

Factors Explaining The Variation of Quality of Life Among Employees In The Malaysian Public Sector

Jegak Uli, Neda Tiraieyari, Nor Asiah Mahmood, Jamilah Othman, Bahaman Abu Samah, Md. Salleh Hj. Hassan, Hayrol Azril Mohamad Shaffril, & Noor Azman Ali

Jegak Uli, Institute for Social Science Studies, University Putra Malaysia.

Abstract: There is a general concern over the quality of life (QOL) decline among employees in the public sector which may adversely affect their performance. In view of this concern, there is a greater need to gain an improved understanding of what factor influence QOL with the view of finding a more integrative model for explaining the variation of QOL. Thus, a dependence model with four factors was proposed. The four factors examined were physical & financial, human, social, and natural capitals. Enter regression method was used to determine to what extent the research data fit the proposed model. The findings revealed that all the four factors considered were significance in explaining quality of life of the employees suggesting that the proposed model was fully supported by the research data. Among the four factors studied, physical and financial capitals make the strongest contribution in explaining variation of QOL, followed by natural capital and social capitals. Human capital was the smallest indicating that it made a smaller contribution compared to the other capitals.

Key words: Quality of life. physical and financial capitals. natural capital. social capitals. human capital

INTRODUCTION

Researchers and managers have generally recognized that employees could potentially affect both workers and organizations in negative ways (Danna & Griffin, 1999). Boyd (1997) pointed out that employees experiencing poor health and well-being in the workplace may be less productive, make lower quality decisions, and be more prone to be absent from work. In addition, Price & Hooijberg (1992) also mentioned that these employees make consistently diminishing overall contributions to the organization. According to Bourbeau, Brisson, & Allaire, (1996); Cartwright & Cooper, (1993) the low level of health and well-being at the individual level could result in the rise of physiological, psychological, and/or emotional problems. Therefore, leaders are starting to recognize that having people with good quality of life who are skilled and motivated can make a significant difference. Given the apparent importance and negative consequences of the employees' quality of life, therefore, it is very important to understand what affects QOL. The main purpose of this paper is to gain an improved understanding of the variables and factors that influence or help to explain levels of employees' QOL. What is needed is a conceptual framework or model that includes and integrates these variables or factors into a more complete explanatory model. One such model is the expanded model of ecological economic system elaborated in Costanza, Cumberland, Daly, Goodland, & Norgaard (1997). The core of this model is the set of four basic types of capital: natural, human, social and built and the notion that there is limited substitutability between these. They argued that a balance among these four capitals is necessary to satisfy human needs and generate individual and community well-being. The four capitals are briefly described below:

Human capital (HC) is each individual's personal skills and abilities, physical and mental health, and education. The concept of human capital was largely forgotten by economists until its re-birth in the early 1960s with the writings of Becker (1962, 1964), Schultz (1961, 1962), Mincer (1958, 1962), Kiker (1966), and later in the 70's (Blaug, 1976). Social capital (SC) is the connections in a community. The way in which people interact and relate to each other. Social capital is the degree to which a group uses mechanisms such as social networks, trust, reciprocity and shared norms and values to facilitate collaboration and cooperation. The concept of social capital was popularized amongst others by Bourdieu (1985), Coleman (1988a; 1988b; 1990), Putnam (1993, 1995, 1996), and Portes (1998). Built capital (BC) comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive. Producer goods are the tools and equipment that people use to function more productively. Natural Capital (NC) is the environmental stock or resources of Earth that provide goods, flows and ecological services required to support life. Examples of natural capital include: minerals, water, waste assimilation, carbon dioxide absorption, arable land, habitat, fossil fuels, erosion control, recreation, visual amenity, biodiversity, temperature regulation and oxygen. The concept of natural capital could be found in the work by Costanza & Daly (1992) and others. Recent studies that relate the four capitals (built, human, social and natural) to quality of life include: Vemuri & Costanza (2006), and Mulder, Costanza & Erickson (2006). However, the first study examined quality of life at the cross-community level while the

second one was at a national (country) level. In contrast, this study examines quality of life at the individual level rather than the aggregate level. In addition, we used the term physical and financial capital to include both built and financial capitals. The financial capital was not included earlier these earlier studies. This particular study addresses the influence of the above four capitals on work performance as well as the relationships between variables.

