IRJEMS International Research Journal of Economics and Management Studies
Published by Eternal Scientific Publications
ISSN: 2583 – 5238 / Volume 2 Issue 1 February 2023 / Pg. No: 113-118
Paper Id: IRJEMS-V2I1P116, Doi: 10. 56472/25835238/IRJEMS-V2I1P116

Original Article

A Structural Equation Model on Relationship Continuity of Construction Firms in Davao Region

[1]Romel B. Balucio, [2]Gaudencio G. Abellanosa
[1]DBA Candidate, University of Mindanao, Davao City, Philippines.
[2]Professor, University of Mindanao, Davao City, Philippines.

Received Date: 30 January 2023 Revised Date: 10 February 2023 Accepted Date: 20 February 2023

Abstract: *The primary purpose of this study was to come up with the best fit model for relationship continuity in the construction sector in Davao Region in the context of employee engagement, top management commitment, and service quality. This study employed a stratified random sampling technique in selecting a total of 430 full time employees in various departments. An adapted standardized survey questionnaire published in scholarly journals was utilized as a primary data gathering instrument. This research utilized a descriptive non-experimental research design utilizing correlational and structural equation modeling approach as method of analysis. Results showed that employee engagement, top management commitment, service quality, and relationship continuity is related with each other. Furthermore, the generated model provide a new concept in the context of relationship continuity in the construction sector which is reinforced by top management commitment with the retained indicators: quality vision, resource allocation, quality policies and quality leadership and the employee engagement as defined by the remaining indicators: emotional engagement, rational identification, compatibility, team orientation and motivation.*

Keywords: *Employee engagement, top management commitment, and service quality, relationship continuity, structural equation model, Philippines.*

I. INTRODUCTION

Relationship continuity occurs when both sides are willing to keep working together for a considerable amount of time (Nyakio, 2016). This is a type of relationship exchange that necessitates sharing of information, lining up incentives, and making decisions together (Rezaei Vandchali, Cahoon, and Chen, 2021). But relationship continuity has really not changed much because these companies still have lower degree of supplier engagement, degradation of relationship commitment, dissatisfied customers, and inability to fulfill future promises and expectations and plans (Arslan, 2020). People have also said that relationships in the construction business may not last long. On the one hand, in the context of the individual projects (Havenvid, Bygballe, & Hakansson, 2019) and, on the other, the tradition of relating to counterparts in certain ways are blamed for these shallow relationships.

In the construction industry, it can be observed that some relationship continuity across projects exist (Crespin-Mazet et al., 2019; Havenvid et al., 2019) and it has been suggested that business partnerships enable construction players to profit from investments made across projects (Dubois, Gadde, & Mattsson, 2021). There is also an increased focus on partnership contracts, which are intended to strengthen the collaboration among project players, both within and between projects (Rahman, Faisol, Kamaruding, and Nusa, 2022; Crespin-Mazet, Goglio-Primard, Havenvid, and Linné, 2021). Although long-term ties and different forms of collaboration are prevalent in other sectors, partnerships is a relatively recent phenomena in the construction business.

Partnerships offer shared value through enhanced involvement in the engagement by encouraging tight collaboration and equal risk-taking between partners by collective decision and complete reporting. In order to establish long-term and high-involvement links between projects in the construction business, it is recommended to conduct this study. Ashnai, Henneberg, Naudé, & Francescucci (2016); Chams-Anturi, Moreno-Luzon, & Escorcia-Caballero (2019) are only a few examples of scholarly works citing the positive effects of continuity on respect, loyalty, and adaption between businesses and their suppliers.

This study aims to elucidate construction firms' relationship continuity presented through the best fit model as predicted by employee engagement, top management commitment, and service quality and establish the best fit model for the relationship continuity among the employees in construction sector

This study substantially contributes to understanding the different elements and factors that influence the relationship continuity among the construction firms in Davao Region. The construction firms find the result of this study useful because of its relevance in building rapport and relationships with their suppliers and customers. This allows them to identify operational areas that they need to focus on to perform competitively. Other business owners in different industries may also benefit from the study as well. They can benchmark the results to determine the functional areas of the business to focus on in fostering good relationships.

