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Organizational Readiness for Change to Lean Initiatives Amongst Nigerian Manufacturing SMEs: Literature Review and Questionnaire Pre-test

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Abstract

This study pre-tested measurements of organizational readiness for change from the dimensions of change efficacy and change commitment to measure manufacturing SMEs' confidence and willingness to change to lean. Expert opinion and respondents focus groups are used to examine the content of the items in the questionnaire, followed by pilot study of manufacturing SMEs, The result of the pilot study reveals the two dimensions of organizational readiness for change to Lean initiative; thus, change efficacy and change commitment have shown acceptable reliability. Change efficacy has a Cronbach Alpha of 0.911, while change commitment has 0.845 as Cronbach Alpha. The study concludes that the two dimensions of organizational readiness for change are reliable for conducting studies with large sample size.

Keywords

Organizational readiness for change, Change efficacy, Change commitment, Manufacturing SMEs

Introduction

Lean manufacturing (LM) is proving to be an effective system and foundation for the realization of operational excellence and perfection in manufacturing (Shah & Ward, 2007;Vamsi, Jasti, & Kodali, 2015). LM strategies have been mainly conceived to be deployed in large organizations, which made SMEs deal with such a project as a risky decision that must be well prepared for change before deployment (Moya, Galvez, Muller, Camargo, & Moya, 2019). The failure of organizational change programs is traceable primarily to the inability of organizational members to unfreeze effectively, thus creating readiness for change initiatives (Armenakis, Harris, & Mossholder, 1993; Holt, Armenakis, Feild, & Harris, 2009). In Nigeria, the 2016 Global Manufacturing Competitiveness Index shows Nigeria's descent to number 38 out of 40 countries, with an index ranking of 23.1%. The report further projects that Nigeria will remain in the exact status of 38 positions up to 2020. Also, the country's dependence on imported goods worsens patronage of locally manufactured goods. Such unwarranted circumstances have disadvantaged local manufacturing SMEs from selling their goods and competing with their foreign counterparts in quality and price Central Bank of Nigeria (2019). Despite its importance, Manufacturing small and medium-sized enterprises in developing countries like Nigeria have complexities in changing their organizations into LM (Maware,

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Okwu, & Adetunji, 2021). It has been revealed that studies on implementing LM are scarce, especially in developing countries such as Nigeria(Umude-Igbru & Price, 2015). This may be mainly due to poor adoption of quality skills, lack of effective production strategy, ineffective inventory management, and harsh business environment (Anastesia, Chika, Hillary, Chijindu, & Penninah, Ijeoma, 2018). It has been revealed that studies on implementing Lean manufacturing are scarce, especially in developing countries such as Nigeria (Inuwa & AbdulRahim, 2020; Ogah, Ogbechie, & Oyetunde, 2020; Psomas, 2021).

Therefore, the study aims to run a pre-test of organizational readiness for change to lean initiatives questionnaire among manufacturing SMEs in Nigeria to have a reliable instrument that effectively evaluates levels of lean readiness.

Organizational Readiness for Change to Lean Initiatives

Understanding areas where firms are fully ready, partially ready, or entirely unprepared for change is essential for proper and systematic assessment of organizational change readiness (Boston consulting group, 2020). The emphasis is on readiness for change at the organization level, focusing on SME managers. Change commitment is seen as a joint determination by organizational members' to implement a change (change commitment) and their shared belief in their joint competence to do so. Furthermore, Organizational readiness for change is frequently interchanged with 'readiness' or 'readiness for change (Timmings, Moore, Marquez, & Gheihman, 2014).

Research on organizational readiness for change to Lean is lacking in SMEs. This may be one of the factors that hinder SME managers from initiating new changes. For SMEs to be more resilient and sustainable in today's dynamic environment, the need to embrace operational, people, and organizational change management is indispensable (Ates & Bititci, 2011). Most of the previous studies on Lean implementation in SMEs were skewed to critical success factors of Lean implementation, e.g. enablers and inhibitors for Lean implementation. This study runs a pre-test of organizational readiness for change to lean initiatives questionnaire among manufacturing SMEs in Nigeria.

Dimensions of Organizational Readiness for Change

There seems to be ambiguity and debates on which dimensions are more appropriate due to the lack of a generally acceptable conceptual definition of organizational readiness for change (Vakola, 2014). Weiner (2008) proposes change commitment and change efficacy as dimensions for organizational readiness. Change readiness was developed based on change commitment, categorized as affective commitment, continuance commitment, and normative commitment (Herscovitch & Meyer, 2002). A model for assessing organizational readiness for change was developed by Salasin & Davis, (1977) to guide change consultants.

