EFFECT OF TECHNOLOGICAL ENVIRONMENTAL FACTORS ON STUDENTS' RETENTION IN FEDERAL POLYTECHNIC, ILARO, OGUN STATE NIGERIA.

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Abstract

The study examined the significant effects of technological environmental factors on students' retention. The objectives of the study were to determine the effects of social media appreciation, organizational speedy process internet connectivity and self-service on students' retention. The study adopted survey research design. Stratified sampling technique was used to select the respondents for the study targeting students from all departments in the Federal Polytechnic Ilaro, Ogun State. The population of the study was 12,867 being the total number of students for 2020/21 academic session according to Registry Department of the Institution. Sample size of 660 drawn from 20 respondents per department across the 33 departments of the institution using purposive sampling technique. Questionnaire was structured using 6-point Likert scale (Strongly Agree, Agree, Partially Agree, Partially Disagree, Disagree and Strongly Disagree) with 20 respondents per department of a total of 33 (for even distribution). The data were analyzed using simple percentages while the hypotheses were tested using regression analysis with the aid of Statistical Packages for Social Sciences (SPSS). The study revealed that significant relationship exist between technological environmental factors and students' retention and also, that amongst the measures of technological environmental factors, social media, had the greatest effects on students' retention. The researchers recommended that the institution should continuously sustain the tempo to providing quality service and initiate fresh windows to promptly provide satisfaction to current students which will subsequently attract new intakes cum prospects on campus.

Keywords: Social Media, Speedy Process, Internet Connectivity, Self Service and Customer Retention.

Introduction

Globally, technology has become an important tool to the success of any business. Technological advancements reduce costs of information and communication across nations and thereby facilitate global sourcing of raw materials and other inputs (Aremu & Saka 2014). Rapid Technological Innovation and the Proliferation of transnational organisations are driving the formation of a global economy that sometimes conflicts with nationalistic concerns about maintaining corporative advantage and competitiveness (Ahearne & Schillewaert, 2015). It is indeed a time of transition for firms and governments alike. Technological environment refers to the state of science and technology in a country and related aspects such as rate of technological progress, institutional arrangements for development and application of new technology etc (Rajaraman 2017).

Technology consists of not only knowledge and methods required to carry on and improve production and distribution of goods and services but also entrepreneurial expertise and professional know-how (Abdulsalam, 2016). In an increasingly competitive and result-oriented market, consumers/students' retention is of key importance to firms and institutions (Cepel, 2018). Students' success is more likely to be achieved when students fell personally significant i.e. when students feel recognized as individuals that they matter to the institution (Rendon, 2019). The rate of technological change in the marketing environment is a significant factor that influences relationship-marketing success. The internet especially has been changing so rapidly and has been providing so many advance technologies for doing businesses to manage consumers' retention in an organised and right way (Zineldin, 2020). Therefore, internet technology plays a significant role in increasing customer service levels by providing fast responses to customers' needs and affording customers the opportunity to help themselves.

The application and non-usage of technological variables could make or break businesses around the world. With the advent of technology, some of the delays experienced in writing exams or checking results are becoming things of the

past. Many organizations/institutions pay less to their staffers owing to the fact that customers/students perform some functions themselves that ordinarily would have been paid for. Before the integration of social media platform, students engage in a long communication chain which subsequently brings about inconveniences, making it a veritable tool in today's business undertakings. The research aims to ascertain the significant effect of social media application, organizational speedy process internet connectivity and self- services on students' retention. The variables if positively considered will contribute to the growth and improvement of technology in enhancing students' loyalty in higher institution. This research work however, shall be relevant to many researchers, government agencies, libraries, institutions and other users since it shall cover the applicability of the effect of technological environmental factors on customers/students' retention. This study will lay emphasis on how these variables would assist in retaining higher institutions' students. The geographical scope would be limited to the respondents within the Federal Polytechnic Ilaro, Ogun State.

Literature Review

Technological development is one of the main factors for a firm's competitiveness in national and international markets. The innovation of technology is a key factor in a firm's competitiveness; therefore, the development of a technological environment can arise through a variety of mechanism (Rajaraman 2015). Information technology had diverse definition with no standard definition; there it will be defined in the view of several scholars. According to Folarin and Hassan (2015) technology was defined as an advancement that makes life better and easier by enabling people to perform task faster and efficiently, communicate easily and transacts business conveniently. Information technology is a strategic source that enables main alterations in competitive behaviour, marketing and customer service (Aremu & Saka, 2014)

This chapter is therefore a review of selected literature relevant to the area of the study which deals with the conceptual framework, theoretical review, empirical framework and summary of literature.