Further, this also benefits the employees, employee engagement is among the variables considered in the study. The employees benefit from the results as they can find evidence of the effects of employee engagement on the firm's relationship continuity which will likely result in employers focusing on motivating their employees to sustain in stiff competition in the construction sector/industry. The government can benefit from the results as they may utilize it as a reference for policy enhancement aiming to enhance the performance of construction firms. It has been discussed in various scientific articles that construction firms, which some may categorize or belong to small and medium enterprises, contribute to nation-building as a whole. Finally, future researchers can use the findings as baseline information and references for relevant studies in the future.

II. METHODOLOGY

A. Research Respondents

A scientific procedure was used to select the appropriate respondents of this research. For this research undertaking, a stratified sampling was utilized to choose the respondents. A survey of 430 full-time workers in various administrative, operation, logistics, and support offices from various construction firms was conducted. These offices included engineering, human resources, the finance department, and support. Slovin's formula was utilized to obtain the precise sample size of the respondents. From the third quarter of 2022 through the final quarter of that year, data was collected. Bagozzi and Yi (2012) claim that adopting a structural equation model (SEM) with a sample size of at least 200 is preferable (SEM). Additionally, SEM works with big samples in order to be more efficient and minimize measurement standards as well as considering errors (Hair et al., 2012).

The researchers used the stratified random sampling approach, in the process the population is being considered and divided into smaller groups called strata, to determine the total number of respondents. A stratum sample is identified using uniform and randomized sampling from each stratum. The sample is made by combining and considering all per-stratum samples (Nguyen, Shih, Srivastava, Tirthapura, & Xu, 2020). A stratified random sample can be used to answer questions about aggregates such as the mean and population total, which is one of the advantages of stratified random sampling (Kandula, Shanbhag, Vitorovic, Olma, Grandl, Chaudhuri, & Ding, 2016).

Therefore, obtaining a sample size of 430 was adequate and justifiable. Due to the nature and time constraints of the survey, outsourcing and subcontracting employees were not included since they cannot accurately assess the relationship continuity as seen by employees. More so, at any moment the respondents did not feel ease and comfortable completing the survey instruments, they were allowed to stop and withdraw from the study without any repercussions to their relationship with the researcher or within the study itself. There was no pressure applied to individuals to answer the questionnaire.

The research was done in Davao Region. This is situated in the southern part of the island of Mindanao, which consists of five progressive provinces. These are Davao del Norte, Davao de Oro, Davao Occidental, Davao del Sur, and Davao Oriental. The study included construction workers from the aforementioned location. Specifically, respondents from Davao City, Malita, Governor Generico, Mawab, and Tagum were studied. The study examined a sample of employees from 82 Davao Constructors Association Center, Inc. (DCACI) member construction firms from the specified region.

B. Materials and Instrument

The variables of the study were adapted from the following studies: employee engagement (Kirsh, 2016), top management commitment (Wanyoike, 2016), and service quality (Sunindijo et al., 2014) toward relationship continuity (Mugarura et al., 2010) among employees in construction firms in the Davao Region. The instrument was restructured to make it more appropriate to the existing enterprises and the local environment. To make the instrument more relevant, it was validated by five specialists in the domains of construction, human resource management, and operational supervision.

Following the validation performed, pilot testing was done and performed. Cronbach alpha was considered to assess the questionnaire's reliability. Typically, the alpha consistency coefficient of Cronbach falls between zero and one. There was consideration that the greater the internal consistency of a certain scale's items, means the closer the Cronbach's alpha coefficient reaches to one (Simon & Choi, 2018). George and Mallery (2018) suggested the following Cronbach's alpha guidelines for questionnaire reliability: If the specific result is greater than or equal to 0.90, it is excellent; 0.80, good; 0.70, acceptable; 6 is uncertain; 0.5, poor; and 0.5, undesirable. Each construct's Cronbach Alpha is as follows: relationship continuity (.939), employee engagement (.948), top management commitment (.971), and service quality(.943).

C. Design and Procedure

In order to identify the dimensionality of the model that provided the best fit for the study, this inquiry applied a quantitative methodology. This study, in particular, used a structural equation modeling (SEM) technique. SEM is a type of statistical modeling that shows how measured and unmeasured variables are related by cause and effect. SEM is better at analyzing data than many other methods, such as time-series analysis, multiple regression, factor analysis, path analysis, and covariance analysis. It also has methods that can be used instead of these methods (Heck & Thomas, 2020). Kline (2015) says that the structural equation model is a group of processes that work together. This allows and provides the researcher an opportunity to explore and test different models. This study looked at how the different exogenous variables relate to the different endogenous variables and their indicators as specific measures.

