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Information and Communications Technology Competencies and Twenty-First Century Skills: A Structural Model on e–Leadership of School Administrators

James L. Paglinawan[1], **Raul C. Orongan**[1], and **Rubillinda A. Paglinawan**[2]
jlpaglinawan@cmu.edu.ph; ralmz@yahoo.com; s.rubillinda.paglinawan@cmu.edu.ph

[1] Central Mindanao University, Philippines
[2] Dologon National High School, Philippines

Abstract. This study investigated the relationship of the public basic education school administrators' demographic profile, Information and Communications Technology (ICT) competencies, Twenty-First (21st) century skills, and attitude to ICT towards their electronic-leadership (e-leadership) capabilities. Furthermore, it also explored the variables that best predict e-leadership capabilities and the structural model that best fits the e-leadership capabilities of school administrators. The school administrators displayed a high level of 21st century skills which means they displayed the skills most of the time whenever these skills may be applicable. The school administrators possessed a basic level of ICT competencies which means that they only performed some of the basic ICT operations and use ICT sometimes as a tool for administration. The 21st century skills and ICT competencies of school administrators are significantly related to e-leadership capabilities. E-leadership of the school administrators is greatly attributed to their 21st century skills and ICT competencies. Structurally, the e-leadership capability of the school administrators was best anchored on the 21st century skills and ICT competencies. The 21st century skills and ICT competencies greatly contributed to the e-leadership capability of the school administrators.

Keywords: *21st Century Skills, ICT Competencies, E-leadership Competencies, Attitudes towards ICT, Structural Equation Modeling (SEM), Path Analysis*

1. Introduction

In the Philippine education, being a school administrator in a certain school also means he or she has to possess also the corresponding skills and competencies borne out of the tasks assigned to the position. In order to find out if certain variables have a significant relationship and played a crucial role to one another, different structural equation models were explored so as to find the variables which predict the electronic leadership or e-leadership of the administrators. There is a need to answer and investigate the different levels of the targeted variables so as to really determine the significant relationship of the independent variables to the dependent variable.

It is said that the new society – variously called information society, knowledge society, or networked society is marked by four key structural changes reshaping leadership rapid and far reaching technological changes, especially the digitalization of Information and Communications Technology (ICT); accelerated globalization; a shift toward knowledge as the central factor of production; and more distributed, less hierarchical organizational forms with greatly accelerated movement within and across organizations and sectors. It is on this idea that the online social networks were accepted as technology-based education tools among higher education institution students (Al-Qaysi, N., Mohamad-Nordin, N., Al-Emran, M., & Al-Sharafi, M. A. , 2019).

A survey commissioned in 2002 by the Philippine Senate Committee on Education, Arts and Culture to the South-East Asian Ministers of Education Organization Regional Centre for Educational Innovation and Technology (SEAMEO INNOTECH), examined the ICT infrastructure of elementary and secondary schools in the Philippines. One of the survey findings found out that 27,042 school heads (74.36 percent) indicated they had received no training on any topic related to ICT in the past five years. The remaining 4,774 school heads (13.13 percent) indicated they had received some sort of ICT training (Belawati, 2002).

The primary objective of this study was to develop a structural model which best fits the e-leadership capability of school administrators by evaluating the level of ICT competencies and 21st century skills, and the best and fitting variables to engage and investigate are the following:

1. ascertain the level of 21st century skills of the school administrators in terms of the four domains:
   a. educational leadership:
      i. setting instructional direction,
      ii. teamwork, and
      iii. sensitivity;
   b. resolving complex problems:
      i. judgment,
      ii. results orientation, and
      iii. organizational ability;
   c. communication:
      i. oral communication, and
      ii. written communication;
   d. developing self and others:
      i. understanding own strengths and weaknesses, and
      ii. development of others.
2. find out the level of ICT competencies of the school administrators along the technological domain in terms of their:
   a. subject-oriented and didactical competencies,
   b. personal ICT competencies, and
   c. pedagogical competencies.
3. determine the level of attitude towards ICT of the school administrators in terms of:
   a. enthusiasm,
   b. anxiety,
   c. acceptance,
   d. impact on society,
   e. productivity,
   f. importance,
   g. confidence, and
   h. relevance.
4. assess the e-leadership capability of the school administrators in terms of:
   a. know – ability,
   b. mobilize – ability, and
   c. sustain – ability.
5. correlate the e-leadership capability, the level of 21st century skills, ICT competencies and attitudes of the school administrators.
6. identify what variable, singly or in combination, best predicts the e-leadership capability of the school administrators.
7. develop a structural model that best fits the e-leadership capability of school administrators.

2. Method

The research method employed was descriptive-correlational and causal-comparative designs utilizing a quantitative approach to determine the level of ICT competencies and 21st century skills of the randomly selected school administrators within the Northern Part of Mindanao, Philippines.

The study was conducted in the randomly selected public elementary and secondary schools in the Northern Region of Mindanao, Philippines. The region has fourteen (14) existing schools' divisions, including the interim divisions, each managed by a Schools Division Superintendent or Officer-in-Charge.

The study included the school administrators of the basic education or the elementary and the secondary school administrators.

The sample population of five hundred sixty-nine basic education teachers and school administrators, either education public supervisors, school principals or school heads, officers-in-charge, head teachers, master teachers, department heads, year level chairpersons, and faculty organization presidents both in the public elementary and secondary schools, served as the respondents of this study.