Technological Environment

Technology is the backbone of running and successful business in modern society. The kind of business set up we have today requires an entrepreneur to take note of the ever evolving technology and keep pace (Beckeikh & Amara, 2016). According to Suman (2014), technology is the development in the field of technology which affects business by new intentions of productions and other improvements in techniques to perform the business work. Those factors which impact the business operations are called technological environmental factors.

Therefore technological environment refers to the state of science and technology in an organisation or an institution and related aspects such as rate of technological progress, institutional arrangements for development and application of new technology (Ezeilo, 2014).

The Importance of Technology

Technology brings skills, knowledge, process, techniques and tools together for solving problems of human beings, making their life secure and easier (Slidingmotion.com). Why technology is important today is because technology is driving the world and making the world better. The following are some reasons that illustrate the fact technology is no longer a want but a need:

Technology helps improve communication: Nowadays, many companies rely on different applications and software for communicating with others.

Technology improves efficiency: There is no denying the fact technology increases the efficiency of the company. The advancements in the world of robotics and applied sciences help businesses facilitate their customers.

Unlimited supply of knowledge: With technology, there is no limit as to what you can achieve and accomplish. It provides an endless supply of knowledge and valuable insights.

Modern tech empowers students to take ownership of their education: Giving students tools to actively participate in their learning ensures that the responsibility for learning is not just on teachers.

Using digital tools can drive down costs long-term: The Higher Education Policy Institute reported that using education technology in their learning plans helped save 31% of costs.

Elements of Technological Environment

1. **Social Media:** Carr and Hayes (2015) provide an excellent discussion and breakdown of social media: Internet-based and persistent channels of mass personal communication facilitating perceptions of interactions among users, deriving value primarily from user-generated content.

- **Facebook Evolution:** Business communication tool to viable conversion platform – with over 400 million users, a valuation of greater than $10 billion dollars and the recent title of most travelled place on the "internets", Facebook has become a juggernaut. As a result, businesses are scrambling to find their place on this most popular internet platform and have been for the last several years.

- **Twitter:** Twitter is one of the top platforms to keep up with the latest trends and conversations. It helps you discover which TV shows people are watching, which social media challenges they encounter and more. The benefits of this platform include:
  Gain Valuable Customer Insights: Twitter sees 6,000 tweets per seconds. This puts into perspective how actively people are using it as a conversation platform.
  Deliver Customer Support and Gather Feedback
  Cultivate a Brand Community

- **Instagram:** Instagram is a go-to app for sharing lifestyle photos of brunches, sunsets and pets and it's helped breed a new kind of internet star: an influencer/tastemaker. These people have hundreds of thousands of followers, and use that clout to make money from brands.

- **WhatsApp:** Whatsapp has quickly emerged as the go-to messaging app for over 1.6 billion consumers around the globe. It's a fast, simple and convenient way for family and friends to chat, create group texts, share photos and videos, send and receive documents, and engage in private, secure conversation anytime, day or nights (Twilio 2021). Whatsapp business allows companies to safely and securely message their customers directly within the messaging platform. One advantage over SMS is that Whatsapp is tied directly to a single phone number and provides a branded business profile rather than a string of digits. Engaging Globally: If your customer base is global, know this; as of early 2018,.

2. **Speedy Process:** Speedy process is a decrease in the series of actions or structured activities that companies use in producing goods/services to customers (Alkadi & Otaro, 2016). Technology had helped many businesses to eliminate unwanted processes that delay production of products with the use of automations (Intellitrend, 2017). Also, Reijers and Jansen-Vullers (2015) argue that initiatives are popular for distributing both physical goods and service. Hence, technology enables movement of information to occur immediately without any delay with respect to the in-process inventory that permit customers to place order. Prior research by Yoon (2019) found that adoption of information technology improves business processes, ensures faster delivery to customers, thereby, influences customers' satisfaction and retention. Speedy process has great impact on customers' satisfaction and retention, due to just-in-time services that enable quick delivery (Lin, Wu & Chang, 2015).

