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E-Campus Technology Strategy and Performance for Innovative Resource Management of Arellano University

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Abstract - The study determined the relationship of e-campus technology strategy such as process automation, cloud computing, on-line promotion, and greening information technology and e-campus technology performance of Arellano University (AU). The paper studies the role of technology applications and a university's technology strategy on the effectiveness and efficiency of e-campus technology. Moreover, the research output is to propose e-campus technology for innovative resource management based on the analysis of e-campus technology strategy and performance of AU. The concept involves management of organizational resources for effective and efficient e-campus technology performance. The study used descriptive research design and employed the five (5) branches of AU as respondents. The groups of respondents consist of graduating IT students, IT professors, and IT staff with 161 sample size of the study. The research used descriptive statistics in analyzing e-campus technology strategy and performance. Moreover, inferential statistics such as t-test was used to determine significant relationship between e-campus technology strategy and performance. The result reveals that process automation strategy is statistically significant to e-campus performance and other strategies are not. Thus, it is apt to recommend the proposed e-campus technology for innovative resource management of AU to acquire, develop, maintain, and utilize e-campus strategy for effective and efficient e-campus technology performance.

Keywords - e-Campus Technology, e-Campus Technology Strategy, e-Campus Technology Performance, e-Campus Innovative Resource Management

I. INTRODUCTION

The e-Campus Technology strategy is an application of multistream management of Information Technology used by the educational institutions to produce competitive graduates and provide quality services to its clientele. The emphasis of multistream management is on multiple forms of well-being for multiple stakeholders [1]. The e-campus technology applications in the study consist of information systems, web services, learning software, system security, digital media, computer laboratory, hardware brand name, technology gadgets, internet connection, hardware processor, and software technology. The independent variables of the study include the e-campus technology strategies such as process automation, cloud computing, on-line promotions, and greening IT. However, in order to utilize e-campus technology and enhance the quality of overall university education, it is therefore important to determine the e-campus technology performance. The e-campus technology performance is measured in terms of effectiveness and efficiency as the dependent variable of the study. The e-campus technology effectiveness and efficiency is rooted to the e-campus technology resource management to attain organizational goals and objectives. The rationale of this study is to promote Arellano University campuses climate receptive to new technologies, progress the efficiency and effectiveness of e-campus technology to students, faculty, and staff. This research is aligned to the Arellano University Vision-Mission in order to attain the University goals and objectives.

The study provides information on the most frequently used e-campus technology and the analysis of e-campus technology strategy for Arellano University. The output of the study may also be used as a valuable tool in enhancing the e-campus technology strategy and performance for innovative resource management of higher education institutions. The topic is a trend in an education industry and it is important for the future. The study will also help the school/university board of directors, school administrators, IT director/head, dean/ program chair of IT, IT faculty, IT students, researchers, and the stake holders as a whole to make their decisions that fits best in the field of information technology that will make educational institutions profitable and produce globally competitive IT graduates.

A. Conceptual Framework

According to Asgarkhani (2005) [2], the most of the shortcomings (as they concern the effectiveness of e-Service) can be resolved by improving the technology infrastructure and access to e-Technologies. Technology usually enhances communication between faculty and students. It provides students with educational experiences which they could not otherwise experience. The information and communication technologies are tools for manipulating ideas and images and for communicating effectively with other people. These are precisely the functions performed by higher education [3].

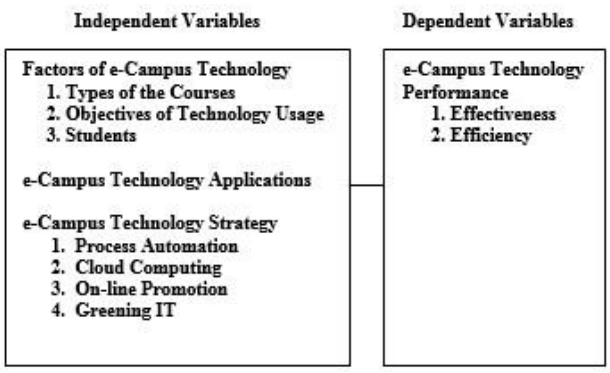

Fig 1. The Research Paradigm Showing the Relationship Of E-Campus Technology Strategy and Peformance