A purposive sampling technique was utilized to determine the respondents from among the 13 schools division, drawn and determined in advance through snowball sampling method.

After the reliability index was obtained through pre-testing, a permission letter was then sent to the Regional Director as endorsed and through the recommendation of the Dean of the Graduate School stating the purpose and significance of the study. The different Schools Division Superintendents were then informed, including the respondents through a letter that they were chosen to take part in answering the survey instrument. They were given one week to answer the questionnaire before the retrieval was done.

The instruments were retrieved, tallied and tabulated, scored, and classified based on the problems of the study, and corresponding statistical techniques were employed.

The researcher made use of a survey questionnaire with permission on the adoption from the 2015 National Association of Secondary School Principals at www.nassp.org, reprinted with permission.

In order to assess the Information and Communications Technology (ICT) Competencies of the school administrators, a questionnaire was adapted and modified from Akudolu, L-R. (2002), Restructuring Nigerian Secondary Education System through Information and Communications Technology (ICT) – Driven Curriculum was utilized.

In order to assess the school administrators' attitudes, competence, and use of ICT, a special survey instrument was developed and adapted based on the questionnaire "Teachers' Attitudes toward Computer" (TAC) designed by Christensen and Knezek (1998).

To determine the profile of the respondents in terms of gender, age, years in service as school administrator, educational background and frequency of trainings attended related to ICT, descriptive statistics were employed such as mean and percentage. Same statistics were also utilized to find out the level of 21st century skills, ICT competencies, attitudes towards ICT and e-leadership capability of the school administrators.

Pearson-product moment correlation was employed to find out if there was a significant relationship in the level of ICT competencies, 21st century skills, attitudes towards ICT and e-leadership capability of the school administrators. Stepwise multiple regression was applied to determine which of the four variables namely, demographic profile, ICT competencies, 21st century skills and attitude towards ICT significantly predict e-leadership capability of the school administrators.

A stepwise regression analysis was employed to determine which of the variables best predicts the e-leadership capabilities of the administrators. With respect to what model best fits the e-leadership in terms of 21st century skills and ICT competencies, Structural Equation Modeling (SEM) was used through AMOS software, specifically maximum likelihood (ML) method was used to test the hypothesized model. In order to evaluate the goodness of fit of the hypothesized model, the following indices were computed: Chi-square/ degrees of freedom ($\frac{\chi^2}{df}$), Goodness of Fit Index (GFI), Normed Fit Index (NFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA).

3. Results

Table 1 summarizes the three domains namely: educational leadership with a mean of 3.26 or very high level, resolving complex problems with a mean of 3.25 or high level, and developing self and others with a mean of 3.11 or high level, together with their individual factors. The results indicated that the overall mean for the level of the 21st century skills was 3.17 demonstrating a high level of skills possessed

by the school administrators of the basic education or the elementary and the secondary school administrators, either education public supervisors, school principals or school heads, officers-in-charge, head teachers, master teachers, department heads, year level chairpersons and faculty organization presidents both in the public elementary and secondary schools.

The school administrators exhibited a very high level of skills in terms of educational leadership, exhibited a high level in the skills under resolving complex problems, communication, and developing self and others.

DOMAINS FOR 21st CENTURY SKILLS	**Overall Mean**	**Qualitative Description**
EDUCATIONAL LEADERSHIP	3.26	VERY HIGH LEVEL
A. Setting Instructional Direction	3.21	High Level
B. Teamwork	3.28	Very High Level
C. Sensitivity	3.26	Very High Level
RESOLVING COMPLEX PROBLEMS	3.17	HIGH LEVEL
A. Judgment	3.25	High Level
B. Results Orientation	3.12	High Level
C. Organizational Ability	3.12	High Level
COMMUNICATION	3.06	HIGH LEVEL
A. Oral Communication	3.11	High Level
B. Written Communication	2.99	High Level
DEVELOPING SELF AND OTHERS	3.11	HIGH LEVEL
A. Development of Others	3.08	High Level
B. Understanding Own Strengths and Weaknesses	3.19	High Level
OVERALL MEAN FOR 21st CENTURY SKILLS	3.17	HIGH LEVEL

Table 1. Level of 21st century skills of school administrators under the domains educational leadership, resolving complex problems, communication and developing self and others

Legend:

Range	Qualitative Description	Interpretation
3.26 – 4.00	Very High Level	The skill is evident in every event that it may be applicable.
2.51 – 3.25	High Level	The skill is displayed in most of the times as it may be applied.
1.76 – 2.50	Low Level	The skill is applied seldom in the situation.
1.00 – 1.75	Very Low Level	The skill is not evident as applicable.

3.1. Level of ICT Competencies

The results in determining the level of ICT competencies of the school administrators were discussed in this section. The level of ICT competencies was measured along with the three (3) technological domains, namely: personal ICT competencies, pedagogical competencies, and subject-oriented and didactical competencies.

Table 2 shows the summary for the level of ICT competencies along with the three (3) technological domains. The results revealed that the school administrators exhibited an overall mean of 2.03 with a qualitative description of a basic level of ICT competencies, with an interpretation that the school administrators performed some of the basic ICT operations and used ICT sometimes as a tool for administration. Personal ICT competencies topped the school administrators' ICT competencies with a mean of 2.13, followed by subject-oriented and didactical competencies with a mean of 2.02, and pedagogical competencies with a mean of 1.94.