Capitals and Quality of life:

Results of a survey conducted by Ruslan Abdul-Hakim *et al.* (2010) to examine the impact of social capital on quality of life showed that social capital has a significant impact on quality of life of 2500 rural households in Terengganu, Malaysia. Similarly result of empirical analysis of the relationship between social capital and quality of life in the workplace in Spain revealed that higher levels of social capital imply greater levels of quality of life at work. Social capital is a better predictor of quality of life at work than the characteristics of the worker, the company or organization, and the work environment (Requena, 2003). Mulde *et al.* (2005) suggests that individuals who do not place as much importance upon community interactions are less likely to be happy.

The development of human capital is important for personal development and personal performance namely in term of productivity and quality of life. Human capital is a form of productive investment such as ability, skill, appearance and health resulting from investing in education, training and health care. The result of a case study conducted in Pulutan village, Menggatal, Kota Kinabalu specifically among the ethnic Kadazan-Dusun, revealed that the Kadazan-Dusun community in the village placed high importance to education as a form of continuous investment especially in developing human capital among their children in producing future generation who are more productive of better quality and equipped with a vision and mission (Mansur *et al.*, 2010).

According to Winters (2011) the effect of the human capital on quality of life is positive and significant with a coefficient of 0.163. This result suggests that a .10 increase in the share of college graduates increases the quality of life in an area and causes real wages to fall by roughly 1.6% to offset the greater quality of life and keep individual utility equal across areas. The human capital level and the presence of higher education institutions have effects on quality of life.

Collados and Duane (1999) reported that natural capital contributes to the quality of life of in two complementary ways: first, by directly providing environmental services that cannot be imported, and second, by supplying the natural resources that, through a human controlled production process, become valuable to humans. Mulde *et al.* (2005) also reported a fairly strong correlation between the importance of natural areas and both individual and community Quality of life ($s = 0.17$ and 0.15 , respectively, with $p = 0.0001$).

Physical Capital starts with infrastructure. Without infrastructure, communities simply don't function. In general, physical capital refers to any non-human asset made by humans and then used in production. Often, it refers to economic/financial capital. These four capital product indices give us a way of ranking the factor proportions of the four capitals in terms of determining QOL. According to Mulde *et al.* (2005) the social capital index was the most significant component of individual and community QOL, explaining 3 to 4 times as much of the variation of individual QOL as the other capitals. Human capital and natural capital were also determinants, though more influential for community QOL than individual QOL. Built capital was the weakest determinant, showing no significance for individual QOL.

Objectives of the study:

The main purpose of this paper is to gain an improved understanding of the factors that help to explain the variation of QOL among employees in Malaysia public sector. The specific objectives of the study are to:

1. Determine relationship between physical and financial, human, social, natural capital and QOL.
2. Assess the proposed four-factor regression model to explain the variation of QOL among employees in Malaysian public sector.

MATERIALS AND METHODS

Variables of Study:

The dependent variable for this study is quality of life (QOL). In this study, QOL was simplified to measure of life satisfaction, or just the cognitive evaluation of one's subjective QOL (Sirgy, 2002). The QOL instrument consists of a total 70 items. Nine of the items were grouped under the remunerations and benefits, eight under job characteristics, seven under interpersonal relationships, nine under work environment, eight under organizational support, and facilities, nine under organizational policies and management style, five under safety & security assurance, six under individual and family life, and nine under personal health and well-being. The composite scores were computed by adding the responses of 70 items used and then the mean of the composite scores were calculated to give the QOL scores needed for analysis.