3. **Internet Connectivity:** Internet is a global system of connected networks that Consist of millions of computers, servers, routers and printers on every network (Webopedia). In Nigeria today, there are quite a number of internet network providers; MTN, Airtel, Etisalat, Glo and others. These network providers make available data for fast and efficient browsing needs. Although some from time to time may have connectivity issues making it impossible for subscribers to enjoy smooth browsing experience. Depending also on location, MTN is viewed to be the most efficient owing to their reach and large broad band. Therefore, the term Internet Connectivity refers to the way people wired up to the Internet and may include dial-up telephone lines, always-on broadband connections and wireless devices (Encyclopedia).

(D) Self Service: The system of serving oneself in any form of service oriented outfit. Grant (2017) proposed that adopting advanced technology leads to increased information accessibility, which increase the speed and effectiveness with which customers can change information into decision. Technology enables buyer easy access to product information, provides transaction assurance and solves timely problems for business applications. Beldona (2015) explain that, lesser time is required in serving oneself or to have permanent access to information like wide product assortments from an e-shop, which will likely lead to customer satisfaction and retention. Therefore,

customers would naturally stick to the internet merchant whose website is easier to surf and who gives them the detailed information. Thus, Cheung and Lee (2015) concluded that self service and accessibility impacts Customers' satisfaction and retention.

Customer Retention

Customer retention refers to a company's ability to turn customers into repeat buyers and prevent them from switching to a competitor. It indicates whether your product and the quality of your service please your existing customers (Khatibi 2013). Customer retention strategies are the processes and initiatives businesses put in place to build customer loyalty and improve customer lifetime value. According to Davis (2014), retaining customers is about more than just transactions – it's about relationships. Customer retention is increasingly being seen as an important managerial issue, especially in the context of saturated market or lower growth of the number of new customers. It has also been acknowledged as a key objective of relationship marketing, primarily because of its potential in delivering superior relationship economics, i.e. it costs less to retain than to acquire new customers.

Benefits of Customer Retention

Cost Saving: Customer retention is generally more cost-effective than enquiring first-time customers.

Positive Word of Mouth Marketing: Loyal customers are more likely to tell their friends and family about your brand.

A better bottom line: Increasing retention rates by just 5 percent can increase revenue by 25 percent to 95 percent.

Technological Environment and Customer Retention

The internet revolution has been cited as the biggest change to hit business since currency replaced barter (Reichheld, Hopton & Markey, 2015). According to Reichheld, no new business tool has generated more anticipation. The internet revolution has had a major impact on higher education for higher education administrators; the tool represents an opportunity to attract more and a different type of student through the offering of online education programs. In fact, a recent article in Education and Training states that around 86% of regular internet users would like to improve their skills and knowledge through online education.

The intention of users to continue to use the technology of the course is considered one of the main determinants of the success of the online mode (Mohammadi, 2015). Technology can help increase retention rate in the following ways:

- Feedback and Pulse Surveys: Many technology solutions allow managers to distribute short and regular surveys to get feedback from customers and discover ways the organization can better help serve them
- Better Facilitate Communication: One of the most annoying things for customers is not receiving regular and clear communication about the use of the product of service obtained.

Social Media and Customer Retention

Word of mouth is a powerful tool in retaining business and also in gaining new business. Social Media is the modern day extension of this principle. According to Emma, Meakin (2013), brand should see social media as an opportunity to create a relationship with consumers. Providing excellent customer service via social can help to create a customer for life. Conversely, if done badly it can lead to losing a valuable customer.

Self Service (Automation) and Customer Retention

The fundamental to succeed in an economic world is by pleasing your customer. With the increase in competitiveness, product uniqueness is also reducing, bringing everything down to the service you provide. Self service is one of the most preferred forms of customer service technologies out there. Customers love to feel self-sufficient and empowered. Above all, when a customer independently solves their product-based issues, they feel more in control and this cultivates confidence in the brand (Sweta Chakraborty, 2021).
Creating a self service system around their preferred channel / device will potentially make a difference in the quality of your service. And subsequently, this will make them crave for more.

Internet Connectivity and Customer Retention

The rate of technological change in the marketing environment is a significant factor that influences relationship-marketing success (Szymanski and Hise, 2000). The internet especially has been changing so rapidly and has been providing so many advanced technologies for doing businesses to manage customer relationships in an organized and right way. Lindh (2015) define internet connectivity "as the communication, relationship, interaction and keeping in-touch with customers through e-mails, text messaging and social medias. There are internal charges in businesses, as well as, in terms of their communication with their customers (Karmarkar and Mangal, 2007).