DOMAINS FOR LEVEL OF ICT COMPETENCIES	**Overall Mean**	**Qualitative Description**
Personal ICT Competencies	2.13	Basic Level
Pedagogical Competencies	1.94	Basic Level
Subject-Oriented and Didactical Competencies	2.02	Basic Level
OVERALL MEAN FOR LEVEL OF ICT COMPETENCIES	2.03	BASIC LEVEL

Table 2. Level of ICT competencies of school administrators under the domains personal ICT, pedagogical and subject-oriented and didactical competencies.

Legend:

Range	Qualitative Description	Interpretation
3.26 – 4.00	Expert Level	Performs all basic ICT operations and uses ICT always as tool for administration.
2.51 – 3.25	Advanced Level	Performs most of the basic ICT operations and uses ICT frequently as tool for administration.

1.76 – 2.50	Basic Level	Performs some of the basic ICT operations and uses ICT sometimes as tool for administration.
1.00 – 1.75	No Competency	Does not perform basic ICT operations and does not use ICT at all as tool for administration.

3.2. Level of Attitude Towards ICT

Table 3 shows the summary result of school administrators' attitudes sorted from the highest to the lowest mean. The results revealed that the school administrators exhibited an overall mean of 2.76 with a qualitative description of a highly positive attitude. The factor with the highest mean was the attitude of the school administrators in terms of relevance, obtaining a mean of 3.43 with a qualitative description of highly positive; followed by importance, with a mean of 3.30, denoting a highly positive attitude.

Productivity obtained a mean of 3.14 or positive; enthusiasm, with a mean of 3.08 or positive; a positive attitude is also displayed for acceptance and confidence, with obtained means of 2.78 and 2.76, respectively. On the other hand, a negative attitude is displayed for impact on society, with obtained means of 2.31, and a highly negative attitude for anxiety with a mean value of 1.47.

INDICATORS FOR ATTITUDE TOWARDS ICT	Overall Mean	Qualitative Description
Relevance	3.43	Highly Positive
Importance	3.30	Highly Positive
Productivity	3.14	Positive
Enthusiasm	3.08	Positive
Acceptance	2.78	Positive
Confidence	2.76	Positive
Impact on Society	2.31	Negative
Anxiety	1.47	Highly Negative
OVERALL MEAN FOR LEVEL OF ATTITUDE TOWARDS ICT	2.76	POSITIVE

Table 3. School administrators' attitude towards ICT

Legend:

Range	Qualitative Description	Interpretation
3.26 – 4.00	Strongly Agree	Highly Positive
2.51 – 3.25	Agree	Positive
1.76 – 2.50	Disagree	Negative
1.00 – 1.75	Strongly Disagree	Highly Negative

3.3. e-Leadership Capabilities of School Administrators

Table 4 presents the summary of the means of e-leadership capabilities of the school administrators in terms of know-ability, mobilize-ability, and sustainability. Results revealed that the school administrators displayed a capable level with a mean of 2.79.

By looking at the means of the three (3) domains, the school administrators rated all with a qualitative description of capable level, with the means as follows: know-ability obtained a mean of 2.78, mobilize-ability with a mean of 2.83 and sustain-ability with a mean of 2.79, with an interpretation that the capabilities were frequently observed and were practiced often by the school administrators. The overall mean for the e-leadership capability of the school administrators is 2.80, with a qualitative interpretation of capable in the three-domain of e-leadership.

DOMAINS FOR E-LEADERSHIP CAPABILITIES	Overall Mean	Qualitative Description
Know-ability	2.78	Capable
Mobilize-ability	2.83	Capable
Sustain-ability	2.79	Capable
OVERALL MEAN FOR E-LEADERSHIP CAPABILITIES	2.80	CAPABLE

Table 4. School administrators' e-leadership capabilities

Legend:

Range	Qualitative Description	Interpretation
3.26 – 4.00	Highly Capable	The capability is always visible and always practiced as observed.
2.51 – 3.25	Capable	The capability is frequently observed and often practiced.
1.76 – 2.50	Moderately Capable	The capability is rarely seen and practiced as observed.
1.00 – 1.75	Less Capable	The capability is not visible and not in practice as observed.

3.4. Correlation on Demographic Profile, 21st Century Skills, ICT Competencies and Attitude to ICT Towards E-leadership Capability of School Administrators

Table 5 reveals that among the variables, age is insignificant towards the e-leadership capabilities of the school administrators with a correlation of .079 with (*p*-value>0.05). Gender indicates a negative correlation of -.093 with (*p*-value>0.05), which depicts that gender has no significant relationship with the e-leadership capabilities of school administrators.

