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An Assessment of the Digitalization at the College and University Level: An Input to The Strategic Performance Management Program (SPMP)

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Abstract

This study identified the digital transformation at the college and university level. It was done thru an identification of automation of records and office processes in selected Local Colleges and Universities (LCUs), State Universities and Colleges (SUCs), and Private Schools in the Philippines. Thirty-seven (37) institutions participated in this descriptive research. A validated survey was done using a snowball sampling technique. A survey Questionnaire thru Google Forms was sent to the administrators who participated in the study. It was found that digital transformation is at 43% (fully applied), 27% (moderately applied), 16% (slightly applied), and a whopping 14% are not at all. It is therefore concluded that most universities and colleges are now using technology to automate records and processes to optimize efficiency and effectiveness in their school management. Since there are still institutions that are in the process of automation, it is highly recommended that they should address these concerns to fully comply with technological change. Based on this study, some educational institutions in the Philippines are ready in terms of digital SPMP in managing the performance of their colleges/universities. It is now a challenge to them how they can adapt to the new normal considering that many institutions are on their way to coping with the prevailing situation.

Keywords: Pandemic, Digitalization, Colleges, Universities, and Strategic Performance

1. Introduction

Teachers are considered one of the most indispensable members of the education sector. They transfer their knowledge and expertise to new breeds of society through the learning process. At the college/university level, they are recognized as mentors and information conduits. They served as role models and inspirations to most of their students. However, the COVID-19 pandemic has caused schools to lockdown to safeguard teachers, employees, and students. It has created the largest disruption of education systems in human history, affecting nearly 1.6 billion learners in more than 200 countries (Pokhrel & Chhetri, 2021). As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms (Li & Lalani, 2020). Teachers suddenly have to deliver their lessons using technological tools, including through specific online platforms, in order to reach out to the students (Cataudella et al., 2021).

Online education is the delivery of learning materials using the internet for student-student and student-teacher interaction and for distributing educational materials (Kumar, 2021). This present system was done because of the mandatory social distancing imposed by the COVID-19 pandemic, which has affected the relationships and performance of teachers, professors, and students, as well as the technologies and procedures adopted by them to innovate and achieve sustainable education (Scavarda et al., 2021). Scholarly activities are still virtual (Hernandez & Quintanilla, 2021). Aside from online classes, virtual educational processes are being done to accommodate educational setup through the use of a virtual learning environment (VLE) (Alves, Miranda, and Morais, 2017).

Meanwhile, a research study conducted by Susan Grajek and the 2019-2020 Educause Review wherein colleges and universities are driving digital transformation today. It was found that 13% of colleges and universities are engaging in digital transformation today, 32% are developing a digital strategy, another 38% of higher education institutions exploring, and only 17% of institutions investing no time in digital transformation (Grajek, 2020).

Currently, there have been a lot of changes going on in the education sector worldwide due to the COVID-19 pandemic (United Nations, 2020). It really has brought dramatic changes (Li & Lalani, 2020).

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To cope with this prevailing situation, the Philippines embraced this digital transformation by enhancing the quality of higher education by 83% (D2L, 2022).

This is the very reason for doing this kind of endeavor - identifying the digital transformation at the college or university level. And thus, providing a mechanism for setting individual performance evaluations utilizing the strategic performance management program.

2. Objectives

To know the prevailing digitalization in some of the educational institutions in the Philippines, this research has the following objectives:

- 1) To identify the status of digital transformation in selected colleges and universities in the Philippines.
- 2) To suggest improvement in the technological application and services provided by the respondents using the Strategic Performance Management Program (SPMP).

3. Materials and Methods

This descriptive study identified the current situation of selected colleges/universities in the Philippines in terms of using digital technology. The survey instrument, which was crafted and validated by selected college/university officials was given using a snowball sampling technique. This was given thru Google Forms to the administrators of selected public and private colleges/universities.

