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RESEARCH ARTICLE

DETERMINANTS OF EXTENSION PRODUCTIVITY OF THE FACULTY IN STATE UNIVERSITIES AND COLLEGES IN MINDANAO, PHILIPPINES

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Abstract

Extension programs were originally conceived as a service to extend research-based knowledge to improve the lives of the rural people. The main objective of the study was to develop a structural model that draws factors leading to improved extension productivity in the State Universities and Colleges in Northern Mindanao, Philippines. This research described the socioeconomic profile of the faculty, their level of competencies, motivation, organizational climate, and productivity; and developed the best fitting structural model on extension productivity. Data were gathered from a randomly sampled faculty from the seven (7) State Universities and Colleges in Northern Mindanao Region using a pretested questionnaire analyzed using the descriptive method, Pearson Product Moment Correlation, Multiple Regression and structural equation model that best linked the competencies, motivation and organizational climate with extension productivity. Based on the findings of the study, the faculty in Northern Mindanao were dominated by middle-aged, female, married, and experienced employees with an advanced degree. They were competent and motivated faculty with relevant knowledge and skills on the technical and cultural aspects, communication, and program management within a favorable organizational climate. Overall, the faculty were moderately productive in their extension and community involvement. The best-fitting model of extension productivity was anchored on organizational climate coupled with the competencies of the faculty. Thus, a more supportive organizational climate combined with better faculty competencies will result in higher extension productivity in state universities and colleges in Northern Mindanao.

Introduction:-

Services to the community are one of the measures in the evaluation of the performance of State Universities and Colleges (SUCs) in the Philippines as mandated by the Commission on Higher Education (CHED). Consequently, extension agenda have been included in the Philippine Development Plan and the Public Higher Education Reform Agenda as determinant of the institution's productivity. Besides, extension is an integral component of the performance evaluation of the faculty in SUCs.

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The CHED defines extension as the act of communicating, persuading and helping specific sectors and target clientele to enable them to effectively improve production, community and/or institutions, and quality of life (CMO No.8, series 2008). Mojares (2015) stresses that extension is a dynamic concept as a result of tradition and policy context which is reflective of institutional goals. Extension practice goes beyond technology transfer to facilitation, training to learning, helping people form groups, deal with issues on community development, and partner with a broad range of service providers and other agencies.

The Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP), Incorporated assesses SUCs' extension and community involvement with an emphasis on societal changes and solutions to problems at the local, regional and national levels (Corpus, 2013).Moreover, Section 92 of the Republic Act 8435 - Agriculture and Fisheries Modernization Act of 1997 mandates the state colleges and universities to assist the Local Government Units in improving their effectiveness and efficiency through capability-building and complementary extension activities. This includes active partnerships with other institutions, the community served, adopters, and viable demonstration projects. Furthermore, Republic Act 7722, known as the "Higher Education Act of 1994" mandated institutions of higher learning in the Philippines to promote and enhance the extension function for societal transformation. Riedy (2013) stresses the high societal expectations of academia to contribute to sustainability science, advocacy, and education.

On the other hand, productivity may be defined as an index that measures output (goods and services) relative to the input (labor, materials, energy, etc.) to create the output (Inman, 2001).In rural development, extension programs are expected to help increase farm productivity, farm revenue, reduce poverty and minimize food insecurity (Danso-Abbeam et al., 2018). The extension productivity of the higher educational institutions highly depends on the performance of the faculty. In fact, competent extension workers ensure the success of the extension services and extension organization as well (Khalil et al., 2008). An extensionist is not simply seen as a technical innovation motivator, but goes beyond human resource development leader to help the institution in building and mobilizing resources in the community (Lopokoiyit et al., 2013). However, FAO (2009) observes the lack of career development plans and opportunities for extension workers which provide disincentive and result to inefficiency of service delivery. Similarly, extension and community involvement is one of the weak areas in the accreditation of some SUCs in the Philippines (Corpus, 2013). Thus, developing core competencies is fundamental to all extension staff. Davis and Sulaiman (2014) argue the need to develop functional and technical capacities across individuals and organizations, and enabling environment.

Moreover, extrinsic motivation can have an immediate and powerful effect on performance but will not necessarily last long (Mullins, 2005; Armstrong, 2006). According to Friday & Friday (2003), the level of motivation differs in individuals and affects productivity. Besides, the academic institution must align its role of public service with its policies and practices regarding faculty involvement. The provision of adequate services to the faculty generates an impact on their behavior to become more engage in their work assignments (Bay et al., 2014). According to Wade & Demb (2009), personal, professional, and institutional factors affect faculty involvement in outreach and engagement.