However, the research paradigm showing the relationship model between the e-campus technology strategy and performance for innovative resource management of Arellano University. The available e-campus technology applications and e-campus technology strategies (process automation, cloud computing, on-line promotion, and greening information technology) are considered independent variables of the study. While the e-campus technology performance determined dependent variables of the study measured in terms of effectiveness and efficiency. Moreover, factors that affect the effectiveness and efficiency is considered in the model based on type of the courses, objectives of technology usage, and students themselves too. The research is a trend in an education industry, has potential to improve performance of technology usage in an education environment, and it is important for the future. Thus, the output of the study could be a valuable tool for higher education institutions to progress e-campus technology strategy and performance to make the schools and their students competitive in the business world.

The following are the variables and key terms operationally defined in the context of the study:

Cloud Computing. It refers to cloud-based services to meet the broad need of the university on quality storage and virtual servers available over the internet.

e-Campus Technology Applications. It refers to IT applications on information system, web services, e-learning software, IT system security, digital media, computer laboratory, IT hardware brand name, technology gadgets, internet connection, IT hardware processor, and software technology.

e-Campus Technology Performance. It refers to evaluation of e-campus technology in terms effectiveness and efficiency e-Campus Technology Strategy. It refers to the strategy on process automation, cloud computing, on-line promotion, and greening information technology.

Effectiveness. It refers to performance management in doing the right things on e-campus internal competencies, resources and time behavior. It entails promptly achieving a stated organizational objective.

Efficiency. It refers to performance management in doing things right on e-campus internal competencies, resources and time behavior. It entails balancing the amount of resources used to achieve an objective against what was actually accomplished.

Greening Information Technology. It refers to IT strategy on sustaining and preserving our environment and addressing issues related to global ecosystem.

Innovative Resource Management. It refers to management of organizational resources such as man, money, materials, machinery, market, and methods.

On-Line Promotion. It refers to IT strategy in the use of online advertising of the university.

Process Automation. It refers to IT strategy in delivering service quality of e-campus technology applications.

B.Statement of the Problem

This study aims to determine the e-campus technology strategy and performance for innovative resource management of Arellano University.

Specifically, the study sought to answer the following questions:

1. What are the available e-campus technology applications of Arellano University?
2. What are the e-campus technology strategies of Arellano University in terms of:
   a. Process Automation
   b.Cloud Computing
   c. On-line Promotion
   d. Greening IT
3. What is the e-campus technology performance of Arellano University in terms of:
   a. effectiveness
   b. efficiency
4. Is there a significant relationship between the e-campus technology performance and the following e-campus technology strategy of Arellano University;
   a. Process Automation
   b. Cloud Computing
   c. On-line Promotion
   d. Greening Information Technology
5. What e-campus technology innovative resource management can be proposed to Arellano University?

C. Hypothesis

There is no significant relationship between e-campus technology strategy (Process Automation, Cloud Computing, On-line Promotion, and Greening Information Technology) and e-campus technology performance (effectiveness and efficiency) of Arellano University.

D. Scope and Limitations of the Study

The study is limited on the following independent variables for e-campus technology: available e-campus technology applications and e-campus technology strategy measured in terms of process automation, cloud computing, on-line promotion, and greening information technology. And the dependent variable of the study is limited to e-campus technology performance in terms of effectiveness and efficiency.

There are five (5) branches of Arellano University with computer/IT courses included in the study such as AU-Legarda, AU-Malabon, AU-Mandaluyong, AU-Pasay, and AU-Pasig. The respondents comprise of IT staff/head, IT/computer faculty, and 4th year IT/computer students which consist of one hundred sixty-one (161) sample size of the study. The study conducted from January 2015 to October 2015.

E. Review of Related Literature and Studies

As often happens in organizations, recognition of a need precedes the ability to put it into place. IT leaders are now making significant strides in articulating IT strategy and linking it more effectively with business strategy. Deciding how to make the trade-offs between the different types of IT work is the essence of effective strategy. Unfortunately, few businesses do this very well [4].