The first part of the survey is the demographic profile of the respondents. The second part is the identification of digital automation of colleges/universities. For statistical treatment, frequency count and percentage were used to determine the status of automation in colleges and universities.

4. Results and Discussion

The following tables reveal the findings of the study from selected school administrators. Thirty-seven (37) institutions participated in this research. 34 Local Colleges and Universities (LCUs) and State Universities and Colleges (SUCs) take up 91.9% of the samples while the remaining 8.1% are 3 private schools that participated in this survey. 28 of 37 respondents or 75.7% are full-time administrators with no teaching/faculty load and 9 of 37 or 24.3% are full-time administrators with a teaching/faculty load. 15 of 37 respondents or 40.5% are male and 22 of 37 or 59.5% are female.

 Table 1 Student Development and Welfare – Guidance and Counseling (note: 100% for each question)

Item	Scale	Frequency	Percentage
 Online counseling for the client 	Fully applied	10	27.0%
(student/employee) is also effective just like face-	Moderately applied	15	40.5%
to-face.	Slightly applied	10	27.0%
	Not at all	2	5.4%
2. Career Counseling and interview workshops are	Fully applied	16	43.2%
done online.	Moderately applied	12	32.4%
	Slightly applied	8	21.6%
	Not at all	1	2.7%
3. Routine interviews and guidance are done	Fully applied	14	37.8%
virtually.	Moderately applied	15	40.5%
	Slightly applied	5	13.5%
	Not at all	3	8.1 %
4. Both counselor and student achieve confidentiality	Fully applied	21	56.8%
and privacy in online counseling.	Moderately applied	9	24.3%
	Slightly applied	4	10.8%
	Not at all	3	8.1 %
5. Referral to a specialist is done thru the use of e-	Fully applied	15	40.5%
mail.	Moderately applied	11	29.7%
	Slightly applied	8	21.6%
	Not at all	3	8.1%
	Total	37	100 %

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In terms of student development, 76 of 185 or 41% are fully applied and 12 of 185 or 6.5% are not fully applied. Digital technologies are constantly changing and school guidance counselors are challenged to keep up with the adolescent's use and acquisition of new technologies (Hohn, 2017). Innovation became a necessity and a challenge for guidance and counseling (Suryahadikusumah & Nadya, 2020). This area will be improved given the appropriate development in technology, access to technological devices, and support in implementation. (Hohn, 2017).

Table 2 University Learning Resource Center (note: 100% for each question)

Item	Scale	Frequency	Percentage
1. There is a functional and interactive library websites	Fully applied	13	35.1%
such as Online Public Access Catalog (OPAC).	Moderately applied	14	37.8%
	Slightly applied	3	8.1%
	Not at all	7	18.9%
2. There is a multimedia area/center where students	Fully applied	14	37.8%
can access the internet for review and research.	Moderately applied	16	43.2%
	Slightly applied	3	8.1%
	Not at all	4	10.8%
3. There is an automated library database, where	Fully applied	9	24.3%
users' information is stored.	Moderately applied	12	32.4%
	Slightly applied	9	24.3%
	Not at all	7	18.9%
4. There is an automated library system that includes check	Fully applied	9	24.3%
out, check-in, renewals, holds, fines, and inventory.	Moderately applied	10	27.0%
	Slightly applied	9	24.3%
	Not at all	9	24.3%
5. There is a remotely accessible electronic resources	Fully applied	9	24.3%
such as books and journals.	Moderately applied	15	40.5%
	Slightly applied	5	13.5%
	Not at all	8	21.6%
	Total	37	100 %

For the university learning resource center, 54 out of 185 or 29% are fully applied and 35 out of 185 or 19% are not fully applied. This low percentage should be addressed because as reported, the digital library is very helpful in education by getting quick and dynamic information, assisting the users in the process of learned teaching, help in getting catalogs, references, and information about research (Ilahi, Widiaty, Wahyudin, & Abdullah, 2019). And also, students reported being satisfied with the resource and found it usable in improving digital libraries (Brewer, Rick, & Grondin, 2017). In this pandemic period, getting information online is very crucial. To prevent one from exposure to the virus, users would most likely utilize their gadgets.