In particular, Mindanao is the biggest contributor to the Philippines total agricultural output, but the island's potentials, however, have not been translated into sustained socioeconomic growth due to the low productivity of its agricultural lands. Poverty remained high with one (1) of three (3) families still considered poor. Poverty data show that the region's poverty incidence among families is placed at 32.8 percent in 2012, dismally far from the 2017 target of 20.7 percent. The number of poor families has increased by about 7,000 families per year (NEDA, 2015). Enhancing the extension function of higher education institutions in Mindanao is viewed as a key contributor to poverty alleviation and societal transformation.

Finally, extension must consider and adjust to rapid changes and emerging challenges (ECOP, 2002). The scope of extension services has been widening, and the need to adapt to changing context is also growing. These indicate the need for multi-skilled human resources in extension services (Cochran, 2009). State Universities and Colleges must have a clear understanding of the constraints on its extension productivity in the pursuit of a better quality of life of the partner communities. Every SUC faculty is evaluated based on the quality of output and their impact in the community towards the realization of the institution's mission and vision, hence this study.

This study is anchored on the Expectancy Theory, Social Cognitive Theory, Motivator Hygiene Theory, and the Conceptual Theory on Productivity. These theories provided the concept of motivation, competencies, organizational climate, and productivity as they apply to the practice of extension in SUCs in Mindanao, Philippines. In general, the study aimed to develop a structural model of extension productivity of faculty among SUCs in Mindanao, Philippines. Specifically, it sought to describe the socioeconomic, levels of competencies, motivation, nature of the organizational climate, and level of extension productivity of SUCs' faculty. In addition, it analyzed the relationship between the faculty extension productivity and their competencies, motivation, and organizational climate.

Procedure:

This study utilized the descriptive-correlational and causal-comparative research designs to analyze quantitative data in determining the relationship of extension productivity of faculty with their competencies, motivation, and organizational climate. A causal-comparative design was used to determine if a cause-effect relationship exists between the exogenous and the endogenous variables of the study.

The study was conducted in the seven (7) state universities and colleges in Northern Mindanao owned and managed by the Philippine government. Using stratified random sampling, the study interviewed 413 faculty representing 87% of the total number of faculty in the seven (7) SUCs. The questionnaire was subjected to content validity by two (2) extension experts from a non-governmental organization and government sectors using the Delphi method through focused group discussion. With prior approval, the assessment instrument of a recognized accrediting agency in the Philippines was incorporated in the research questionnaire. The questionnaire was pilot-tested among the faculty in another state university in Southern Mindanao with a highreliability Cronbach Alpha value of 0.977. It was administered or mailed to and retrieved personally from the faculty. Secondary data from the extension unit of the SUCs through their respective Extension Directors and Coordinators were used to validate data obtained through the questionnaire.

Descriptive statistics were used to determine the level of competencies, motivation, and organizational climate and extension productivity of the faculty. Pearson Product Moment Correlation was employed to determine a significant relationship between the dependent and independent variables and the stepwise multiple regression was used in determining the variable that best predicts extension productivity. The Structural Equation Modeling (SEM) was used to test the hypothesized structural model. To evaluate the standard fit of the hypothesized model, the following indexes were computed: Chi-square/degrees of freedom (X2/df), Goodness of Fit Index (GFI), Normed Fit Index (NFI), Tucker-Lewis Index (TLI), Comparative Fix Index (CFI), and Root Mean Square Errors of Approximation (RMSEA).

The endogenous variable, extension productivity (PROD) of the faculty was measured based on three (3) components: extension workability (PRA_ABC), services to the community and extension (PRB), and community involvement (PRC_REE). Table 1 displayed the exogenous variables: competencies (COMPETE), motivation (MOTIVE), and organizational climate (ORGCLIM) that might influence the extension productivity of the faculty. The competence variables encompassed cultural (CO_CUL), technical (CO_TECH), communication (CO_COMM), program planning (CO_PLAN), program implementation (CO_IMPL) and program evaluation (CO_EVAL). The motivation (MOTIVE) variable comprised both intrinsic and extrinsic. The organizational climate comprised relationship (OC_REL), personal growth (OC_PER), and system maintenance and change (OC_SYS).

Table 1:- The code, nature and measure of the variables of the study.