SEM (Structural Equation Modeling) was used and utilized to evaluate the interrelationships between the hypothesized models and to determine the best fit model for relationship continuity. In order to assess how well the models fit the data, the following indices were produced, and they need to be adequate to satisfy the requirements: The CMIN/DF ratio should be 0 value 2 with a p-value greater than 0.05, the Tucker Lewis Index (TLI) should be greater than 0.95, the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Normative Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA) should be less than.

III. RESULTS AND DISCUSSION

In an effort to determine the relationship continuity model that provides the most satisfactory explanation for the data, five distinct models were investigated. Fit indices for path coefficients and model fit are used to evaluate structural equation models. Model fit indices work in many situations, according to studies. SEMs with more fit indices are more likely to reject good models. As fit indices increase, miss-specified models are more likely to be rejected. Additionally, at least two fit indices should be merged (Hu & Bentler,1999). Several indices suggest cutoff levels, but none of them is the optimal choice for each and every or in a specific circumstance (Hoyle, 2011; Kline, 2015).

Table 1: Summary of Goodness of Fit Measures

Index	Criterion	Model 1	Model 2	Model 3	Model 4	Model 5
CMIN/DF	0<value< 2	12.02	9.017	3.654	3.125	1.016
p-value	>0.05	.000	.000	.000	.000	.109
NFI	>0.95	.623	.738	.856	.909	.961
TLI	>0.95	.609	.712	.836	.888	.983
CFI	>0.95	.641	.656	.876	.913	.963
GFI	>0.95	.621	.674	.872	.901	.971
RMSEA	<0.08	.164	.163	.085	.891	.025
Pclose	>0.05	.000	.000	.043	.087	.128

Legend

CMIN/DF- Minimum Discrepancy divided by Degrees of Freedom
p-value - probability value
NFI - Normed Fit Index
TLI - Tucker Lewis Index
CFI - Comparative Fit Index
GFI - Goodness of Fit Index
RMSEA - Root Mean Square Error of Approximation
Pclose - test of Close Fit

In this model, the objective of the study was intended to find the relationships between the hypothesized models considered and the model of relationship continuity that best fits the data. When a structured model yields a satisfactory fit, it illustrates the consistency of theory and method used on variables of the empirical interactions predicted by the model. Regarding the study issue linked with the model that best represents the variables that predict connection continuity, the initial proposed model depicted in Figure 1-5 must be modified to fit the data. In this study, five created models were provided. Table 1 provides an overview of the results regarding the presentation on goodness of fit of these five evaluated and developed models.

The best fit model is realized through the correlative effect of employee engagement and top management commitment on relationship continuity. However, in this model, modification indices were considered to create a better model fit, and error terms were correlated. The Chi-square test was performed, and the result was 1.016 when divided by the number of degrees of freedom. The p-value was 0.109, which was larger than.05. This indicated that the model provided an accurate representation

of the data. An RMSEA score of 0.025, which was lower than 0.05 and whose related P-close value was higher than 0.05, further provided compelling evidence in support of this assertion. In a similar manner, the values of the other indices, such as NFI, TLI, and CFI, all fall under each threshold, suggesting a model that has a fit that is very good or outstanding. Specifically, a GFI value of 0.971, a CFI of 0.963, an NFI of 0.961, and a TLI of 0.983.