Moreover, effective strategy development is becoming vital for today's organizations. As the impact of IT has grown in organizations, IT strategy is finally getting the attention it deserves in business. Nevertheless, most

organizations are still in the very early stages of learning how to develop an effective IT strategy and synchronize it with an overall business strategy. Getting the balance right between the many different ways IT can be used to affect a business is a constant challenge for today's leaders. While there is, as yet, no well-developed IT strategy development process, there appears to be general agreement on certain critical success factors and the key elements involved. Over time, these will likely be refined and better-integrated with overall business strategy development. Those who learn to do this well without locking the enterprise into inflexible technical solutions are likely to win big in today's rapidly-evolving business environment [5].

Furthermore, Yazdani, B.O., Kord,B., & Taroghi, M. (2011) [6]. explain that as the effective utilization of information technology (IT) becomes recognized as a core competency, benchmarking is increasingly important to chief information officers (CIOs) to react successfully to the moves of competitors, CIOs need to know how effective these competitors are in implementing IT–enabled process changes or new internet–enabled business models.

Organizations spend enormous sum of money on IT to compete in today's fast-paced business environment. Some organizations spend up to 50 percent of their total expenditures on IT. To justify these expenditures, an organization must measure the payoff of these investments, their impact on business performance, and the overall business value gained. Efficiency and effectiveness metrics are two primary types of IT metrics. Efficiency IT metrics measure the performance management of the IT system itself such as throughput, speed, and availability. Effectiveness IT metrics measure the impact IT has on business process and activities including customer satisfaction, conversion rates, and sell-through increases. Peter Drucker offers a helpful distinction between efficiency and effectiveness. Drucker states that managers "Do things right" and/or "Do the right things." Doing things right addresses efficiency—getting the most from each resource. Doing the right things addresses effectiveness—setting the right goals and objectives and ensuring they are accomplished. Efficiency focuses on the extent to which an organization is using its resources in an optimal way, while effectiveness focuses on how well an organization is achieving its goals and objectives. The two-efficiency and effectiveness- are definitely interrelated. However, success in one area does not necessarily imply success in the other [7].

New developments in information technologies are radically transforming process automation. Today's automation systems already have footprints that extend into cyberspace beyond the control system per se and into physical space beyond the plant perimeter (e.g., wireless signals). A sophisticated, multifaceted approach is recommended, and will, with appropriate extensions, be essential as economics and performance considerations drive us toward even more open and globally connected architectures [8]. Cloud computing utilities are delivered to users in a number of ways. They can be private, public, community based, or a hybrid of the three. The private cloud remains on the inside of the organization while the public cloud is made available to the general public [9]. Along with the National Institute of Standards and Technology (NIST), cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction [9].

According to Roberts, ML (2011) [10], the advent of the internet has altered the business landscape with astounding speed and power. In that changed terrain, the role of marketing has also undergone dramatic upheaval. Customers, both consumer and business, have access to voluminous amounts of information and many competitive offerings. Their expectations in terms of both product quality and customer services are high. The number of choices available to customers is very great, as is their ability to acquire information and change suppliers. Marketers must meet ever-increasing expectations, master a new medium, and drive costs down in order to offer competitive prices—all at the same time. Marketers engage in a variety of activities to accomplish their goals. These fall into the basic categories of customer acquisition, conversion, retention, and building customer value.

Electronic Commerce encompasses all electronically conducted business activities, operations, and transaction processing. With the development of electronic commerce in the Internet, companies have changed the way they connect to and deal with their customers and partners. Businesses now could overcome the space and time barriers and are capable of serving customers electronically and intelligently. In the promotion patterns model, by segmenting the market, customer behaviors of three categories can be analyzed by utilizing data mining techniques and statistical analysis to generate personalized candidate promotion products. Finally, multiple evaluation indicators are used and adjusted to rank and obtain the final personalized promotion products. With the promotion products based on customers' past frequent purchase patterns, it has the potential to increase the success rate of promotion, customer satisfaction, and loyalty. In this paper, a prototype system was developed to illustrate how the proposed on-line personalized promotion decision support system works in electronic commerce and a simplified case of performance analysis was conducted for evaluation [11].