Variable	Code	Nature	Measure
Competencies	COMPETE	Exogenous	Competency Questionnaire
Technical	CO_TECH		
Communication	CO_COMM		
Program Planning	CO_PLAN		
Program Implementation	CO_IMPL		
Program Evaluation	CO_EVAL		
Cultural	CO_CUL		
Motivation	MOTIVE	Exogenous	Motivation Questionnaire
Organizational Climate	ORGCLIM	Exogenous	Organizational Climate

			Questionnaire
Relationship	OC_REL		
Personal Growth	OC_PER		
System Maintenance & Change	OC_SYS		
Extension Productivity	PROD	Endogenous	Productivity Questionnaire
Extension Work Ability	PRA_ABC		
Extension & Community Involvement	PRC_REE		

Results And Discussion:-

Socioeconomic Profile of the SUC Faculty:

The SUC faculty ranged from 25-63 years old with a mean of 43 years old. Many of them were female (64%) and about 73% were married who migrated from the islands in Central Philippines. The faculty were holding assistant professors (38%) academic rank in their respective SUCs, 2-42 years of work experience with a mean of 16 years. They attained an advanced degree: masters degree (39%), doctorate degree (25%) and 21% have earned doctorate units with specialization in education (38%). Their length of extension experience ranged from 2-27 years with a mean of seven (7) years, but they have not attended any training (41%) related to extension. They carried a teaching load of 18 units, with extension projects focused on capacity development or skills training (46%).

Level of Competencies of the Faculty:

The data showed that the SUC facultyof Northern Mindanao were competent in doing extension with a grand mean score of 3.73 (Table 2). They were particularly competent in the culture, program implementation, program planning, technical, and communication. Although, they were moderately competent in program evaluation.

The findings indicated that the faculty had the ability and credibility to perform their extension function. They were culturally sensitive and technically equipped to do extension. They possessed the essential knowledge and skills to plan and implement an extension program. However, they needed to improve their competency in program evaluation.

Table 2:- Level of Competencies of the Faculty.

Indicators	Overall Mean	Qualitative Description
Cultural	4.19	Competent
Program Implementation	3.19	Competent
Program Planning	3.73	Competent
Technical	3.67	Competent
Communication	3.50	Competent
Program Evaluation	3.47	Moderately Competent
Grand Mean	3.73	Competent

Legend:

Range	Descriptive Rating	Qualitative Interpretation
4.50-5.00	Strongly Agree	Highly Competent
3.50-4.49	Agree	Competent
2.50-3.49	Moderately Agree	Moderately Competent
1.50-2.49	Slightly Disagree	Slightly Competent
1.00-1.49	Disagree	Not Competent

Level of Motivation of the Faculty:

Data revealed that the faculty were motivated in conducting extension as indicated in the overall mean of 3.68 using 18 indicators (Table 3). In particular, the faculty were motivated to contribute to community development which enriched their knowledge and skills and enabled them to perform their social responsibility. On the other hand, the faculty were moderately motivated by the monetary incentives, professional recognition and awards, and the institutional recognition for exemplary performance in extension. This means that the faculty conducted extension as a social responsibility regardless of incentives or awards. This revealed a more intrinsic than extrinsic motivation of the faculty in conducting extension.

Table 3:- Level of Motivation of the Faculty.

Indicators	Weighted Mean	Qualitative Description
1. I am able to contribute to community development through my extension work.	4.37	Motivated
2. Extension work enriches my knowledge and skills.	4.34	Motivated
3. Extension work enables me to perform my social responsibility.	4.30	Motivated
4. Extension work helps me to become well-rounded individual.	4.28	Motivated
5. Extension work contributes to my leadership development.	4.08	Motivated
6. Extension work helps me to establish linkages and friendships.	4.01	Motivated
7. I perform extension function for my professional development.	3.88	Motivated
8. Extension work provides the opportunity for advancement of my career.	3.87	Motivated
9. Extension work makes me globally competitive.	3.84	Motivated
10. Extension work establishes strong collaboration between departments.	3.83	Motivated
11. Extension work helps me to link with influential people.	3.68	Motivated
12. I am motivated to do extension work because of the opportunity to travel and meet other people.	3.56	Motivated
13. Promotion from work drives me to do my extension function.	3.30	Moderately motivated
14. Extension work gives me prestige.	3.21	Moderately motivated
15. My extension engagement helps me to be secured with my job.	3.08	Moderately motivated
16. The administration provides awards and recognition for extension exemplary performance.	2.96	Moderately motivated
17. Honorarium/incentives motivate me to do extension work.	2.91	Moderately motivated
18. I am motivated to do extension for professional recognition and awards.	2.91	Moderately motivated
Overall Mean	3.68	Motivated