Shea et al. (2014) & Weiner (2009) opined that change commitment and change efficacy are the most appropriate dimensions of organizational readiness for change. Since LM is considered an aspect of quality initiatives, the applied the approach from a change efficacy and change commitment perspective. Using efficacy and commitment will aid in understanding both the confidence and willingness of manufacturing SMEs to adopt Lean initiatives and practices.

Table 1. Dimensions of Organizational Readiness for Change

Author(s)	Dimensions for Organizational readiness for change
Holt et al., (2009).	Change-specific efficacy; Change appropriateness; Management support and Personal valence
Timmings et al., (2016).	Individual psychology, Organizational psychology, Individual structure, and Organizational structure.
Douglas, Muturi, Douglas, & Ochieng, (2017).	Organizational climate: Challenge, Freedom, Ideal time, Dynamism, Support, Openness, Playfulness, Conflict, Debates, and risk-taking.
Uluskan et al. (2018)	Change commitment and Change efficacy.
Weiner, (2009)	Change commitment and Change efficacy.
Shea et al., (2014).	Change commitment and Change efficacy.
Herscovitch & Meyer, (2002).	Affective commitment, Continuance commitment, and Normative commitment

Methodology

The study is based on a questionnaire pre-test. Pre-testing the research instrument is essential as several issues may be corrected. The lack of pre-testing will likely lead to poor data quality and, consequently, deletion of items and cases during measurement model assessment (Memon, Ting, Ramayah, Chuah, & Cheah, 2017). This helps to rectify any inadequacies before administering the instrument orally or through a questionnaire to respondents, to reduce bias (Sekaran & Bougie, 2016).

Also, Pre-testing is the stage in developing a questionnaire that determines the potential effectiveness of the questionnaire before the final distribution of the questionnaire to the target population (Reynolds, Diamantopoulos, & Schlegelmilch, 1993). Further, Items were adapted from the survey (Shea et al., 2014). Pre-test of the items was necessary because the context of the study and respondents differ. Shea et al., (2014) measurements focus on assessment of readiness for change to continuous improvement in the health care sector (hospital). While the current study focuses on manufacturing SMEs organizational readiness for change to Lean initiatives in Nigeria. Hence, the need for pre-test to modify the items to suit the context and objective of the study

Expert Opinion

In this case of expert review, experts who have theoretical questionnaire knowledge or practical experience are asked to review draft questionnaires to identify questionnaire problems (Olson, 2010). Hence, a questionnaire draft was given to six experts in the field research methodologies in SMEs and quality initiatives and organizational change management drawn from Africa, Asia and Europe for observation corrections and suggestions for improvement. After their observations and recommendations, improvement were made to the questionnaire. Among the expert's opinions were addressing common method bias using non-statistical method, scaling, wording, and cover page issues. The Likert scale is increased from 5 points to 7 points. Therefore, Strongly Disagree =1; Somewhat Disagree =2; Slightly Disagree =3; Neutral =4; Somewhat Agree =5; Slightly Agree =6; Strongly Agree =7. Table 3-7 shows the items used in measuring organizational readiness for change. In the same vein, these issues were treated accordingly, as presented below.

Respondents Focus Group

Regarding the respondent's focus group, it is posited that a self-administered questionnaire can be pre-tested in a focus group to learn about the appearance and formatting of the questionnaire (Collins, 2009). Therefore, a small sample of the respondent population was given questionnaires to identify some misconceptions about the instrument thoroughly. After thorough checking by the focus group, issues related to demographic variables, variations in language, terminology, or interpretation of questions, complexity, and structure of the instrument were identified and improved, significantly enhancing the questionnaire's better understanding, as shown in the table below.