There are four independent variables in this study namely physical and financial capitals (P&FC), human capital (HC), social capital (SC), and natural capital (NC). The physical and financial capital was measured by 21 items indicating the extent of adequacy and usability of resources in organization such as budget, tool and equipment, infrastructure, material and supplies and ICT (computer, fax, telephone, and internet). While human capital was measured using 27 items representing the extent of employees' knowledge and skills at work, discipline, implementation of policy and procedures, communication skill and ability to organize the work. The social capital consists of 27 items measuring the extent of employees' relationship and cooperation with colleague, social community interaction, and work family balance. The natural capital comprises 10 items quantifying the extent of air quality, water quality, green reserve area, soil conservation, maintenance of sewage system, noise pollution, industrial waste pollution, household waste pollution, traffic congestion and connectivity, and epidemic diseases. The composite score for each variable was first computed and the mean composite obtained by dividing the composite score with the number items for each variable. Therefore, all the independent variables were measured in ratio scale of measurement.

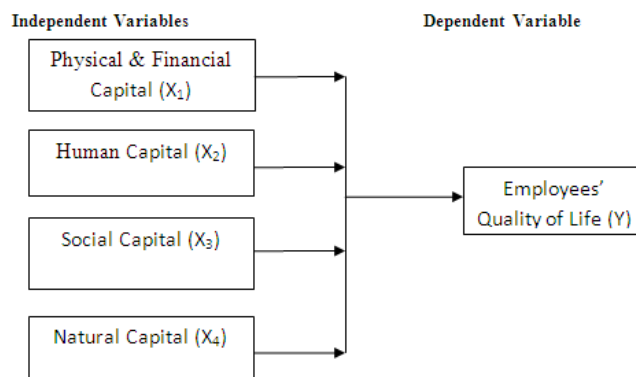


Fig. 1: The Independent and Dependent Variables of the Study

This study hypothesizes that physical and financial, human, social, and natural capitals are positively correlated to QOL. A positive relationship suggests that QOL score is more apt to increase when the physical and financial, human, social, and natural capital increase.

Measurement and Instrumentation:

Developing the instrument for this research was divided into two main phases. The first main phase was to develop structured questionnaire for measuring QOL, P&FC, HC, SC & NC. Since the current research was not a replication of any previous studies, the team developed the questionnaire from scratch. For the first phase, both the classic and recent materials of DV and IV's literatures were gathered and reviewed.

The second phase of the instrument development involved focus group discussions (FGDs). A total of two FGDs were conducted. The first FGD comprised a panel of 10 knowledgeable informants from various agencies and public sector. The agencies involved were Public Services Department (PSD), Ministry of Home Affairs (MOHA), Ministry of Human Resources (MOHR), Malaysian Productivity Corporations (MPC), Congress of Unions of Employees in the Public and Civil Services (CUEPACS), National Institute of Public Administration (INTAN), Malaysian Modernization and Management Planning Unit (MAMPU), Department of Wildlife and National Parks (DWNP) and Economic Planning Unit (EPU). The first of FGD focused on the construct validity of instruments, while the second one focused more on content validity. For construct validity they were asked to react to appropriateness of QOL constructs identified during the first phase of the instrument development. The panel members were reminded to study each construct in terms of contamination, deficiency, distortion, and accuracy.

For the second FGD, the questionnaire was subject to content validation by a panel of twenty-one officers from various government agencies. All members of the panel worked independently. Each was presented with a set of the instrument and informed of the purpose of the instrument. They were then requested to study the items and decide on the suitability of the items. They were also asked if any other items should be included to fulfill the purpose of the instrument, and to comment on any part of the scale's items that they felt needed amendment or clarification. In addition, they were asked to react to the questions or statements for clarity, uniformity and content validity. The field test of the questionnaire was to provide opportunities to improve the order of questions, general organization of the instrument, question construction, clarity and appropriateness of wordings, understanding and general outlook.

Modifications were carried out from time to time based on the feedback received from the two FGD’s for checking and confirmation. With clarity and accuracy in mind, some questions were reduced in the respective sections, rephrased, combined or deleted. The researcher was made aware by the panel member that a lengthy questionnaire might deter participation. Hence, this calls for reduction of questions and the appropriateness in line with the objectives set in the research.

Population and Sample of Study:

A two-stage cluster sample is obtained by first selecting a probability sample of clusters and then selecting a probability sample of elements from each sampled cluster (Scheaffer, Mendenhall and Ott, 1990: 285). The survey clusters of the study consist of all the twenty-five ministries at federal level in Malaysia. The elements of each cluster in this study are employees of each federal ministry.