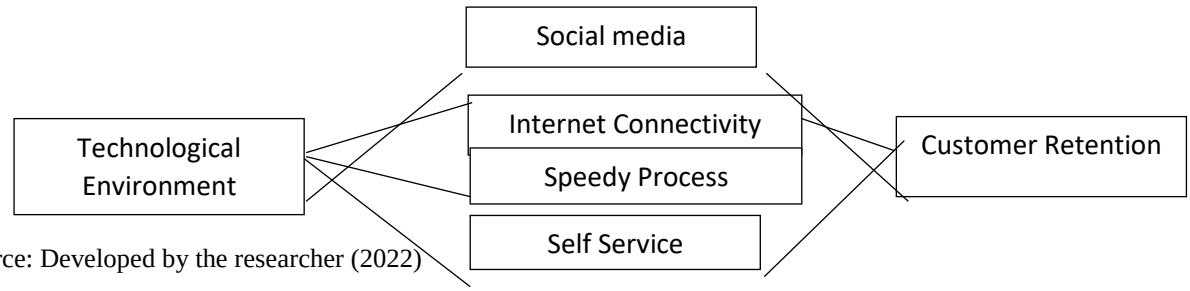
Internet connectivity may lead to quicker reply and respond to customers, improved quality of customer communications, increased customization and response through e-mails, fax and Social Media. Kumar and Peterson (2009) explain that internet connectivity has significant impact on customer satisfaction because customers' relationships are improved with the use of social media resulting in enhanced communications with customers, and improved response times.

Speedy Process and Customer Retention

Speedy process is a particular course of action intended to achieve a result characterised by speed; moving with or capable of moving with high speed (Power thesaurus, 2021). Technology enables movement of information to occur immediately, without any delay with respect and have their products delivered at their doorsteps. Yoon (2009) states that adoption of technology improves business processes and ensures faster delivery to customers, thereby, influences customers' satisfaction and retention. Speedy process has great impact on customers' services that enable quick delivery (Lin, Wu and Chang, 2011). Information technology influences customer satisfaction by reducing transaction time, improving operational effectiveness, reducing the running cost and ushering in swift response in service delivery – this satisfy customers' wants and leads to retention.

Conceptual Model

Figure 2.1: Model of Technological Environmental Factors and Customers/Students' Retention.



Source: Developed by the researcher (2022)

Theoretical Framework

Technology Acceptance Model

Technology Acceptance Model has been developed by Davies (1989) as one of the most popular research model, to predict the use and acceptance of information systems and technology by individual users. It has been studied extensively and verified by numerous researchers who looked at the individual technology acceptance behaviour in different information systems constructs. In technology acceptance model, two factors are relevant when it comes to computer use behaviour; these are perceived usefulness and perceived ease of use. Perceived usefulness as defined by Davis (1989) regards the likely user's subjective probability of their job or life performance would be enhanced by using a specific application system. Perceived ease of use commonly denoted as EOU describes the extent to which the eventual user experts the target system to be effortless.

The Cognitive Information Processing Model

The Information Processing (IP) Model, as the name implies, conceptualized human cognition in terms of computer functions (Siegler & Alibali, 2004). The person (i.e., computer) has biologically predetermined neurological improvements (i.e., hardware upgrades) and learning results in increased knowledge as well as enhanced strategies for effective use of knowledge. IP assumes environmental stimuli move along a conveyer belt of cognitive processing. First, sensory stimuli register in the appropriate neurological sites. Attention to selected stimuli results in further processing which leads to perception. Perception moves the now meaningful stimuli (i.e., information) to various levels of memory (i.e., data storage) where subsequent processing ensures that it is available when needed.

All stages of cognitive processing are facilitated by meta-cognition which includes learning strategies and monitoring the effectiveness of processes (Solso et al., 2005). This serves as the underpinning theory owing to the fact that it touches information processing in a behavioral stats (ie testing the reaction and behavior of consumers when a certain stimuli is activated)

Empirical Framework

Ikemefuna and Abune, (2015) researched on technological environment and some selected manufacturing industry in Enugu State, Nigeria. The study based on reviewing the effect of technological environmental performance on the manufacturing industries aiming at some selected industries in Enugu State, Nigeria. The results of the study revealed that technological environment significantly affect the growth and performance of manufacturing industries in Enugu State.