Demographic Profile Toward E-leadership Capability	r-value	Probability
Age	.079	.058ns
Gender	–.093	.026*
Years in Service as Administrator	.164	.000**
Highest Degree Earned	.166	.000**
Frequency of Trainings Attended Related to ICT	.186	.000**
21st Century Skills	.460	.000**
Educational Leadership	.419	.000**
Resolving Complex Problems	.351	.000**
Communication	.457	.000**
Developing Self and Others	.482	.000**
ICT Competencies	.384	.000**
Personal ICT Competencies	.363	.000**
Pedagogical Competencies	.339	.000**
Subject-Oriented and Didactical Competencies	.366	.000**
Attitude Towards ICT	.217	.000**
Enthusiasm	.178	.000**
Anxiety	–.254	.000**
Acceptance	–.005	.913ns
Impact on Society	.015	.722ns
Productivity	.203	.000**
Importance	.342	.000**
Confidence	.051	.224ns
Relevance	.388	.000**

*** Correlation is significant at the 0.01 level (2-tailed)*

** Correlation is significant at the 0.05 level (2-tailed)*

ns – not significant

Table 5. Correlation of the demographic profile, 21st century skills, ICT competencies, and attitude to ICT towards e-leadership capability of school administrators

Furthermore, ICT competencies revealed a coefficient correlation of 0.384 that reveals a significant relationship towards e-leadership of school administrators with (*p* value <0.05). All the factors under this domain have a strong positive relationship with the e-leadership of school administrators, to wit: personal ICT competencies has an *r*=0.363, revealing a positive relationship towards e-leadership of school administrators with its (*p* value < 0.05); pedagogical competencies with an *r*=0.339 (*p* value <0.05); and subject-oriented and didactical competencies with an *r*=0.366 with its (*p* value <0.05).

3.5. Variables that Best Predict E-leadership Capability of School Administrators

Table 6 illustrates the stepwise multiple regression analysis on variables under 21st century skills (educational leadership, resolving complex problems, communication and developing self and others), ICT competencies (subject-oriented and didactical competencies, personal ICT competencies, and pedagogical competencies), attitude towards ICT (enthusiasm, anxiety, acceptance, impact on society, productivity, importance, confidence and relevance) and demographic profile (age, gender, years in service as administrator, highest degree earned and frequency of trainings attended related to ICT).

As presented in Table 6, the entire standardized beta of the four (4) independent variables were positive (Beta >0) and were highly significant (*p*<0.001). Impact on society was found to be the greatest predictor of e-leadership capabilities of the school administrators with the *t*-value of 9.414 with its 0.000 probability value that indicates its significance at 0.01 level of significance. Productivity and subject-oriented didactical competencies were the second and the third predictors of e-leadership capabilities of school administrators, with *t*-value of –8.720 and *t*-value of 8.624, respectively with their 0.000 probability values covered under the 0.01 level of significance.

The result of the regression analysis clarified that the coefficient of subject-oriented and didactical competencies had the greatest degree of influence considering its 0.568 beta weight which could be inferred that subject-oriented and didactical competencies is the best predictor of e-leadership capabilities of school administrators.

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	–.013	.230		–.055	.956
Demographic Profile					
Years in Service as Admin	.014	.004	.119	3.429	.001
Highest Degree Earned	.047	.020	.082	2.292	.022
21st Century Skills					
Educational Leadership	.445	.072	.306	6.203	.000
Resolving Complex Problems	–.244	.079	–.183	–3.084	.002
Developing Self and Others	.428	.072	.367	5.946	.000
ICT Competencies					
Personal ICT Competencies	.148	.053	.149	2.766	.006
Pedagogical Competencies	–.318	.073	–.319	–4.341	.000
Subject-Oriented and Didactical Competencies	.566	.066	.568	8.624	.000
Attitude Towards ICT					
Enthusiasm	.336	.054	.241	6.238	.000
Acceptance	–.268	.046	–.190	–5.848	.000
Impact on Society	.357	.038	.332	9.414	.000
Productivity	–.664	.076	–.445	–8.720	.000
Importance	.365	.076	.320	4.780	.000
Confidence	–.444	.059	–.293	–7.582	.000
Relevance	.252	.057	.207	4.442	.000

Note: R = .750, R^2 = .562, F – ratio = 47.283, P – value = .000

Table 6. Variables that best predict e-leadership capability of school administrators

3.6. Structural Equation Model Derivation

The structural model depicts a web of a causal relationship of the following: 21st century skills and the ICT competencies towards the e-leadership capabilities of school administrators.