The first task in the two-stage cluster sampling was to specify appropriate clusters, in this study, all the twenty-five federal ministries were selected as the survey clusters. Next, a frame that lists all clusters (ministries) was composed. Since this study is part of a bigger study on “Factors Affecting Quality of Life and Performance in Relation to selected Work Systems in Malaysian Public Sector” only those implementing these work systems (ISO, KPI and E- Government) were selected. A simple random sample of clusters was then selected from this frame. Out of the twenty-five federal ministries, only a total of twenty (20) ministries implemented the three work systems (ISO, KPI and E- Government), and these twenty ministries constitute the sampling frame of the study. Subsequently, from this sampling frame, fifteen (15) ministries were selected using a simple random sampling procedure. The second task in the two-stage cluster sampling involved selecting 90 employees from the selected survey clusters by using simple random sampling. A total of 1,350 employees were selected for the survey. However, only 1,253 employees responded fully. Thus this figure represents the final number used for the confirmatory data analyses of this study. This final number was well above the minimum total sample size of 129 determined by G-Power method for multiple regression analysis using the following criteria: effect size $f^2 = 0.15$ (Medium), $\alpha = 0.05$, power = 0.95 and number of predictors = 4 with a critical $F(4, 124) = 2.4448$ and $\Lambda = 19.35$. This study utilized a questionnaire as the instrument to collect data from the respondents. A drop-off and pick-up method was adopted to collect data from the respondents.

RESULTS AND DISCUSSION

The relationship between physical and financial, human, social, natural capitals and QOL:

The relationship between physical and financial, human, social, natural and QOL was investigated using Pearson product-moment correlation coefficients. Preliminary analyses were performed to ensure no violation of the assumptions of normality and linearity. Since there were five (4) bivariate pairs, Bonferroni adjusted alpha of 0.0125 (0.05/4) was used to test null hypothesis of the bivariate pairs.

As depicted in Table 1, the strongest linear relationship was found between human capital and QOL ($r = .60, p = .0001$). The positive moderate correlation coefficient of .60 indicates that as the score for human capital increases so do the rating for QOL. The second highest was found between social capital and QOL ($r = .59, p = .0001$) and the correlation coefficient value of .59 indicates that there was moderate positive linear relationship between social capital and QOL. The next highest was between physical and financial capital and QOL ($r = .57, p = 0.0001$) and an r value of .57 indicates a moderate positive linear relationship. Finally, natural capital also showed a moderate positive correlation with QOL ($r = .46, p = 0.0001$). Although this study was not designed to determine, whether, an increase in one variable caused an increase in the value of a second variables. It would seem logical that to say that the quality of life (QOL) is more apt (likely) to increase when physical and financial, human, social and natural capital increase.

Table 1: Skewness, Cronbach’s alpha, Mean scores and Zero Order Pearson Correlation Coefficients of the Independent and Dependent Variables

Variables	Skewness	Cronbach’s Alpha		Mean	Y	X ₁	X ₂	X ₃	X ₄
		Pilot	Actual						
Quality of life (Y)	-.24	.97	.98	7.22	1.00				
Physical and financial capital (X ₁)	-.52	.95	.95	7.18	.57**	1.00			
Human capital (X ₂)	-.47	.97	.97	7.94	.60**	.50	1.00		
Social capital (X ₃)	-.46	.98	.96	8.09	.59**	.40	.81	1.00	
Natural capital (X ₄)	-.02	.93	.87	6.56	.46**	.37	.31	.31	1.00

** Correlation is significant at the 0.01 level (1-tailed). Bonferroni Adjusted Alpha = 0.05/4 = 0.0125, n = 1253

Results of correlation are consistent with past findings that suggested there are positive relationship between the four capital and QoL (Ruslan Abdul-Hakim *et al.* (2010); Requena (2003); Mulde *et al.* (2005); Mansur *et al.* (2010); Winters (2011); and Collados and Duane (1999).