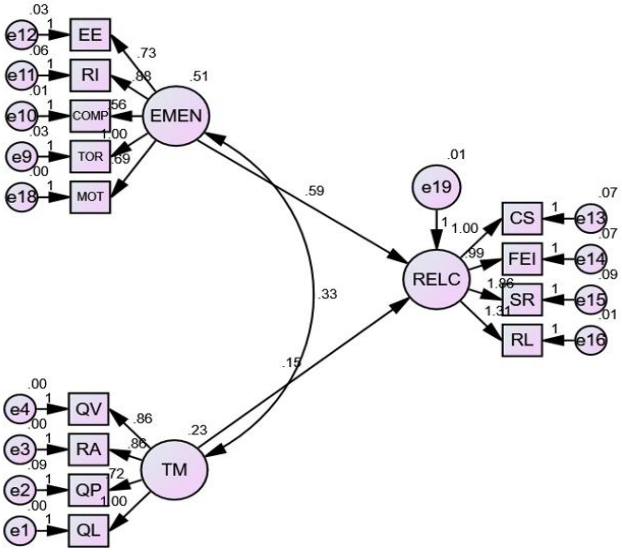

Figure1. Best Fit Model for Relationship Continuity

Figure 1 depicts the structural model in standard solution for employee engagement and top management's commitment to relationship continuity. With a set of beta coefficient of.591 and with consideration on a p-value smaller than.001, the results elucidates that employee engagement has a significant consideration impact on relationship continuity. A unit increase in employee engagement corresponds to a 0.591% increase in the level of their relationship continuity, assuming the commitment of top management remains constant. Moreover, evidence indicates that .150 rise in relationship continuity corresponds to an increase in the level of top management commitment, holding employee engagement remains constant.

The best fit model derives the significant influence of employee engagement and top management support towards relationship continuity. According to Mone and London (2018), employee engagement is about understanding one's job in a company and being aware and enthusiastic about how it fits into the firm's mission and goals. It further points out how a business is achieving its mission and goals, such as fostering employee engagement to foster positive relationships with clients and suppliers. Also, according to Durairatnam, Chong, Jusoh, and Dharmaratne (2020), top management is responsible for setting the direction, provision of resources, maintaining customer-focused systems and processes, and ensuring performance excellence, thus, the overarching role of top management in attaining the success must be given enough consideration and attention.

Throughout the entirety of structural equation modeling, it has been recommended to eliminate non-significant aspects of the initial model, such as the deletion of service quality as a latent variable proposed by the modification index, to improve the model fit. This is the case so long as these aspects were supported by theory (Byrne, 2016). The model was also altered depending on the association between constructs contributing in the same direction to a particular variable. These alterations were done in order to account for the data (Schumacker & Lomax, 2010). Nevertheless, in the process of model change, consideration was given to the alterations that made sense or were justified based on theoretical support (Arbuckle, 2013). This was done in order to promote actual measurement improvement.

The omission of service quality from the final model can be due to or linked with the following factors: To begin, the vast majority of services are not easily quantifiable because they are based on performance rather than actual products or things that can be measured directly. Third, the inclusion of service quality in the final model would have made the model more complex. Second, the services that are provided are not homogenous, especially when they are heavily reliant on the performance of humans, which might shift drastically from one day to the next (Forsythe, 2008). Because of this dependence, what a business plans to offer a customer and what the customer actually receives can wind up being very different things. Fourth, the provision or consumption of various services are linked, which means that the interactions between customers and service providers have an effect on the process (Sunindijo, Hadikusumo, & Phangchunun, 2014).

In addition, the optimal model provides empirical insight into the perspectives of Havenvid, Bygballe, and Hkansson (2019). It contributes to the formation of hierarchical connections between the prime contractor and subcontractors in a supply chain that is becoming increasingly fragmented. Consequently, these interaction patterns are viewed as problematic for organizational learning, creativity, and, ultimately, the degree of industrial production (Demirkesen, Wachter, Oprach, & Haghsheno, 2019). According to Crespin-Mazet, Goglio Primard, Havenvid, and Linné (2019), it is causing discontinuities in the creation of knowledge and its transmission inside and across enterprises and between projects. Therefore, employee engagement and top management support are considered to be significant relationship continuity components.

IV. CONCLUSION AND RECOMMENDATIONS

On the basis of empirical findings of this study, the researchers came up with the following conclusions: The results further implied that the construction companies in the region are dedicated to helping their employees, the top level management of the construction sector are committed to advancing relationship with the partners and suppliers and relationship continuity was preserved and considered 'permanent' by the partners of the firm.

In essence, this study's findings supported and demonstrated Khan's Work Engagement Theory, which states that engaged employees experience good work-related emotions, such as happiness and enthusiasm, while doing work duties (Wu, Kuo, Lin, Hu, Wu, & Cheng, 2020). When experiencing positive impacts, individuals establish ambitious goals for an activity and anticipate that their participation will yield favorable consequences (Seppala, Hakanen, Tolvanen, & Demerouti, 2018). Therefore, the connection of employee engagement and relationship continuity is reinforced by the work engagement theory, which asserts that emotion is transferred between interacting persons. Second, Caroline, Harriet, and Anne's (2016) hypothesis was accurate and that it suggested that top management commitment aids in establishing trust and confidence with employees and may lead to establishing strong rapport and relationships with its suppliers and consumers. By demonstrating dedication, their employees are committed to attaining the overall success of the organization.