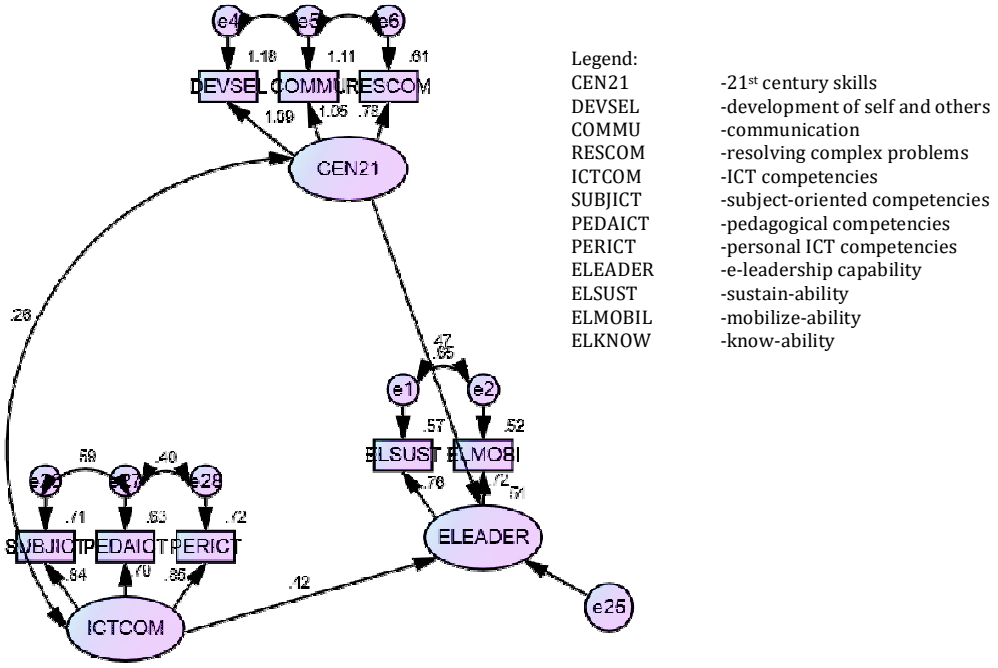

Fig. 1. Structural model on the 21st century skills and ICT competencies towards the e-leadership capabilities of school administrators.

The direct effects of the 21st century skills and ICT competencies on the e-leadership capabilities of the school administrators were illustrated in Table 7. This provides an overview of the total effects between latent variables.

LATENT VARIABLES	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
21ST CENTURY SKILLS	.338	0.000	.338
ICT COMPETENCIES	.517	0.000	.517

Table 7. Direct, indirect, and total effect estimates of the structural model.

The data show that ICT competencies with a standard beta equal to 0.517 had the greatest contribution or total effect on e-leadership capabilities of the school administrators. The variable ICT competencies also follows with 0.338 or 33.8% direct effect to e-leadership capabilities of the school administrators. Both the variables have a higher direct effect on the e-leadership capabilities of the school administrators, which means that the two (2) variables greatly contributed to the e-leadership capabilities of the school administrators.

INDEX	CRITERION	MODEL 2 FIT VALUE
CMIN/DF	0<CMIN/DF<2	1.444
P-Value	>.05	.230
NFI	>.95	1.000
TLI	>.95	.997
CFI	>.95	1.000
GFI	>.95	.999
RMSEA	<.05	.028

Legend:

CMIN/DF – Chi Square/ Degrees of Freedom NFI – Normed Fit Index
GFI – Goodness of Fit Index TLI – Tucker-Lewis Index
RMSEA – Root Mean Square Error of Approximation CFI – Comparative Fit Index

Table 8. Goodness of fit indices of the structural model.

The Structural Model which includes the direct causal relationship of 21st century skills and ICT competencies towards e-leadership capabilities of school administrators was shown to have a very good fit for the data with indices of chi-square/ degrees of freedom = 1.444 and RMSEA = 0.028, all are significant at the 0.05 level (2-tailed) these indices were consistently supported by the other indices such as NFI = 1.000, TLI = 0.997, CFI = 1.000, and GFI = 0.999 which all fall within the acceptable range of >0.95.

Among the structural models explored in the study, it appears that only one has indices that consistently indicate a very good fit to the data. This signifies that the best fitting structural model indicates that the e-leadership of the school administrators is best anchored on strong evidence from the 21st century skills and ICT competencies. This means that the electronic leadership or e-leadership of the school administrators is really influenced by their 21st century skills and ICT competencies. The higher their skills in terms of 21st century and ICT competencies, the better and higher is the level of their e-competencies, and the more that they have the best option to perform the functions associated with their leadership and management responsibilities. To be a better e-leader, one must enhance and hone the 21st century skills and the ICT competencies, which are the needed skills of today's society, as manifested by the proliferation of technology in the educational system, and in the processes of the institutions.

4. Conclusions

The school administrators' level of 21st century skills are high, which means they can display the skills in most of the times whenever these skills may be applicable. The level of ICT competencies of school administrators is on the basic level which means that they can only perform some of the basic ICT operations and sometimes use ICT as a tool for administration. The school administrators displayed a positive attitude towards ICT. They are capable in their e-leadership and the capabilities are frequently observed and they often practice in their supervision and administration of their schools.

The 21st century skills and ICT competencies indicate a significant relationship with e-leadership capabilities, thus rejecting the null hypothesis stating that there is no significant relationship among e-

leadership capability, ICT competencies, 21st century skills and the attitudes towards ICT of the school administrators.

Structurally, the e-leadership capability of the school administrators is best anchored on the 21st century skills and ICT competencies, thus rejecting the null hypothesis that there is no structural model that best fits with the e-leadership capability of the school administrators. The 21st century skills and ICT competencies greatly contributed to the e-leadership capability of the school administrators.

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Appendix

Research Questionnaire

INFORMATION AND COMMUNICATIONS TECHNOLOGY COMPETENCIES AND 21st CENTURY SKILLS: A STRUCTURAL MODEL ON E–LEADERSHIP OF SCHOOL ADMINISTRATORS

RESEARCH QUESTIONNAIRE

I. DEMOGRAPHIC PROFILE: ***(PLEASE FILL UP ALL THE INFORMATION, DO NOT LEAVE ANY ITEM UNANSWERED)***

Respondent's Name (Optional) _____ Age: _____ years old

Gender: ( ) Male ( ) Female

Number of Years in Service as:
Administrator : _____ years
Teacher : _____ years

Highest Degree Earned:
( ) BS ( ) With PhD Units
( ) With MA/MS Units ( ) PhD

( ) Masters Graduate

II. LEVEL OF 21st CENTURY SKILLS

Instructions: Read the definition for each skill dimension. Reflect on your current behavior and practice as it relates to the skill dimension and its definition. Be honest with yourself. Read each statement and then check the box which best shows how you rate your skill according to the items described.