The Factors Explaining the Variation of QOL:

The Proposed QOL MLR Model:

A four-capital multiple linear regression model was proposed to explain the variation of quality of life (Y) among employees. The four-capital variables proposed were physical and financial capital (X₁), human capital (X₂), social capital (X₃) and natural capital (X₄). Therefore, the equation of the proposed QOL multiple linear regression (MLR) model is as follows:

$$\hat{Y} \text{ (Quality of life)} = b_0 + \beta_{b1}(X_1) + b_2(X_2) + b_3(X_3) + b_4(X_4) + e \tag{1}$$

Where:

- \hat{Y} = Quality of life,
- b_0 = Constant (Intercept)
- b_{1-4} = Estimates (Regression coefficients)
- X_1 = physical and financial capital,
- X_2 = human capital,
- X_3 = social capital, and
- X_4 = natural capital,
- e = Error

Evaluating the QOL MLR Model

Table 2: Estimates of coefficients for the QOL MLR model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	.767	.178		4.305	.0001		
	Physical and financial capital	.250	.019	.298	12.847	.0001	.696	1.438
	Human capital	.177	.037	.165	4.750	.0001	.310	3.225
	Social capital	.266	.033	.268	8.108	.0001	.342	2.920
	Natural capital	.167	.016	.221	10.422	.0001	.836	1.197

Notes: $R = 0.792$, $R^2 = 0.531$, Adjusted $R^2 = 0.530$; $F(4, 1248) = 353.774$, $P = 0.0001$.

To determine to what extent the research data fit the proposed multiple linear regression model, enter regression method was used. Based on the enter method, all the four predictor variables were significance in explaining QOL (\hat{Y}) $F(4, 1248) = 353.77$, $p = .0001$. The four predictor variables were physical and financial capital ($t = 12.85$, $p = .0001$), human capital ($t = 4.75$, $p = .0001$), social capital ($t = 8.11$, $p = .0001$), and natural capital ($t = 10.42$, $p = .0001$). This suggests that the four-predictor work performance MLR model was fully supported by the research data.

The R^2 value of 0.531 (this value is about equal to adjusted R^2 if the sample is large) implies that the four predictor variables explain about 53.1% of the variance/variation in the QOL (Y) suggesting that the result is quite laudable or impressive. The ANOVA table tests the null hypothesis that the multiple R in the population equals 0. The ANOVA table revealed that the F-statistics [$F(4, 1248) = 353.77$] was very large and the corresponding p-value was highly significance ($p = 0.0001$) or lower than the alpha value of 0.05 indicating that the null hypothesis was rejected and thus the multiple R is not equal to zero.

As depicted in Table 2 and Figure2, the estimates (B weights) of the model coefficients are as follows: b_0 was .767, b_1 was .250, b_2 was .177, b_3 was .266 and b_4 was .167. According to these B weights, the estimated regression equation is as follows:

$$\hat{Y} \text{ (QOL)} = .767 + .250(X_1) + .177(X_2) + .266(X_3) + .167(X_4) + e \tag{2}$$

Where:

- \hat{Y} = Quality of life,
- b_0 = Constant (Intercept)
- b_{1-4} = Estimates (Regression coefficients)
- X_1 = physical and financial capital,
- X_2 = human capital,