An understanding of basic environmental problems and technological solutions, such those detailed in Greening through IT, should be part of the acumen of any policymaker. The magnitude of the problems faced coupled with one's seeming inability to improve the situation can induce helplessness [12].

According to Velte, T, Velte, A.,& Elsenpeter, R.C. (2009) [13], green IT explains how to adopt a business-driven green initiative and provides a detailed implementation plan. You will find strategies for reducing power needs, procuring energy from alternative sources, utilizing virtualization technologies, and managing sustainable development. Keep your IT department and your organization in the green--both environmentally and financially--with help from this comprehensive guide: work within current global initiatives and standards for

e-waste; minimize power usage and use alternative cooling methods in your datacenter; transition your office into a paperless environment; equip your organization with green hardware; implement efficient datacenter design in terms of energy consumption, cooling, server configuration, consolidation, cabling, redundancy, and more; virtualized servers and storage using the latest technologies from VMware, Microsoft, Compellent, Incipient, and others; measure existing datacenter efficiency using current metrics, and track progress with Business Intelligence tools; Establish a green supply chain; explore the Software as a Service (SaaS) model, and manage ongoing compliance and sustainable growth.

The literature and studies cited have greatly enhanced the conceptualization of the study. Likewise, the literature enabled the researcher to realize that e-campus technology has high impact in education and industry. The studies noted the insights that management of e-campus technology applications and strategies used by the educational institution produces competitive graduates and provide quality services to its clientele.

II. METHODOLOGY

The study was answered through descriptive research design as the paper describes the present factual condition on the e-campus technology strategy and performance for innovative resource management of Arellano University. The five branches of Arellano University except the Law School were included in the study that offered information technology education (ITE) programs. The research used Slovin's formula to compute sample size of the study, which consists of one hundred sixty-one (161) respondents and distributed accordingly to 129 respondents for 4th-year computer/IT students, 24 respondents for IT faculty, and 8 respondents for IT administrator/staff.

The study employed non-probability purposive sampling in the selection of the respondents who are considered to be the most knowledgeable to give the needed information in IT field of expertise. In the distribution of questionnaires, the study used non-probability convenience sampling techniques. This means that questionnaires were distributed to the available respondents for an ease of data gathering. The research used a self-made questionnaire to elicit answer to specific problems of the study. The survey questionnaire is composed of five parts. Part one includes the category of respondents, part two consists of available e-campus technology applications, part three pertains to analysis of e-campus technology strategy, and part four comprises the analysis of e-campus technology performance of Arellano University.

In order to establish the content validity of the instruments, a draft of questionnaire was constructed and floated to three information technology managers and seven computer/IT professors from the different Arellano University branches. Comments and suggestions were considered for further improvement before the instrument was actually distributed to the respondents. The research questionnaires were distributed to the respondents and made follow-up to retrieve the filled-up survey questionnaires. Also, through personal visitations from the different respondent's branches, the distribution and the retrieval of questionnaires were done for consolidation and interpretation.

The statistical results for descriptive and inferential statistics were computed for data analysis. The data gathered from the respondents were recorded, classified, tabulated, presented, analyzed, and interpreted. Descriptive statistics used weighted mean, frequency counts and percentage in analyzing the e-campus technology strategy and e-campus technology performance of Arellano University. However, inferential statistics such as t- test was used to determine the significant effect among variables of the study.

III. RESULTS AND DISCUSSIONS

The presentation of data is organized following the sequence of stated of the problems:

Group of Respondents

Majority of the respondents are 4th year computer/IT students consisting of 106 out of 161 respondents or about 66 percent. There are 40 computer/IT faculty respondents or about 25 percent, and 15 IT staff/head or about 9 percent. They are all knowledgeable in e-campus technology applications of the five branches in Arellano University.