Legend:

Range	Descriptive Rating	Qualitative Interpretation
4.50-5.00	Strongly Agree	Highly Motivated
3.50-4.49	Agree	Motivated
2.50-3.49	Moderately Agree	Moderately Motivated
1.50-2.49	Slightly Disagree	Slightly Motivated
1.00-1.49	Disagree	Not Motivated

Nature of Organizational Climate of the Faculty:

Data showed that the SUCs provided their faculty with a supportive working relationship, the autonomy in doing extension, and the administrative environment for the conduct of extension. This is indicated in the grand mean of 3.75 in Table 4. This demonstrated that the SUCs have established a mechanism by which the faculty could provide services to the communities. This showed further that the SUCs facilitated and promoted the involvement of the faculty in community work.

Level of theExtension Productivity of the SUC Faculty:

Results indicated that the faculty in Northern Mindanao have moderate extension productivity with a grand mean of 3.05 (Table 5). They were however, productive in extension work capacity and effort, and extension and community involvement, but slightly productive in the services to the community. This revealed that the extension projects implemented by the faculty in the communities were aligned with their expertise. While the SUCs shared their expertise with their stakeholders, the data indicated that the faculty conducted only few extension activities in the communities. This negated from the high expectations of academia to improve the human capital that will contribute to community development. This may also raise questions on the proficiency of the faculty in the delivery of extension service. Overall, the result challenges the attainment of the third mandate of SUC to improve the communities in its service area.

Table 4:- The Nature of Organizational Climate among the Faculty.

Indicators	Overall Mean	Qualitative Description
Relationship Dimension	3.82	Favorable
Personal Growth Dimension	3.76	Favorable
Systems Maintenance and Change Dimension	3.65	Favorable
Grand Mean	3.75	Favorable

Legend:

Range	Descriptive Rating	Qualitative Description
4.50-5.00	Strongly Agree	Highly Favorable
3.50-4.49	Agree	Favorable
2.50-3.49	Moderately Agree	Moderately Favorable
1.50-2.49	Slightly Disagree	Slightly Favorable
1.00-1.49	Disagree	Not Favorable

Table 5:- The Level of Extension Productivity of the Faculty.

Indicators	Overall Mean	Qualitative Description
Extension Work Capacity & Effort	3.73	Productive
Individual Effort	3.95	Productive
Individual Capacity	3.67	Productive
Task Capacity	3.57	Productive
Services to the Community	1.82	Slightly Productive
Extension Project Implemented	2.32	Slightly Productive
Involvement in Extension Training	2.39	Slightly Productive
Community Served	2.47	Slightly Productive
Extension Linkages/Partnerships Established	2.31	Slightly Productive
Information, Education and Communication Materials Developed	1.50	Slightly Productive
Extension Output Presented	1.28	Not Productive
Extension Awards Received	1.19	Not Productive
Extension Output Published	1.11	Not Productive
Extension and Community Involvement	3.60	Productive
Relevance	3.90	Productive
Management	3.53	Productive
Availability of Resources	3.38	Moderately Productive
Grand Mean	3.05	Moderately Productive

Legend:

Range	Descriptive Rating	Qualitative Description
4.50-5.00	Strongly Agree	Highly Productive
3.50-4.49	Agree	Productive
2.50-3.49	Moderately Agree	Moderately Productive
1.50-2.49	Slightly Disagree	Slightly Productive
1.00-1.49	Disagree	Not Productive

Correlation and Regression Analyses Between the Faculty Competencies, Motivation and Organizational Climate, and Extension Productivity

In competencies, the results showed that technical (r= .531; p<.01), communication (r=.560; p<.01), program planning (r=.577; p<.01), program implementation (r=.621; p<.01), program evaluation (r= .566; p<.01), and cultural competencies (r=.457; p<.01) were significantly associated with the faculty extension productivity. It implied that the faculty should be competent in program planning, program implementation, and culture to increase extension productivity of SUCs. The positive correlation coefficients indicated that the higher the level of competency, the more productive the faculty in doing extension.