X_3 = social capital, and
 X_4 = natural capital,
 e = Error

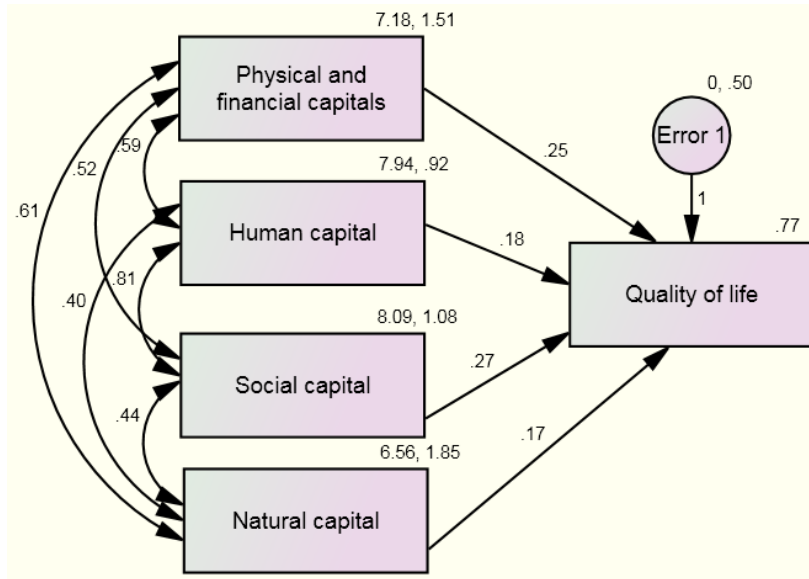


Fig. 2: Estimates of unstandardized coefficients of the QOL MLR model

As depicted in Table 2 and Figure 3, the largest standardized beta coefficient obtained was .298 for physical and financial capital (X_1) and this corresponds with the highest t -statistic of 12.85. This means that physical and financial capital makes the strongest unique contribution in explaining the dependent variable QOL, when the variance explained by all other predictor variables in the model was controlled for. It suggests that one standard deviation increase in physical and financial capital is followed by .298 standard deviation increase in QOL (see Pallant, 2007: 160). The beta value for social capital (X_3) was the second highest (.268), followed by natural capital (X_4) in the third place (.221). The Beta value for human capital (X_2) was the smallest (.165) indicating that it made the smallest amount of contribution. It means that one standard deviation increase in human capital was followed by .167 standard deviation increase in QOL (Y).

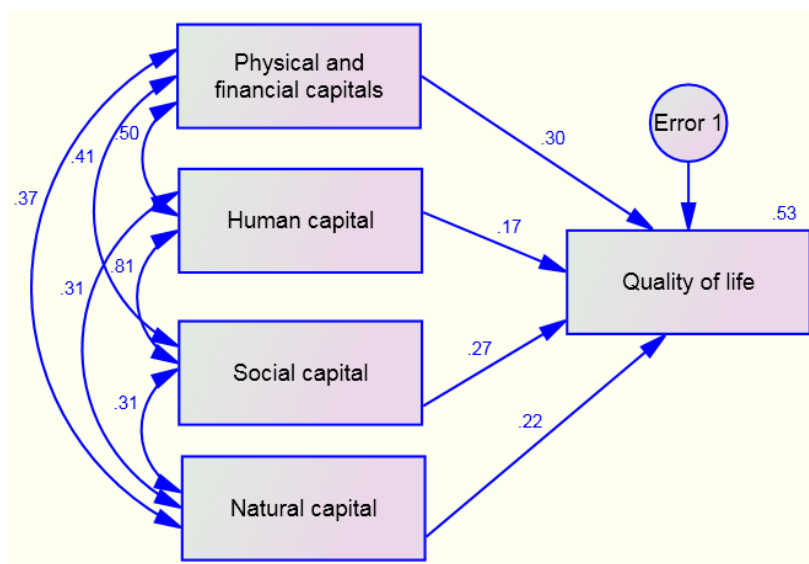


Fig. 3: Estimates of standardized coefficients of the QOL MLR model

Assessing Assumptions of the QOL MLR Model:

Multicollinearity:

Several methods can be used to check for the presence of multicollinearity of the MLR model. The first one is using the correlation table (Table 1). Pallant (2007: 149) suggested to check that the correlation between each of the independent variables is not high ($r = .9$ or above). Based on this cut-off value none of the IV's highly correlated with each other.

The second method is to assess the condition index table as obtained in Table 3. Using this table, first we need to identify all condition indices above a threshold value of 30.0. Then, for all condition indices exceeding the threshold value of 30.0, identify variables with variance proportions above 0.50 percent. Finally, a collinearity problem is indicated when a condition index identified in step 1 accounts for a substantial proportion of variance (0.90 or above) for two or more coefficients. Based on the collinearity diagnostic Table 3 obtained, only the fifth model dimensions had condition index above the threshold value of 30.0 (42.11), and the variables found with a variance proportion above 0.50 were human capital and social capital with their variance proportion values of .92 and .82 respectively. This did not fulfill the last criteria indicating an absence of multicollinearity among the four independents variables included in the MLR model.