Table 2. Change Efficacy Dimension

Change efficacy		**SD**	**D**	**SD**	**N**	**SA**	**A**	**SA**
CE1	We feel confident that our employees can keep the momentum going in changing to LM .	1	2	3	4	5	6	7
CE2	We can confidently manage the politics of changing to LM .	1	2	3	4	5	6	7
CE3	We feel confident that the organization can support people as they adjust to Lean implementation.	1	2	3	4	5	6	7
CE4	We feel confident that the organization can get people interested to change to LM .	1	2	3	4	5	6	7
CE5	We feel confident that tasks can be coordinated so that changing goes smoothly.	1	2	3	4	5	6	7
CE6	We feel confident that the organization can keep track of progress during changing to Lean.	1	2	3	4	5	6	7
CE7	We feel confident that our employees can keep the momentum going in changing to LM .	1	2	3	4	5	6	7

Table 3. Change Commitment Dimension

Change commitment		**SD**	**D**	**SD**	**N**	**SA**	**A**	**SA**
CC1	We are committed to implement LM	1	2	3	4	5	6	7
CC2	We are determined to change to LM	1	2	3	4	5	6	7
CC3	Our employees are motivated to change to LM	1	2	3	4	5	6	7
CC4	We will do whatever it takes to change to LM	1	2	3	4	5	6	7
CC5	We want our business to change to LM.	1	2	3	4	5	6	7

Pilot Study

The Cronbach alpha coefficient is used to test the internal consistency of the measurement instrument. A pilot test is a preliminary study that may not be included in the main study. The most used technique of validating inter-item consistency reliability is the Cronbach's alpha coefficient. This study retrieved 37 pilot questionnaires from the 80 distributed. Hence, it is suggested by Malhotra (2008) that a sample size of 30 or more is sufficient for a pilot study (Malhotra, 2008; Memon et al., 2017).

Therefore, SPSS version is used to test the reliability of each interval variable with their items and their corresponding responses. The pilot analysis of the variables showed that change efficacy obtained high reliability of 0.911 and change commitment has 0.845 Cronbach alpha. Accordingly, a Cronbach alpha of 0.60 is considered average reliable, but a Cronbach

alpha of 0 .70 and above is highly reliable (Nunnally, 1978; Sekaran & Bougie, 2016). Hence, the piloted measurements had achieved a high level of Cronbach alpha reliability; this means that the instrument has reached a standard threshold.

Table 4. Result of Pilot Study

Constructs	Cronbach's Alpha	Number of Items
Change Efficacy	0.911	7
Change Commitment	0.845	5

Discussions and Conclusion

The study pre-tested an instrument for evaluating organizational readiness for change to lean initiatives within manufacturing SMEs in Nigeria. Hence, the instrument has shown high reliability, making it practical for more extensive distribution to have a wider population for generalization. Also, it is recommended that studies in the future should further test and validate the questionnaire's effectiveness as it will serve as an instrument for examining organizational readiness for change to LM within SMEs globally. The study has also provided a literature review of organizational readiness for change to lean with its various dimensions and emphasizes change efficacy and change commitment as more suitable dimensions. The study further provides insight into LM deployment in Nigeria within SMEs in the manufacturing sector and calls on the need to assess and evaluate organizational readiness for change to lean prior full implementation to identify areas that need critical attention.

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References

Anastesia, Chika, A., Hillary, Chijindu, E., & Penninah, Ijeoma, O. (2018). Accounting and non-accounting challenges of small and medium scale enterprises in Nigeria : Their impacts and way forward for effective national industrialization. *The Business and Management Review*, *9*(4), 9–10.

Armenakis, A., Harris, G., & Mossholder, W. (1993). Creating Readiness for Organizational Change. *Human Relations*, *46*(6), 681–713.

Ates, A., & Bititci, U. (2011). Change process : a key enabler for building resilient SMEs. *International Journal of Production Research ISSN:*, *49*(18), 5601–5618. https://doi.org/10.1080/00207543.2011.563825

Boston consulting group. (2020). *Are You Ready To Transform?* Boston.

Central Bank of Nigeria. (2019). *Central Bank of Nigeria Annual Report 2019*. Retrieved from https://www.cbn.gov.ng/documents/reports.asp

Collins, D. (2009). An overview of cognitive methods Pre-testing survey instruments : *Quality*. https://doi.org/10.1023/A:1023254226592

Douglas, J., Muturi, D., Douglas, A., & Ochieng, J. (2017). The role of organisational climate in readiness for change to Lean Six Sigma. *TQM Journal*, *29*(5), 666–676. https://doi.org/10.1108/TQM-04-2017-0046

Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change: Extension of a

three-component model. *Journal of Applied Psychology*, *87*(3), 474–487. https://doi.org/10.1037/0021-9010.87.3.474

Holt, D. T., Armenakis, A. A., Feild, H. S., & Harris, S. G. (2009). Readiness for organizational change: The systematic development of a scale. *THE JOURNAL OF APPLIED BEHAVIORAL SCIENCE*, *43*(2), 34-1-34–16. https://doi.org/10.1177/0021886306295295

Inuwa, M., & AbdulRahim, S. (2020). Lean readiness factors and organizational readiness for change in manufacturing SMEs: The role of organizational culture. *Journal of Critical Reviews*, *7*(5), 56–67. https://doi.org/10.31838/jcr.07.05.10

Malhotra, N. K. (2008). *Essentials of marketing: An applied orientation* (2nd ed.). Pearson Education Limited.