The faculty motivation showed significant association (p<.01) with extension productivity (r=.576). This implied that motivations could enhance extension involvement of the faculty. In particular, the results demonstrated the need of providing both extrinsic and intrinsic motivation to increase extension engagementof the faculty in SUCs.

In organizational climate, the system maintenance and change dimension (r= .590; p<.01), relationship dimension (r=.581; p<.01), and personal growth dimension (r= .556; p<.01) showed significant association with extension productivity of the faculty. This implied that a favorable system, relationship, and personal growth could improve SUCs' extension productivity. The provision of an enabling work environment, therefore, is essential for achieving high level of extension productivity in SUCs.

Thus, the null hypothesis which stated that "there is no significant relationship between faculty extension productivity and competencies, motivation and organizational climate" was rejected.

Table 6:- Correlation between Faculty Competencies, Motivation and Organizational Climate, and Extension Productivity.

Indicators	Correlation Coefficient	Probability
Competencies	.658	.000*
Technical	.531	.000*
Communication	.560	.000*
Program Planning	.577	.000*
Program Implementation	.621	.000*
Program Evaluation	.566	.000*
Cultural	.457	.000*
Motivation	.576	.000*
Organizational Climate	.629	.000*
Relationship Dimension	.581	.000*
Personal Growth Dimension	.556	.000*
System Maintenance and Change Dimension	.590	.000*

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

For the regression results, six (6) of the 10 variables were found to be the significant predictors of extension productivity of the SUC faculty in Northern Mindanao (Table 7).The faculty extension productivity was affected by factor variables namely: system maintenance and change (β = .179), program evaluation competency (β= .176), program implementation competency (β = .163), motivation (β = .158), personal growth dimension (β = .158) and program planning (β = .113). Thus, the null hypothesis which stated that there were no variables, singly or in combination best predict extension productivity was rejected.

From the foregoing analysis, the equation useful in predicting the extension productivity (Y1) as indicated by the F-value (83.642) significant at p<.01 level is illustrated below:

$Y^1 = 1.00 + 0.092\ X_1 + 0.084X_2 + 0.088\ X_3 + 0.084\ X_4 + 0.080\ X_5 + 0.054\ X_6$

Where: 1.000 is constant

Y^1 = Extension Productivity
X_1 = System Maintenance and Change
X_2 = Program Evaluation Competency
X_3 = Program Implementation Competency
X_4 = Motivation
X_5 = Personal Growth Dimension
X_6 = Program Planning Competency

Table 7:- Regression Analysis on the Extension Productivity of SUC Faculty in Northern Mindanao.

Indicators	Unstandardized Coefficients		Standard Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	1.000	.082		12.220	.000
Competencies					

Program Planning	.054	.027	.113	2.037	.042
Program Implementation	.088	.031	.163	2.831	.005
Program Evaluation	.084	.023	.176	3.603	.000
Motivation	.084	.024	.162	3.557	.000
Organizational Climate					
System Maintenance & Change	.092	.027	.179	3.396	.001
Personal Growth Dimension	.080	.025	.158	3.232	.001
R= .743	R^2= .553	F = 83.642	P- Value = 0.000		

Based on the beta weights (β), each additional score/unit accounted for by the six (6) measured variables would imply an increase of extension productivity holding other variables constant. The R2 of 55.3% denotes that the variance in the extension productivity could be explained by the system maintenance and change, program implementation competency, motivation, communication competency, relationship dimension, program evaluation competency and personal growth of the SUC faculty. On the other hand, 44.7% of the variance can be attributed to the other factor variables outside of the regression model.

Finally, the Model below showed the best fit model with a clear direct causal relationship of competencies and organizational climate with extension productivity. It has indices that consistently showed a very good fit for the data as indicated by CMIN/DF = 1.611, p-value=.088; RMSEA = .038, pclose= .687 and all indices such as NFI (.993), TLI (.993), CFI(.997) and GFI (.989) all greater than 0.95. All of these data fall within each criterion.