With reference to the foregoing conclusions, the researcher recommends: As all the variables are related to each other, all these three factors are necessary to maintain the relationship continuity of the construction firms and their partners. Moreover, as the employees are the best assets of companies, construction firms may continually invest in their development, education, and professional growth. With this, construction firms may be able to maintain a wholesome relationship with the clienteles and partners in the industry.

With the increasing potential of the construction businesses (expansion and scale) because of the Build, Build, Build (BBB) project of the Duterte administration, the government may strengthen the partnership with the construction sector, it is greatly advocated that the government should promote the PPP or the private public partnerships through agreements, contracts, and even investments. With these, construction firms may be able to continue their efficiency as they also contribute to the aggregate economic development of the nation.

Also, with the continued expansion and innovation of the construction sector in the Philippines, there appears to be an urgent need to reconsider the primary actors in the supply chain such as suppliers of construction materials, manpower, and skilled workforce. The providers of the construction materials and firms may establish a long-term and sustainable relationship in order to maintain the quality of materials. To do this, firms may strengthen their ties through the local association of contractors. Next, the manpower requirements of the construction sector is the heart of this industry, therefore, maintaining an authentic and sustainable relationship is a requirement in order to achieve sustainability in all of the projects (whether private or public funded). The human capital element in the construction industry is very important to realize the visions and aims of building a better and sustainable future.

Finally, with the limited factors being considered in this study, the researcher recommends that other direct or indirect elements related to this sector be considered in the future studies so we can truly understand the whole picture of this industry in a developing country such as the Philippines. More on that, policy related issues and concerns may also be taken into account by the future researchers as this may have strong implications on the operations of construction firms especially in Region XI.

V. REFERENCES

[1] Arbuckle, J.L., 2013. SPSS Amos. IBM SPSS: Chicago.
[2] Arslan, I.K., 2020. The importance of creating customer loyalty in achieving sustainable competitive advantage. Eurasian Journal of Business and Management, 8(1), pp.11-20.
[3] Ashnai, B., Henneberg, S.C., Naudé, P. and Francescucci, A., 2016. Inter-personal and inter-organizational trust in business relationships: An attitude–behavior–outcome model. Industrial Marketing Management, 52, pp.128-139.
[4] Bagozzi, R.P. and Yi, Y., 2012. Specification, evaluation, and interpretation of structural equation models. Journal of the academy of marketing science, 40(1), pp.8-34.