1. Available e-Campus System Applications

The study resulted to multiple responses of the respondents in identifying available e-campus technology of Arellano University. And the following are the most commonly used available e-campus technology applications as rated by the respondents:

a. Information System: enrolment system, student grading system
b. Web Services: e-groups/facebook, school website, e-mail
c. Learning Software: SAP accounting software, e-books (i-ready, diagnostic exam for Nursing), folio software
d. System Security: anti-virus software
e. Digital Media: digital graphics animation , digital photography, and digital music and audio production,
f. Computer Laboratory: local area network (LAN), wireless network, stand alone
g. Hardware Brand Name: HP, Apple Macintosh, Lenovo, ASUS, IBM
h. Technology Gadgets: desktop, flat screen, LCD projector
i. Internet Connection: WIFI, cable internet, DSL
j. Hardware Processor: dual core, core 2 duo
k. Software Technology: windows XP, iMAX OS X, windows 7, Open office, Unix, Windows/excel etc., adobe premiere, Microsoft office 2010, C,C++,C#, JCreator, My SQL

2. Analysis of e-Campus Technology Strategies

The e-campus technology strategies are measured in terms of process automation, cloud computing, on-line promotion, and greening IT. The e-campus technology strategies are rated using a five point scale, one being the lowest and five the highest. Such category uses "always", "often", "occasionally", "seldom", and "never" labels.

TABLE I.
SUMMARY OF E-CAMPUS TECHNOLOGY STRATEGY

Description	N	Mean	Interpretation	Rank
Process Automation	161	2.91	Occasionally	3
Cloud Computing	161	2.79	Occasionally	4
On-Line Promotion	161	3.08	Occasionally	2
Greening IT	161	3.09	Occasionally	1
e-Campus Technology Strategies (Mean)	161	2.97	Occasionally	

Table 1 affirms the summary results of e-campus technology strategy rated by the respondents as "occasionally" with an average mean score of 2.97. The analysis of e-campus technology strategy reveals the highest to lowest results as follows: ranked first is greening information technology (3.09/occasionally), followed by on-line promotion (3.08/occasionally), process automation (2.91/occasionally), and cloud computing (2.79/occasionally).

In process automation strategy, respondents rated high on delivering consistent service quality of e-campus technology applications. However, respondents rated low on implementing software that automates IT processes to ensure that IT system run smoothly, maximizing the use of software applications to meet increasing service demand, and resolving systematic e-campus operational issues that repeatedly cause unplanned downtime.

In cloud computing strategy, respondents rated high on providing the best possible e-campus services and extending IT existing capabilities. However, respondents rated low on ensuring the quality cloud-based services performance with varying degrees of security or compliance, and creating an exceptional cloud services to meet the broad needs of the university.

In on-line promotion strategy, respondents rated high on the flexibility and better delivery of marketing messages to attract customers, and securing confidentiality of information, privacy and anonymity of users . However, respondents rated low on the dynamic use and wide reach of online promotion of services over the internet, and the well execution of the plan for on-line promotions for specific and target audience.

In greening IT strategy, respondents rated high on consuming the precise amount of energy through minimizing electricity consumption. However, respondents rated low on improving waste management program on electronic waste, and enhancing stakeholders the value of greening information technology.

3. Analysis of e-Campus Technology Performance

The e-campus technology performance is measured in terms of effectiveness and efficiency. The e-campus technology performance are rated using a five point scale, one being the lowest and five the highest. Such category uses "exceptional performance", "very satisfactory performance", "adequate performance", "improvement needed", and "unsatisfactory performance" labels.

TABLE II.
SUMMARY OF E-CAMPUS TECHNOLOGY PERFORMANCE

Description	N	Mean	Interpretation	Rank
Effectiveness	161	2.90	Adequate Performance	2
Efficiency	161	2.82	Adequate Performance	1
e-Campus Technology Performance (Mean)	161	2.86	Adequate Performance	

Table 2 confirms the summary results of e-campus technology performance rated by the respondents as "adequate performance" with an average means score of 2.86. The analysis of e-campus technology performance reveals the highest, which is effectiveness rated as adequate performance with a mean score of 2.90, followed by efficiency rated as adequate performance with a mean score of 2.82.

In effectiveness of the e-campus technology performance, respondents rated high on effective delivery of e-campus technology services, and involvement of academic community in decision-making to solve IT problems. However, respondents rated low on conducting computer audit for accuracy of data vis-a- vis manual report, improving the level of users' satisfaction, development of e-campus technology strategy, and management support on IT development cost thru allocation of IT budget.