Memon, M. A., Ting, H., Ramayah, T., Chuah, F., & Cheah, J.-H. (2017). A Review of the Methodological Misconceptions and Guidelines Related To the Application of Structural Equation Modeling: a Malaysian Scenario. *Journal of Applied Structural Equation Modeling*, *1*(June), i–xiii. https://doi.org/10.47263/jasem.1(1)01

Moya, C. A., Galvez, D., Muller, L., Camargo, M., & Moya, C. A. (2019). A new framework to support Lean Six Sigma deployment in SMEs. *International Journal of Lean Six Sigma*, *10*(1), 58–80. https://doi.org/10.1108/IJLSS-01-2018-0001

Nunnally, J. C. (1978). An Overview of Psychological Measurement. In *Clinical Diagnosis of Mental Disorders*. https://doi.org/10.1007/978-1-4684-2490-4_4

Ogah, M., Ogbechie, R., & Oyetunde, K. (2020). Ethical Challenges of Lean Implementation in Nigerian Manufacturing Industry : An Exploratory Study. *Journal of Business and Social Science Review*, *1*(5), 29–39.

Olson, K. (2010). An examination of questionnaire evaluation by expert reviewers. *Field Methods*. https://doi.org/10.1177/1525822X10379795

Psomas, E. (2021). Future research methodologies of lean manufacturing: a systematic literature review. *International Journal of Lean Six Sigma*. https://doi.org/https://doi.org/10.1108/IJLSS-06-2020-0082

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach* (7th ed.). London: John Wiley & Sons.

Shah, R., & Ward, P. T. (2007). Defining and developing measures of lean production. *Journal of Operations Management*, *25*, 785–805. https://doi.org/10.1016/j.jom.2007.01.019

Shea, C. M., Jacobs, S. R., Esserman, D. A., Bruce, K., & Weiner, B. J. (2014). Organizational readiness for implementing change: A psychometric assessment of a new measure. *Implementation Science*, *9*(1), 1–15. https://doi.org/10.1186/1748-5908-9-7

Timmings, C., Khan, S., Moore, J. E., Marquez, C., Pyka, K., & Straus, S. E. (2016). Ready, Set, Change! Development and usability testing of an online readiness for change decision support tool for healthcare organizations. *BMC Medical Informatics and Decision Making*, *16*(1), 1–10. https://doi.org/10.1186/s12911-016-0262-y

Uluskan, M., McCreery, J. K., & Rothenberg, L. (2018). Impact of quality management practices on change readiness due to new quality implementations. *International Journal of Lean Six Sigma*, *9*(3), 351–373. https://doi.org/10.1108/IJLSS-05-2017-0049

Umude-Igbru, O., & Price, B. (2015). Acceptability of Lean Six Sigma in a developing economy: Results from exploratory research in Nigerian consulting companies. *IEOM 2015 - 5th International Conference on Industrial Engineering and Operations Management, Proceeding*. https://doi.org/10.1109/IEOM.2015.7093706

Vamsi, N., Jasti, K., & Kodali, R. (2015). Lean production : literature review and trends. *International Journal of Production Research*, *53*(3), 867–885. https://doi.org/10.1080/00207543.2014.937508

Weiner, B. J. (2009). A theory of organizational readiness for change. *Implementation Science*,

4(67), 1–9. https://doi.org/10.1186/1748-5908-4-67

Weiner, B. J., Amick, H., Lee, S. D., & Lee, S. D. (2008). Review Measurement of Organizational Services Research and Other Fields. *Medical Care Research and Review*, *65*(4), 379–436. https://doi.org/10.1177/1077558708317802

Womack, J., & Jones, D. (1997). Lean Thinking-Banish Waste and Create Wealth in Your Corporation. *The Journal of the Operational Research Society*, *48*(11), 1148. https://doi.org/10.1057/palgrave.jors.2600967

Womack, P., & Jones, D. (2003). *lean Thinking: Banish waste and create wealth in your Corporation (Revised Edition)* (Second). New York: Free Press Inc.