- [7] J. Williams and A. Ramaprasad, "A taxonomy of critical success factors," *European Journal of Information Systems*, vol. 5, no. 4, pp. 250-260, 1996.
- [8] B. C. Lines, K. T. Sullivan, J. B. Smithwick, and J. Mischung, "Overcoming resistance to change in engineering and construction: Change management factors for owner organisations," *International Journal of Project Management*, no. 33, pp. 1170-1179, 2015.

- [9] S. Al-Haddad and T. Kotnour, "Integrating the organizational change literature: a model for successful change," *Journal of Organizational Change Management*, vol. 28, no. 2, pp. 234-262, 2015.
- [10] S. H. Zala, A. V. Gohil, and V. B. P. K.G. Dave, "Critical success factors and impending factors for implementing change methods in small and medium scale automobile manufacturing plants," *Materials Today: Proceedings*, no. 33, pp. 4501-4508, 2020.
- [11] G. M. Tawfik *et al.*, "A step by step guide for conducting a systematic review and meta-analysis with simulation data," *Tropical Medicine and Health*, vol. 47, no. 46, pp. 1-9, 2019.
- [12] Y. Xiao and M. Watson, "Guidance on Conducting a Systematic Literature Review," *Journal of Planning, Education and Research*, vol. 39, no. 1, pp. 93-112, 2019.
- [13] K. S. Khan, R. Kunz, J. Kleijnen, and G. Antes, "Five steps to conducting a systematic review," *Journal of the Royal Society of Medicine*, vol. 96, pp. 118-121, 2003.
- [14] D. Moher *et al.*, "Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement," *Systematic Reviews*, vol. 4, no. 1, pp. 1-9, 2015.
- [15] K. J. Zink, U. Steimle, and D. Schröder, "Comprehensive change management concepts - Development of a participatory approach," *Applied Ergonomics*, no. 39, pp. 527-538, 2008.
- [16] A. A. Armenakis and S. G. Harris, "Reflections: our Journey in Organizational Change Research and Practice," *Journal of Change Management*, vol. 9, no. 2, pp. 127-142, 2009.
- [17] D. Chrusciel and D. W. Field, "Success factors in dealing with significant change in an organisation," *Business Process Management Journal*, vol. 12, no. 4, pp. 503-516, 2006.
- [18] M. Dempsey, R. Riedel, and M. Kelly, "Serious Play as a method for process design," in *IFIP International Conference on Advances in Production Management Systems*, 2014: Springer, pp. 395-402.
- [19] M. Tawalbeh, R. Riedel, M. Dempsey, and C. Emanuel, "Lego® Serious Play® as a Business Innovation enabler," in *5th European Lean Educator Conference*, 2018: NUI Galway.
- [20] M. Dempsey, A. Brennan, V. Kaub, and J. McAvoy, "Thought piece on the effectiveness of Contemporary Project Management and its top performing enablers," *IEEE Engineering Management Review*, 2021.
- [21] CENELEC, "BS EN 62740:2015, Root cause analysis (RCA)," ed. Brussels: BSI Standards Publication, 2015.
- [22] R. Doskocil and B. Lacko, "Root Cause Analysis in Post Project Phases as Applicatin of Knowledge Management," *Sustainability*, vol. 11, pp. 1-15, 2019.
- [23] A. Brennan and M. Dempsey, "Perceived Non-value Added Activities in the Research Grant Application Process—Through a Lean Six Sigma Lens," in *Lean Six Sigma in Higher Education*: Emerald Publishing Limited, 2020.
- [24] M. Dempsey, A. Brennan, and J. McAvoy, "Barriers and waste in the research grant application process in higher education through a Lean Six Sigma lens," *Management and Production Engineering Review*, vol. 11, 2020.
- [25] A. Brennan and M. Dempsey, "P-PAC (Partnership in Pedagogy, Accreditation, and Collaboration): a framework to support student transition to employability in industry. A lean systems case study," *Management and Production Engineering Review*, vol. 9, 2018.
- [26] M. Dempsey, P. Gormley, and R. Riedel, "Using Wikis to Facilitate Team Work: German and Irish Students?," 2011.
- [27] P. Häggberg and C. Ellsén, "Organizing for Change in a Temporary Environment-Implications for Change Initiatives," 2021.