[5] Byrne, B.M., 2016. Adaptation of assessment scales in cross-national research: Issues, guidelines, and caveats. International Perspectives in Psychology, 5(1), pp.51-65.
[6] Caroline, N., Harriet, K. and Anne, N., 2016. Top management commitment for successful small and medium-enterprises (SMEs): a hoax or a reality?. European Scientific Journal, 12(4)
[7] Chams-Anturi, O., Moreno-Luzon, M.D. and Escorcia-Caballero, J.P., 2019. Linking organizational trust and performance through ambidexterity. Personnel Review.
[8] Crespin-Mazet, F., Goglio Primard, K., Havenvid, M.I. and Linné, Å., 2019. Innovating in project-based organizations: patterns of interaction over time. In IMP Conference.
[9] Crespin-Mazet, F., Goglio-Primard, K., Havenvid, M.I. and Linné, Å., 2021. The diffusion of innovation in project-based firms–linking the temporary and permanent levels of organisation. Journal of business & industrial marketing.
[10] Demirkesen, S., Wachter, N., Oprach, S. and Haghsheno, S., 2019, July. Identifying barriers in lean implementation in the construction industry. In Proceedings of the 27th Annual Conference of the International Group for Lean Construction (IGLC), Dublin, Ireland (pp. 3-5).
[11] Dubois, A., Gadde, L.E. and Mattsson, L.G., 2021. Purchasing behaviour and supplier base evolution–a longitudinal case study. Journal of Business & Industrial Marketing.
[12] Durairatnam, S., Chong, S.C., Jusoh, M. and Dharmaratne, I.R., 2020. Does people-related total quality management "work" for people? An empirical study of the Sri Lankan apparel industry. The TQM Journal.
[13] Forsythe, P., 2008. Modelling customer perceived service quality in housing construction. *Engineering, Construction and Architectural Management*.
[14] George, D. and Mallery, P., 2018. Reliability analysis. In *IBM SPSS Statistics 25 Step by Step* (pp. 249-260). Routledge.
[15] Hair, J.F., Sarstedt, M., Ringle, C.M. and Mena, J.A., 2012. An assessment of the use of partial least squares structural equation modeling in marketing research. Journal of the academy of marketing science, 40(3), pp.414-433.
[16] Havenvid, M.I., Bygballe, L.E. and Håkansson, H., 2019. Innovation among project islands: A question of handling interdependencies through bridging. In The Connectivity of Innovation in the Construction Industry (pp. 126-142). Routledge.
[17] Heck, R.H. and Thomas, S.L., 2020. An introduction to multilevel modeling techniques: MLM and SEM approaches. Routledge.
[18] Hoyle R., 2011. Structural equation modeling for social and personality psychology. Sage, London
[19] Hu, L.T. and Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), pp.1-55.
[20] Kandula, S., Shanbhag, A., Vitorovic, A., Olma, M., Grandl, R., Chaudhuri, S. and Ding, B., 2016, June. Quickr: Lazily approximating complex adhoc queries in bigdata clusters. In *Proceedings of the 2016 international conference on management of data* (pp. 631-646).
[21] Kirsch, C., 2016. What is 'Employee Engagement'?–Analysis of the Factor Structure of the Engagement Construct.
[22] Kline, R.B., 2015. Principles and practice of structural equation modeling. Guilford publications.
[23] Mone, E.M. and London, M., 2018. Employee engagement through effective performance management: A practical guide for managers. Routledge.
[24] Mugarura, J.T., Ntayi, D.J. and Muhwezi , D.M., 2010. Buyer-supplier collaboration, adaptation, trust, commitment and relationship continuity of selected private manufacturing firms in Kampala. A masters dissertation,(Uganda): Makerere University Business School.
[25] Nguyen, T.D., Shih, M.H., Parvathaneni, S.S., Xu, B., Srivastava, D. and Tirthapura, S., 2020, April. Random sampling for group-by queries. In *2020 IEEE 36th International Conference on Data Engineering (ICDE)* (pp. 541-552). IEEE.
[26] Nyakio, M., 2016. An Assessment of the Influence of Supplier Relationship Management on Procurement Performance: A Case Study of Nakummatt Holdings
[27] Rahman, S.H.A., Faisol, N., Kamaruding, M. and Nusa, F.N.M., 2022, November. Revisiting the critical success factors (CSFs) contributing to a good subcontracting relationship: Analysing Malaysian construction projects. In AIP Conference Proceedings (Vol. 2532, No. 1, p. 090006). AIP Publishing LLC.
[28] Rezaei Vandchali, H., Cahoon, S. and Chen, S.L., 2021. The impact of power on the depth of sustainability collaboration in the supply chain network for Australian food retailers. International Journal of Procurement Management, 14(2).
[29] Schumacker, R. E., & Lomax, R. G. (2010). A beginners guide to structural equation modeling. New York: Routledge
[30] Seppälä, P., Hakanen, J.J., Tolvanen, A. and Demerouti, E., 2018. A job resources-based intervention to boost work engagement and team innovativeness during organizational restructuring: For whom does it work?. Journal of Organizational Change Management.
[31] Simon, M. and Choi, Y.J., 2018. Using factor analysis to validate the Clance Impostor Phenomenon Scale in sample of science, technology, engineering and mathematics doctoral students. Personality and Individual Differences, 121, pp.173-175.
[32] Sunindijo, R.Y., Hadikusumo, B.H. and Phangchunun, T., 2014. Modelling service quality in the construction industry. International Journal of Business Performance Management, 15(3), pp.262-276.
[33] Sunindijo, R.Y., Hadikusumo, B.H. and Phangchunun, T., 2014. Modelling service quality in the construction industry. International Journal of Business Performance Management, 15(3), pp.262-276.
[34] Wanyoike, R.W., 2016. Quality management practices and firm performance among manufacturing firms in Kenya. Unpublished PHD Thesis (Human Resource Management). Kenyatta University, Kenya.
[35] Wu, C.Y., Kuo, C.C., Lin, C.W., Hu, W.H., Wu, C.Y. and Cheng, S., 2020. How does benevolent leadership lead to work–family enrichment? The mediating role of positive group affective tone. Stress and Health, 36(4), pp.496-506.