Table 3: The multicollinearity diagnostic for the QOL MLR model

Model	Dimension	Eigen value	Condition Index	Variance Proportions				
				(Constant)	Physical and financial capitals	Human capital	Social capital	Natural capital
1	1	4.943	1.000	.00	.00	.00	.00	.00
	2	.028	13.236	.02	.01	.01	.01	.96
	3	.016	17.347	.07	.93	.01	.03	.02
	4	.009	23.126	.90	.00	.05	.13	.01
	5	.003	42.113	.01	.05	.92	.82	.00

a. Dependent Variable: Quality of life

The last method is to examine the tolerance variance inflation factor (VIF) statistics presented in Table 2. As noted in Table 2, none of independent variable has a tolerance value smaller than 0.10 (the minimum is .310) and all the variance inflation factor (VIF) statistics are less than 10.0 (the maximum is 3.25). A tolerance value of less than .10 or a VIF value of above 10 suggests the presence of multicollinearity (Pallant, 2007: 156). This suggests that there was no serious multicollinearity problem among the predictor variables of the estimated model.

Normality, homoscedasticity, linearity of Residuals of QOL MLR Model:

The normal P-P plot of the regression standardized residuals of Figure 4 revealed that the majority of the observed values fall approximately along the diagonal normality line from bottom left to top right indicating that the residuals were from a normally distributed population or suggesting no major deviations from normality, one of the assumptions that ought to be met for any multiple linear regression analysis.

Dependent Variable: Quality of life

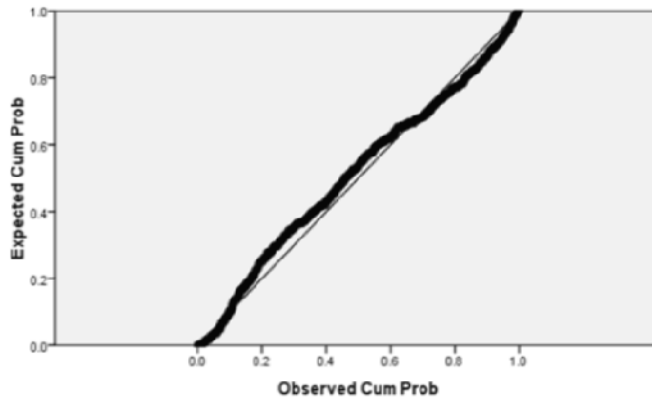


Fig. 4: The Normal P-P plot of the regression standardized residual

Another assumption of a multiple linear regression analysis is that the model must be linear. The linearity assumption of the model is normally assessed by examining the scatterplot of the standardized predicted values against observed values. The scatterplot obtained (Figure 5) shows that the values cluster around a straight line from bottom left to top right indicating that the relationship between the four-predictor variables are linearly related to QOL (Y) of the study. This clearly suggests that the linearity assumption is not violated. The scatterplot obtained also showed that the residual variances were about equal in distance (constant) from bottom left to top right of the regression line signifying the regression model is quite stable.



Fig. 5: The Scatterplot of standardized predicted values vs. observed values

Conclusion:

The findings revealed that all the four factors considered were significance in explaining quality of life of the employees suggesting that the proposed model was fully supported by the research data. Since no multicollinearity problem between the predictor variables was observed and no notable violation of normality, equality of variance and linearity assumption was also noted, hence, it is reasonable to conclude that the estimated multiple linear regression model is a fairly impressive and stable model. Among the four factors studied nonhuman capital namely physical and financial capitals make the strongest contribution in explaining variation of QOL, followed closely by natural capital, and in the third place was social capitals. Human capital was the smallest indicating that it made a smaller contribution compared to the nonhuman capitals. The hypothesized positive relationship between physical and financial, human, social, and natural capitals and QOL was fully supported by the research data.

Although this study was not designed to determine, whether, an increase in one variable caused an increase in the value of a second variables. It would seem logical that to imply that the QOL score is more apt to increase when the physical and financial, human, social, and natural capital increase. Based on the findings and conclusion of this study, the following recommendation is offered. An organization should take good care of all its capital, natural, human, and social in addition to its built capital, in order to continually improve the quality of life of all its employees. An organization should wisely manage all its capitals using and improving the physical and financial, social, natural and human capital in ways that allow that capital to continue to support the organization in the future.

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