In efficiency of the e-campus technology performance, respondents rated high on reducing resource use and energy consumption, and providing smart control system in utilizing e-campus technology. However, respondents rated low on increasing e-campus technology operational efficiency, providing access to information concerning services and the democratic process, introducing workflow management system to increase process efficiency, and delivering consistent e-campus quality services.

4. Relationship Between e-campus technology Strategy and Performance

a. Process Automation Strategy and e-Campus Technology Performance

The computed value of 3.792 is greater than the critical value of 3.182 at 0.05 level of significant. Hence, the alternative hypothesis was accepted. This shows that there is significant relationship in the process automation strategy and e-campus technology performance in the five branches of Arellano University. This means that an increase in process automation strategy improves e-campus technology performance. Any positive change and

increase in the process automation strategy is positively related to e-campus technology performance in the Arellano University.

b. Cloud Computing Strategy and e-Campus Technology Performance

The significant relationship was not found between cloud computing strategy and e-campus technology performance since the computed t of 0.076 is less than the critical value of 3.182 at 0.05 level of significant. Thus, the decision was to accept the null hypothesis. This no relationship might be attributed to the observation that the e-campus technology strategy on cloud computing per branch may not be fully utilized in the Arellano University.

c. On-Line Promotion Strategy and e-Campus Technology Performance

Since the computed t of 1.146 is less than the critical value of 3.182. Thus, null hypothesis was accepted. This means there is no significant relationship between on-line promotion strategy and e-campus technology performance. This no relationship might be attributed to the observation that the e-campus technology strategy on on-line promotion per branch may not be effectively employed in the Arellano University.

d. Greening IT and e-Campus Technology Performance

The computed t of 0.010 is less than the critical value of 3.182 at 0.05 level of significant. Therefore, the null hypothesis was accepted. This means that there is no significant relationship between greening information technology strategy and e-campus technology performance. This no relationship might be attributed to the observation that the e-campus technology strategy on greening information technology per branch may not be properly integrated in the Arellano University.

5.Proposed e-campus technology Strategy and Performance for Innovative Resource Management

The proposed innovative e-campus technology resource management discusses ways on managing organizational resources to achieve organizational goals of the business. Accordingly, the ultimate goal of business is to maximize profit and reduce cost. That means managers' performance should be effective and efficient. Organizational resources include man (human resources management), money (financial management), machinery (technology management), market (marketing management), material (purchasing/supply chain management), method (strategic management), and other resources (risks, stress, change management, etc.). These organizational resources should be properly managed for revitalize e-campus technology operations. However, the organizational resource management is limited only to e-campus technology functions. Such e-campus technology functions include development of strategic IT plan, maximize the IT investment, manage the IT workforce, conduct IT risk assessment, maintain a high-quality systems development process, and others.

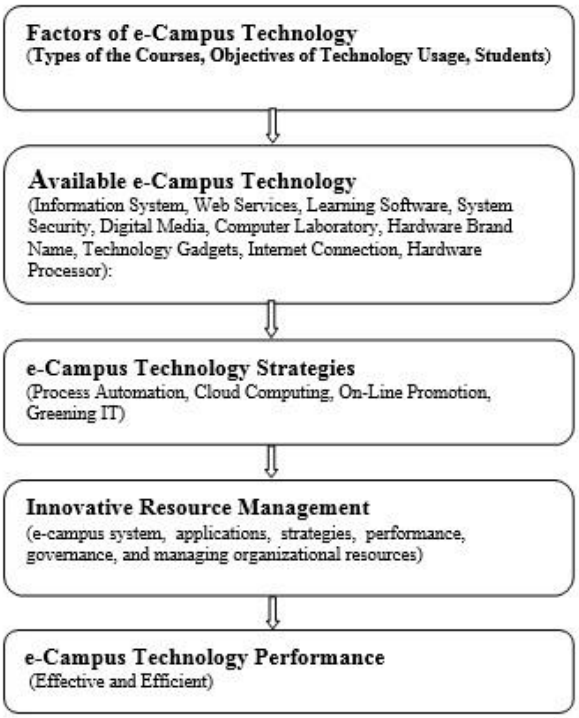

Fig 2. Proposed E-Campus E-Campus Technology Strategy and Peformance for Innovative Resourch Management