Lindh (2015) in his research examined the effect of information technology impact on business relationships. ? Collected and analysed data from 354 business relationships on the Swedish business to business market, to consider the question if and how technology impacts on social exchange relationships. Lindh (2015) focused on communication and relationship, the result shows that business relationships in which technology increases or decreases the need for personal meetings to higher extent have a relatively higher level of use of technology in the exchange.

Both Daneshvar and Ramesh (2016) and Julius, Abiola and Uzoka (2017) studies are of good value, as they answered some of this research questions. Julius, etal (2017) revealed that technology facilities enhance speedy services, quality services, accessibility of information, convenience of customers and reduction in long queues on payment lanes.

Intellitrend (2017) investigated the effects of technology on speed and quality through a comprehensive study that solicited feedback from 304 corporate executives and senior management personnel in global companies. It was discovered that the main reasons why businesses are investing on technology is because it increases the speed of manufacturing, it develop speeds to deliver products/services to end users faster and it ensures quality (Intellitrend, 2017). Das, Kundu and Bhattacharya (2020) study on technology adaptation and survival of SMEs: a longitudinal study of developing countries found that institutional capabilities became dominant over time.

Methodology

The study adopted a descriptive survey research design owing to the fact that the researchers intend to compare consumers' attitudinal responses. The population of the study comprised the entire students of Federal Polytechnic, Ilaro (2020/21 Academic session) which is 12,867 students according to Registry Department of the Institution. Purposive sampling technique was used as the sample 660 was derived from 33 departments across institution representing 20 respondents from each department. The instrument was structured in two part parts of A and B, the Section A has questions on the demography of the respondents while the section B was prepared in a six points Likert Summation rating (6-Strongly Agree, 5-Agree, 4-Paartially Agree 3-Partially Disagree, 2-Disagree, 1-Strongly Disagree). The respondents were reached through the administration of questionnaire to the 33 departments within the institution. The study used Cronbach's Alpha to test the reliability of the instruments with 36 items having 6 for each (for both the independent and dependent variables). The demographics of the respondents were analyzed with aid of weighted average while the hypotheses formulated were tested and analyzed using multiple linear regression analysis with the aid of Statistical Package for Social Sciences (SPSS v 23).

Results and Discussions

Correlations

		SM	SP	IC	SS	CR
SM	**Pearson Correlation**	**1**	**.916****	**.902****	**.890****	**.864****
	Sig. (2-tailed)		**.000**	**.000**	**.000**	**.000**
	N	**660**	**660**	**660**	**660**	**660**
SP	**Pearson Correlation**	**.916****	**1**	**.902****	**.875****	**.864****
	Sig. (2-tailed)	**.000**		**.000**	**.000**	**.000**
	N	**660**	**660**	**660**	**660**	**660**
IC	**Pearson Correlation**	**.902****	**.902****	**1**	**.957****	**.902****
	Sig. (2-tailed)	**.000**	**.000**		**.000**	**.000**
	N	**660**	**660**	**660**	**660**	**660**
SS	**Pearson Correlation**	**.890****	**.875****	**.957****	**1**	**.947****
	Sig. (2-tailed)	**.000**	**.000**	**.000**		**.000**
	N	**660**	**660**	**660**	**660**	**660**
CR	**Pearson Correlation**	**.864****	**.864****	**.902****	**.947****	**1**
	Sig. (2-tailed)	**.000**	**.000**	**.000**	**.000**	
	N	**660**	**660**	**660**	**660**	**660**

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

The above table indicates that there is an association between the variables. This implies that there is a relationship between Social media, Speedy process, Internet connectivity, Self-service and Customer retention in the Federal Polytechnic, Ilaro

Hypothesis I : There is no effect of social media on customer retention in Federal Polytechnic, Ilaro.

Model	Variables	Unstandardized Coefficients		t-value	p-value
		Beta	Standard Error		
I	Constant	0.156	0.033	4.725	0.000
	Social Media	0.903	0.021	43.957	0.000

R = 0.864, R-square = 0.746, Adj. R Square = 0.746, F = 1932.242, p=0.000

Source: Researcher's Compilation from SPSS

The table above shows the R square with the value of .746% which indicates that 74.6% variation in customer retention is caused by social media variable. Also, the adjusted R square indicates that after adjusting the degree of freedom, social media variables can still explain 74.6% variation in customer retention.

The F statistic table reveals the overall significance of the model, the probability value of 0.000 which is below the level of significance indicate that we reject null hypothesis and conclude that we accept alternative hypothesis.