VL = Very Low Level – The skill is not evident as applicable.
L= Low Level – The skill is seldom that can be applied in the situation.
H = High Level – The skill is displayed in most of the times as it may be applied.
VH = Very High Level –The skill is evident in every event that it may be applicable.

EDUCATIONAL LEADERSHIP:				
ITEMS	VL	L	H	VH
Setting Instructional Direction:				
1. I articulate a clear vision for the school and its efforts related to teaching and learning.				
2. I set high performance expectations related to teaching and learning for every student.				
3. I encourage innovation to improve teaching and successful learning for every student.				
4. I set measurable objectives for student academic success and effective instruction.				
5. I generate enthusiasm and persuade others to work together to accomplish common goals for the success of every student.				
6. I develop alliances and resources outside the school to improve the quality of teaching and learning.				
7. I clearly articulate expectations regarding the performance of others as it relates to effective instruction and student success.				
8. I acknowledge and celebrate the achievements and accomplishments of others in their efforts to ensure student success.				
9. I seek commitment of all involved to a specific course of action to improve student learning.				
Teamwork:				
10. I support the ideas and views offered by team members to resolve problems and improve learning.				
11. I encourage others to share their ideas and opinions regarding improved teaching and learning.				
12. I contribute my ideas and opinions toward reaching solutions and improving student success.				
13. I assist in the operational tasks of the team.				
14. I seek input from team members regarding ideas to improve learning.				
15. I assist the team in maintaining the direction needed to complete tasks.				
16. I seek to develop consensus among team members.				
Sensitivity:				
17. I interact appropriately and tactfully with people from different backgrounds.				
18. I elicit perceptions, feelings, and concerns of others.				
19. I voice disagreement without creating unnecessary conflict.				
20. I anticipate responses of others and act to reduce negative impact.				
21. I communicate necessary information to the appropriate persons in a timely manner.				
22. I express verbal and/or non-verbal recognition of feelings, needs, and concerns of others.				
23. I respond tactfully to others in emotionally stressful situations or in conflict.				
24. I divert unnecessary conflict.				
25. I respond in a timely manner to others who initiate contact.				

RESOLVING COMPLEX PROBLEMS:				
ITEMS	VL	L	H	VH
Judgment:				
26. I assign priority to issues and tasks within the school's vision for teaching and learning.				
27. I exercise caution when dealing with unfamiliar issues and individuals.				
28. I avoid reaching quick conclusions and making decisions with limited data.				
29. I evaluate information to determine the elements that affect teaching and learning.				
30. I communicate a clear learning-related rationale for each decision.				
31. I seek additional information about issues and events relevant to the school and its				

mission.				
32. I use relevant sources for data and information to confirm or refute assumptions.				
33. I ask follow-up questions to clarify information.				
34. I seek to identify the causes of problems.				
35. I establish relationships between issues and events.				
Results Orientation:				
36. I take action to move issues toward closure in a timely manner.				
37. I take responsibility for implementing initiatives to improve teaching and learning.				
38. I determine criteria that indicate a problem or issue is resolved.				
39. I consider the long-term and short-term implications of a decision on teaching and learning before taking action.				
40. I see the big picture related to student learning as the mission of the school.				
Organizational Ability:				
41. I delegate responsibility to others.				
42. I monitor the progress and completion of delegated responsibilities.				
43. I develop action plans to achieve goals related to student learning.				
44. I monitor progress and modify plans or actions as needed.				
45. I establish timelines, schedules, and milestones.				
46. I prepare effectively for meetings.				
47. I use available resources effectively to accomplish the student learning goals of the school.				

COMMUNICATION:

ITEMS	VL	L	H	VH
Oral Communication:				
48. I demonstrate effective presentation skills, (e.g., opening and closing comments, eye contact, enthusiasm, confidence, rapport, use of visual aids)				
49. I speak articulately.				
50. I use correct grammar.				
51. I tailor messages to meet the needs of each unique audience.				
52. I clearly present thoughts and ideas in one-on-one conversations.				
53. I clearly present thoughts and ideas in communication with small groups.				
54. I clearly present thoughts and ideas in formal, large-group presentations.				
Written Communication:				
55. I write concisely.				
56. I demonstrate technical proficiency in writing.				
57. I express ideas clearly in writing.				
58. I write appropriately for each of the different audiences in the school community.				

DEVELOPING SELF AND OTHERS

ITEMS	VL	L	H	VH
Development of Others:				
59. I share information and expertise from my professional experiences to assist the professional growth of others.				
60. I motivate others to change behaviors that inhibit their professional growth and student learning.				
61. I suggest specific developmental activities to improve other's professional capacity to contribute to student learning.				
62. I give behaviorally-specific feedback focusing on behaviors, not the person.				
63. I ask an apprentice what he/she perceives to be strengths and weaknesses and what he/she wants to improve.				
64. I seek agreement on specific actions to be taken by an apprentice for his/her development and growth.				
Understanding Own Strengths and Weaknesses:				
65. I recognize and appropriately communicate my own strengths.				
66. I recognize and manage my own developmental needs.				
67. I actively pursue personal growth through participation in planned developmental activities.				