In addition, e-campus technology strategies under investigations include process automation, cloud computing, on-line promotion, and greening IT. And these strategies are linked to organizational resources and the outcomes are possible ways on managing information technology. This research is aligned to the Arellano University Vision *(A model institution of learning where relevant knowledge is acquired and skills are developed in response to the needs of global community)* & mission *(to provide equitable access to learning through relevant, innovative, industry sensitive-environment conscious academic programs and services)* in order to attain the University goals and objectives. The rationale of this study is to promote Arellano University campuses climate receptive to new technologies, progress the efficiency and effectiveness of e-campus technology to students, faculty, and staff.

TABLE III.
PROPOSED E-CAMPUS TECHNOLOGY
INNOVATIVE RESOURCE MANAGEMENT

e-Campus Technology Innovative Resource Management	Flow/Matrix
1. E-campus System	Proposed E-campus Technology Main System Flow
2. E-campus Technology Applications	Available Technology Applications
3. E-campus Technology Strategies	3.1 Process Automation - Collaborative Systems (Knowledge management, Content Management, Decision Support Systems) - Enterprise Resource Planning 3.2 Cloud Computing - Business Process as a Service (BPaaS) - Software as a Service (SaaS) - Platform as a Service (PaaS) - Infrastructure as a Service(Iaas) 3.3 On-Line Promotion - Internet Web Marketing Strategies - Success Factors, Efficient, Services, Development Process of website and Internet of Things (IoT) - Proposed AU Website Content - Campaign management systems - Contact Management systems - Opportunity Management systems 3.4 Greening IT - Green Data Technologies - Eco-friendly data center with proper recycling habits - Customizing innovative power cooling with no impact on Environment Cutting energy costs
4. E-Campus Technology Governance	4.1 Managing (E-campus Technology Guidelines) 4.2 Policy (Important Policy Areas for E-campus Technology function) 4.3 Audit/Control (Controlling/ Continuing function)
5. E-campus Technology Performance	5.1 Effectiveness - Usability(Technology Usage) - Customer Satisfaction (Students) - Conversion Rates - Financial 5.2 Efficiency - Throughput - Transaction Speed - System Availability - Information Accuracy - Web Traffi - Response Time
6. E-campus Technology for Managing Organizational Resources	(Organizational Resources: Man, Money, Machinery, Materials, Market, Methods)

The ultimate goal of business organization is to maximize profit and reduce costs that the performance of a manager should be effective and efficient to achieve its goal. And the manager should know how to manage resources. In business organizational resources it includes man, money, materials, machineries, market, methods and other resources. The management usually innovate organizational resources through acquiring, developing, maintaining, utilizing resources for organizations competitiveness.Thus, table 3 illustrates the proposed e-campus technology for innovative resource management.

IV. CONCLUSIONS

Based on the findings of the study, the following conclusions are drawn:

1. The most commonly used available e-campus system applications are as follows: enrolment system, student grading system, e-groups/facebook, SAP accounting software, folio software; anti-virus software, digital graphics animation , local area network (LAN), wireless network, stand alone, Apple Macintosh, desktop, flat screen, LCD projector, WIFI, dual core, windows XP, iMAX OS, Open office, Unix, Windows, C,C++,C#, My SQL.

2. The summary of e-campus technology strategy reveals the highest to lowest results as follows: ranked first is greening information technology, followed by on-line promotion, process automation, and cloud computing. Moreover, in process automation strategy, respondents rated high on delivering consistent service quality of e-campus technology applications. However, respondents rated low on implementing software that automates IT processes to ensure that IT system run smoothly, maximizing the use of software applications to meet increasing service demand, and resolving systematic e-campus operational issues that repeatedly cause unplanned downtime. While in cloud computingstrategy, respondents rated high on providing the best possible e-campus services and extending IT existing capabilities. However, respondents rated low on ensuring the quality cloud-based services performance with varying degrees of security or compliance, and creating an exceptional cloud services to meet the broad needs of the university. Whereas, in on-line promotion strategy, respondents rated high on the flexibility and better delivery of marketing messages to attract customers, and securing confidentiality of information, privacy and anonymity of users . However, respondents rated low on the dynamic use and wide reach of online promotion of services over the internet, and the well execution of the plan for on-line promotions for specific and target audience. And in greening IT strategy, respondents rated high on consuming the precise amount of energy through minimizing electricity consumption. However, respondents rated low on improving waste management program on electronic waste, and enhancing

stakeholders the value of greening information technology.