Decision Rule: The coefficient table shows that social media with probability value of 0.903 and 0.000 is statistically significant which denote that we reject null hypothesis and therefore conclude that there is significant relationship between social media and customer retention.

Hypothesis II:: Organizational speedy -process does not affect customer retention in Federal Polytechnic, Ilaro

Model	Variables	Unstandardized Coefficients		t-value	p-value
		Beta	Standard Error		
II	Constant	0.197	0.032	6.111	0.000
	SP	0.859	0.020	43.943	0.000

R = 0.864, R-square = 0.746, Adj. R Square = 0.745, F = 1930.984, p=0.000

The table above shows the R square with the value of .746% which indicates that 74.6% variation in customer retention is caused by speedy process. Also, the adjusted R square indicates that after adjusting the degree of freedom, the explanatory variables can still explain 7.45% variation in customer retention.

The F statistic table reveals the overall significance of the model, the probability value of 0.000 which is below the level of significance indicate that we reject null hypothesis and conclude that we accept alternative hypothesis.

Decision Rule: The coefficient table shows that speedy process with probability value of 0.859 and 0.000 is statistically significant which denote that we reject null hypothesis and conclude that there is significant relationship between speedy process and customer retention.

Hypothesis III: Internet connectivity does not influence students' retention in Federal Polytechnic, Ilaro.

Model	**Variables**	**Unstandardized Coefficients**		**t-value**	**p-value**
		Beta	**Standard Error**		
III	Constant	0.083	0.029	2.900	0.004
	IC	0.949	0.018	53.489	0.000

R = 0.902, R-square = 0.813, Adj. R Square = 0.813, F =2861.033, p=0.000

The table above shows the R square with the value of .813% which indicates that 81.3% variation in customer retention is caused by internet connectivity. Also, the adjusted R square indicates that after adjusting the degree of freedom, the internet connectivity can still explain 81.3% variation in customer retention.
The F statistic table reveals the overall significance of the model, the probability value of 0.000 which is below the level of significance indicate that we reject null hypothesis and conclude that we accept alternative hypothesis.

Decision Rule: The coefficient table shows that internet connectivity with probability value of 0.949 and 0.000 is statistically significant which denote that we reject null hypothesis and conclude that there is significant relationship between internet connectivity and customer retention.

Hypothesis IV: Self service does not influence customer retention in Federal Polytechnic, Ilaro

Model	**Variables**	**Unstandardized Coefficients**		**t-value**	**p-value**
		Beta	**Standard Error**		
IV	Constant	0.040	0.021	1.893	0.059
	SS	0.983	0.013	75.390	0.000

R = 0.947, R-square = 0.896, Adj. R Square = 0.896, F =5683.699, p=0.000

The table above shows the R square with the value of .896% which indicates that 89.6% variation in customer retention is caused by self-service. Also, the adjusted R square indicates that after adjusting the degree of freedom, self-service can still explain 89.6% variation in the customer retention.
The F statistic table reveals the overall significance of the model, the probability value of 0.000 which is below the level of significance indicate that we reject null hypothesis and conclude that we accept alternative hypothesis.

Decision Rule: The coefficient table shows that self-service with probability value of 0.983 and 0.000 is statistically significant which denote that we reject null hypothesis and conclude that there is significant relationship between self-service and customer retention.

Conclusion and Recommendations

Conclusion

Based on the findings discussed above, assumption can be drawn related to the mindset and experience of the students currently on campus. From the forgoing discussions, observed findings and analysis, the researchers confidentially conclude that there is significant relationship between technological environmental factors and students' retention. Furthermore, there is a strong positive relationship between the criterion and predictor variables. Social Media, Speedy Process, Internet Connectivity and Self Service significantly have effects on students' retention in the context of the study.

Recommendations

Based on the findings and conclusion of this study, the following recommendations are provided:

1. The institution should sustain the technological innovation and strategies to continuously provide satisfaction to existing students which will subsequently help in acquiring prospects.

2. The institution should spread her social media content to cover twitter and instagram for better and wider spread..

3. The institution should therefore seek to build a suitable platform where course materials are being delivered to the students for convenience and preparation ahead of the classroom presentation.
4. The institution should maintain her level self service capability as this has earned her more accolades in outside the polytechnic community.

5. They should sustain factors that enhance convenience in registration, information updates and data presentation for prospective students to register and make payment from their comfort zones.

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