III. LEVEL OF ICT COMPETENCIES

Instructions: This survey consists of 4 parts. Read each statement and then check the box which best shows how you rate your skill according to the items described.

NC = No Competency – Does not perform basic ICT operations and does not use ICT at all as tool for administration
BL = Basic Level – Performs some of the basic ICT operations and uses ICT sometimes as tool for administration
AL = Advanced Level – Performs most of the basic ICT operations and uses ICT frequently as tool for administration
EL = Expert Level – Performs all basic ICT operations and uses ICT always as tool for administration

PERSONAL ICT COMPETENCIES

	ITEMS	NC	BL	AL	EL
	Skills in:				
1.	Use of the keyboard in encoding and making reports.				
2.	Identifying and using available hardware fitting for the job to be done.				
3.	Use of different instructional software packages				
4.	Use of different operating systems and available programs				
5.	Accessing the internet and other social media in research and communication				
6.	Use of e-mail and attaching of files				
7.	Using key ICT skills in developing and presenting information				
8.	Participating in online discussion and forums				
9.	Hardware repairs and peripheral troubleshooting				
10.	Writing general programmes and basic programming				

PEDAGOGICAL COMPETENCIES

	ITEMS	NC	BL	AL	EL
1.	Select and evaluate subject – specific educational software				
2.	Develop and maintain educational or personal website				
3.	Prepare ICT-based learning materials				
4.	Prepare schemes of work and lesson notes using ICT				
5.	Solve common ICT problems relating to instruction				
6.	Write educational programmes and basic programming related to education				
7.	Monitor and evaluate ICT teaching and learning				
8.	Integrate ICT in other subjects across the curriculum				
9.	Use ICT for supervision, teaching and learning				
10.	Develop hardware components and conduct of maintenance				

SUBJECT ORIENTED AND DIDACTICAL COMPETENCIES

	ITEMS	NC	BL	AL	EL
1.	Use ICT as a didactic tool in the class				
2.	Employ digital devices during instruction				
3.	Implement cooperative learning strategies using ICT				
4.	Establish virtual learning environment or online class discussions				
5.	Encourage ICT-based collaborative learning				
6.	Use educational subject-specific software to give assignments to only the intelligent students				
7.	Work effectively with ICT in developing learners ICT capability				
8.	Use ICT to involve parents in their children's learning				
9.	Promote learner-autonomy by discouraging teacher-learner interaction				
10.	Encourage on line learning more than face-to face learning				

IV. LEVEL OF ATTITUDE TOWARDS ICT

Instructions: To what extent do you disagree or agree with each of the following statements about the use of ICT at school? Read each statement and then check the box which best shows how you feel.

SD = Strongly Disagree – Highly Negative Attitude
D = Disagree – Negative Attitude
A = Agree – Positive Attitude
SA = Strongly Agree – Highly Positive Attitude

ENTHUSIASM (Indicator 1)

	ITEM	SD	D	A	SA
1	I would like to learn more about computers.				
2	The challenge of learning about computers is exciting.				
3	I would like to spend more time using a computer.				
4	I will take computer courses.				
5	I do not like learning on computers.				
6	I will use a computer as soon as possible.				
7	If given the opportunity, I would like to learn about and use computers.				
8	I think working with computers would be enjoyable and stimulating.				
9	I want to learn a lot about computers.				
10	If I can, I will take subjects that will teach me to use computers.				
11	Learning about computers is boring and not interesting.				
12	I look forward to using a computer on my job.				
13	I enjoy computer work.				
14	Learning about computers is boring to me.				
15	I would like working with computers.				

ANXIETY (Indicator 2)

	ITEM	SD	D	A	SA
1	Working with a computer would make me very nervous.				
2	Computers make me feel uncomfortable.				
3	I get a sinking feeling when I think of trying to use a computer				
4	Computers intimidate and threaten me.				
5	Working with a computer makes me feel tense and uncomfortable.				
6	Computers make me feel uneasy and confused.				
7	I get a sinking feeling when I think of trying to use a computer.				
8	Computers frustrate me.				
9	Working with a computer makes me feel nervous.				
10	I sometimes get nervous just thinking about computers.				
11	I have avoided computers because they are unfamiliar and somewhat intimidating to me.				
12	I hesitate to use a computer for fear of making mistakes I cannot correct.				
13	I do not have self-confidence with it comes to working with computers.				

ACCEPTANCE (Indicator 3)

	ITEM	SD	D	A	SA
1	I can't think of any way that I will use computers in my career.				
2	I find it useful to have a computer in my house.				
3	I will probably do everything to learn how to use a computer.				
4	I will use computers in many ways in my life.				

IMPACT ON SOCIETY (Indicator 4)

	ITEM	SD	D	A	SA
1	Computers are changing the world too rapidly.				
2	Computers dehumanize society by treating everyone as a number.				
3	Our country relies too much on computers.				
4	Computers isolate people by inhibiting normal social interactions among users.				
5	Computers have the potential to control our lives.				
6	Use of computers in education almost always reduces the personal treatment of students.				
7	I dislike working with machines that are smarter than I am.				
8	Working with computers makes me feel isolated from other people.				
9	I am afraid that if I begin to use computers, I will become dependent upon them and lose some of my reasoning skills.				
10	Working with computers mean working on your own, without contact with others.				