3. The summary results of e-campus technology performance got an adequate performance with which effectiveness as the highest followed by efficiency. Moreover, in effectiveness of the e-campus technology performance, respondents rated high on effective delivery of e-campus technology services, and involvement of academic community in decision-making to solve IT problems. However, respondents rated low on conducting computer audit for accuracy of data vis-a- vis manual report, improving the level of users' satisfaction, development of e-campus technology strategy, and management support on IT development cost thru allocation of IT budget. Whereas, in efficiency of the e-campus technology performance, respondents rated high on reducing resource use and energy consumption, and providing smart control system in utilizing e-campus technology. However, respondents rated low on increasing e-campus technology operational efficiency, providing access to information concerning services and the democratic process, introducing workflow management system to increase process efficiency, and delivering consistent e-campus quality services.

4. Among the e-campus technology strategy, only the process automation reveals that there is statistically significant relationship to e-campus technology performance with at least 95% confidence level. This means that an increase in process automation strategy improves e-campus technology performance. Any positive change and increase in the process automation strategy is positively related to e-campus technology performance in the Arellano University. However, e-campus technology strategy such as cloud computing, on-line promotion, and greening IT, the significant relationship were not found between e-campus technology performances at 0.05 level of significant. These no relationship might be attributed to the observation that the e-campus technology strategy should be fully utilized in the University.

5. The study highlighted the role of technology applications and a university's strategy on the effectiveness and efficiency of e-campus technology. Also, the proposal model for innovative resource management through acquiring, developing, maintaining, utilizing resources for organizations competitiveness.

V. RECOMMENDATIONS

In light of the foregoing summary of findings and conclusions, the following recommendations are offered:

In light of the foregoing summary of findings and conclusions, the following recommendations are offered:

1. It is strongly recommended to utilize and maximize the use of available e-campus technology applications. That the constant use of available e-campus technology progresses the IT performance of the university.

2. Regarding process automation strategy, it is deemed necessary to use and implement software that automates IT processes to ensure that IT system run smoothly, maximize the use of software applications to meet increasing service demand, and resolve systematic e-campus operational issues and concerns that repeatedly cause unplanned downtime.

As regards to cloud computing strategy, it is imperative to ensure the quality cloud-based services performance with varying degrees of security or compliance, and creating an exceptional cloud services to meet the broad needs of the university.

In on-line promotion strategy, it is essential the dynamic use and wide reach of online promotion of services over the internet, and the well execution of the plan for on-line promotions for specific and target audience.

And in greening IT strategy, it is noteworthy to boost waste management program on electronic waste, and enhancing stakeholders the value of greening information technology.

3. In advancing performance management on effecti veness of e-campus technology, it suggests to conduct computer audit for accuracy of data vis-a- vis manual report, to improve the level of users' satisfaction, development of e-campus technology strategy, and management support on IT development cost thru allocation of IT budget. While, performance on efficiency suggests that it is vital to increase the use of e-campus technology so that to provide access to information concerning services and the democratic process, to introduce workflow management system to increase process efficiency, and to deliver consistent e-campus quality services. However, factors that affect the effectiveness and efficiency may be considered based on type of the course, objective of technology usage, and students themselves too.

4. It is to recommend strengthening the use of IT resources and the e-campus technology strategy on process automation. This may positively affect the enhancement of e-campus technology performance of the University. However, full utilization on e-campus technology strategy on cloud computing, on-line promotion, and greening IT may also contribute to the development of performance management. That the constant use of e-campus technology strategy improves the performance management in terms of effectiveness and efficiency.

5. With the new era comes innovation and cutting-edge technologies, it is highly recommended to consider the proposed e-campus technology strategy and performance for innovative resource management.

6. Similar investigation on the use of e-campus technology strategy and e-campus performance in colleges and university is recommended.

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