Legend:

COMPETE – Competencies
CO_COMM – Communication Competency
CO_PLAN – Program Planning Competency
CO_IMPL – Program Implementation Competency
CO_EVAL – Program Evaluation Competency
PROD – Productivity
ORGCLIM – Organizational Climate
OC_REL – Relationship Dimension
OC_PER – Personal Growth Dimension
OC_SYS – System Maintenance and Change

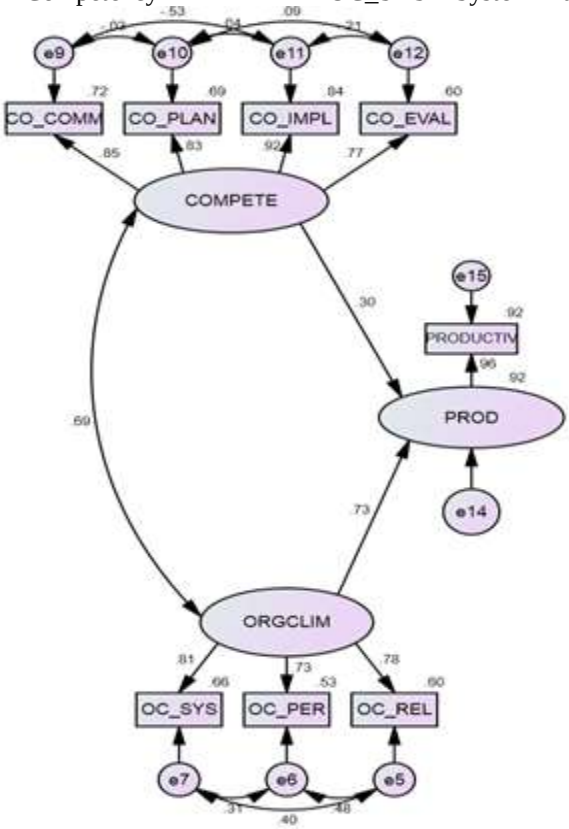

Figure 1:- Structural Model of Faculty Extension Productivity in State Universities and Colleges in Northern Mindanao.

Factors Influencing the Extension Productivity of SUC Faculty:

System maintenance and change dimension of the organizational climate were found to be the greatest predictors of extension productivity. The result implied that the institution's procedures and policies related to extension were important thus, influencedtheir extension productivity. A high level of extension productivity requires a supportive work environment where leaders have explicit extension expectations. Fitzgerald et. al. (2012) stress that institutions must fully address issues related to structure, budget, and operation to incorporate community engagement into all aspects of the institutional mission. For Roelofsen (2002), one of the fundamental human requirements is a working environment that allows people to perform their work optimally under comfortable conditions.

The second and third predictors of extension productivity were competency variables on program evaluation competency and program implementation competency. The result implied that knowledge and skills on the process and outcomes of extension programs were necessary for extension productivity. This result supported the findings of Stone and Coppernoll (2004) that the core competencies of extension professionals are vital to succeed in their jobs. Similarly, Zwane (2014) observes that the mastery of specialized knowledge and professionalism are crucial to the effective delivery of extension services. In addition, community engagement requires human resources with competencies on demand-driven, decentralized, pluralistic, and participatory extension systems (Cochran, 2009; Suvedi and Kaplowitz, 2016).

The fourth predictor of extension productivity was the motivation. The result indicated that extension productivity was affected by the drive of the faculty towards attaining more and higher outputs. This could mean that the level of motivation among the workforce determines high extension productivity. Boxall and Macky (2009) state that a high-involvement goal implied making better use of employee capacities for self-management, personal development, and problem-solving.Moreover, Kinsey (2020) and Talloires Network (2005) agree that faculty incentives and pay are important forms of rewards in driving civic engagement. Thus, highly engaged institutions must encourage and reward faculty members' engagement in research and community-focused instruction (Stanton, 2007) to increase productivity .

Conclusions:-

Faculty of State Universities and Colleges in Northern Mindanao were dominated by middle-aged, female, married, experienced assistant professors with advanced doctorate units whose extension project focused on capability development. They have relevant knowledge and skills on the technical, cultural, communication, and extension program management and administration. To them, extension work was both a social responsibility and commitment towards community development. The faculty were accorded the autonomy, supportive working relationship, and administrative environment by their institutions to engage in extension work. They demonstrated moderate level of productivity in their community engagement function.

The extension productivity of the faculty was significantly associated with and influenced by their competencies, organizational climate, and work motivation. Thus, a unit increase in the level of faculty competency, institutional environment, and motivation would result in a corresponding increase in the extension productivity of the SUC faculty. The system maintenance and change, and personal growth dimensions of the organizational climate; program planning, evaluation and implementation competencies; and work motivation were the strong predictors of the extension productivity in SUCs.

The best model for extension productivity anchored on strong evidence of faculty competencies and supportive organizational climate in the State Universities and Colleges in Northern Mindanao, Philippines.

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