PRODUCTIVITY (Indicator 5)

	ITEM	SD	D	A	SA
1	Computers would save me time.				
2	Computers would increase my productivity.				
3	Computers would help me to organize my work.				
4	Computers would help me to organize my finances.				
5	Computers would help me learn.				
6	Having a computer available to me would improve my general satisfaction.				
7	Having a computer available to me would improve my productivity.				
8	If I had to use a computer for some reason, it would probably save me some time and work.				
9	If I used a computer, I would get a better picture of the facts and figures.				
10	Computer improves the overall quality of life.				
11	Computers can help me to learn things more easily.				
12	If I had a computer at my disposal, I would get rid of it.				
13	Studying about computers is a waste of time.				
14	Anything that a computer can be used for, I can do just as well another way.				

IMPORTANCE (Indicator 6)

	ITEM	SD	D	A	SA
1	I can learn many things when I use a computer.				
2	I know that computers give me opportunities to learn many new things.				
3	I enjoy lessons on the computer.				
4	I believe that is very important for me to learn how to use a computer.				
5	I believe that the more often teachers use computers, the more I will enjoy school.				
6	I concentrate on a computer when I use one.				
7	I would work harder if I could use computers more often.				
8	I am sure I could work with computers.				

CONFIDENCE (Indicator 7)

	ITEM	SD	D	A	SA
1	A job using computers would be very interesting.				
2	When there is a problem with a computer run that I can't immediately solve, I would stick with it until I have the answer.				
3	The challenge of solving problems with computers does not appeal to me.				
4	I don't think I would do advanced computer work.				
5	If a problem is left unsolved in a computer class, I would continue to think about it afterward.				
6	I am sure I could learn a computer language and programming.				

RELEVANCE (Indicator 8)

	ITEM	SD	D	A	SA
1	Knowing how to use computers is a worthwhile skill.				
2	Teachers should have some understanding about computers.				
3	All teachers should have an opportunity to learn about how to use computers at the classroom.				
4	Having computer skills helps you get better jobs.				
5	Teachers should understand the role computers play in society.				
6	Learning to operate computers is like learning any new skill - the more your practice, the better you become.				
7	Learning about computers is worthwhile.				
8	I feel computers are necessary tools in both educational and work settings.				
9	I am sure that with time and practice, I will be as comfortable working with computers as I am working with a typewriter.				
10	It is important for students to learn about computers in order to be informed citizens.				

V. LEVEL OF E-LEADERSHIP CAPABILITY

Instructions: To what extent do you rate yourself in terms of each of the following statements about your e-Leadership capability? Read each statement and then check the box which best shows how you feel.

LC = Less Capable - The ability is not visible and not in practice as observed.
MC = Moderately Capable - The ability is rarely seen and practiced as observed.
C= Capable - The ability is frequently observed and often practiced.
HC = Highly Capable - The ability is always visible and always practiced as observed.

ITEM	LC	MC	C	HC
KNOW – ABILITY				
1. In my school, teachers use technology to construct, share and publish knowledge.				
2. In my school, I use technology to collaborate with peers through collecting and analyzing data relevant to the educational environment for education improvement.				
3. In my school, I use technology to actively involve parents and community members thereby creating a holistic educational experience for the teachers and students.				
4. I use technology to collaborate at building and district levels through collecting data, analyzing data, and giving reflective feedback concerning operational systems and technological resources.				
5. In my school, copyright and fair use policies are addressed and utilized for print, video, and digital resources.				
6. In my school, digital etiquette, digital foot printing, and online safety are addressed and utilized.				
MOBILIZE – ABILITY				
1. In my school, teachers and students engage in ongoing activities at a level that would be unattainable without the support of technology.				
2. In my school, teachers and students use technology to collaborate with peers and experts irrespective of time zone or physical distances.				
3. In my school, the teachers are the facilitator guiding students in self-managed learning projects with reflection for growth and improvement through technology usage.				
4. In my school, I inspire and lead the development and implementation of a school vision for comprehensive integration of technology to promote excellence in education.				
5. In my school, I encourage and support the use of technology to actively involve parents and community members in our school and district.				
6. In my school, I model and facilitate understanding of social, ethical, and legal issues of an evolving digital culture.				
7. I inspire and lead development and implementation of technology throughout my school to ensure teacher and organizational time is focused to support quality instruction and student learning.				

ITEM	LC	MC	C	HC
SUSTAIN – ABILITY				
1. In my school, technology is utilized to differentiate instruction and ensure individual needs are met in a relevant, rigorous, and engaging manner.				
2. In my school, I promote and use diverse technological resources and technologies to support teaching and learning.				
3. In my school, I model the principles of self-awareness, reflective practice, transparency, and ethical behaviors through technology usage.				
4. In my school, I provide digital age leadership and management to continuously improve our school through the effective use of information and technology resources.				
5. In my school, I promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources.				
6. In my school, I create, promote, and sustain a dynamic, digital age learning culture that provides a rigorous, relevant, and engaging education for all teachers and students.				

 # END OF QUESTIONNAIRE

Thank you for your cooperation and honest responses….