Table 3 Scholarship/Financial Assistance (note: 100% for each question)

•	Item	Scale	Frequency	Percentage
1.	There is an automated database, where students'	Fully applied	20	54.1%
	information is securely stored.	Moderately applied	12	32.4%
		Slightly applied	4	10.8%
		Not at all	1	2.7%
2.	Announcements posted on the university website	Fully applied	20	54.1%
	are readily available.	Moderately applied	11	29.7%
		Slightly applied	4	10.8%
		Not at all	2	5.4%
3.	Electronic forms are available on the university	Fully applied	16	43.2%
	website.	Moderately applied	15	40.5%
		Slightly applied	3	8.1%
		Not at all	3	8.1%



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Table 3 Scholarship/Financial Assistance (note: 100% for each question) (Continue)

Item	Scale	Frequency	Percentage
4. There is an online submission of requirements.	Fully applied	25	67.6%
	Moderately applied	7	18.9%
	Slightly applied	4	10.8%
	Not at all	1	2.7%
5. There is a scholarship management system that	Fully applied	12	32.4%
gives each student an online account	Moderately applied	11	29.7%
	Slightly applied	10	27.0%
	Not at all	4	10.8%
	Total	37	100 %

The table above shows that 93 out of 185 or 50% are fully applied and 11 out of 185 or 6% are not fully applied. One of the most popular searches by students worldwide is about scholarship applications (Rakib, 2021). Therefore, this impact of automation might play a role in students choosing their career paths (Imram, Ramesh, & Rudran, 2020). Besides, Valetsianos, and Kimmons (2012) suggested that open scholarship highlights the importance of digital participation. Hence, this ensures applications are intuitive and easy to use for the target audience (Black, 2015).

Table 4 Human Resource Development and Management (note: 100% for each question)

Item	Scale	Frequency	Percentage
Employees' computerized records are stored	Fully applied	17	45.9%
securely and systematically organized.	Moderately applied	12	32.4%
	Slightly applied	4	10.8%
	Not at all	4	10.8%
2. There is a flexible tracking of employees' leave,	Fully applied	19	54.1%
absences, workloads, and locator.	Moderately applied	9	24.3%
	Slightly applied	3	8.1%
	Not at all	6	16.2%
3. Simplifications of payroll can easily be done	Fully applied	18	48.6%
because of the online submission of employees.	Moderately applied	8	21.6%
	Slightly applied	4	10.8%
	Not at all	7	18.9%
4. Modification in the hiring system is streamlined by the	Fully applied	14	37.8%
use of an online system.	Moderately applied	12	32.4%
	Slightly applied	5	13.5%
	Not at all	6	16.2%
5. Publication of vacancies and announcements are made	Fully applied	19	51.4%
available online (FB, Twitter, E-mail)	Moderately applied	13	35.1%
	Slightly applied	4	10.8%
	Not at all	1	2.7%
	Total	37	100 %

The table above shows that 87 out of 185 or 47% are fully applied and 24 out of 185 or 13% are not fully applied. It means that nearly half are fully automated when it comes to a human resource management office. HR function needs to be digitalized to simplify, accelerate and economize the activities it carries out (Mosca, 2020) and to improve the performance of the organization (Varadaraj & AlWadi, 2021).

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Table 5 Finance Management (note: 100% for each question)

Item	Scale	Frequency	Percentage
There is an online student payment transaction	Fully applied	15	40.5%
such as transcript request and transfer credential.	Moderately applied	4	10.8%
	Slightly applied	7	18.9%
	Not at all	11	29.7%
2. Computerized monitoring of expenses is available.	Fully applied	14	37.8%
	Moderately applied	9	24.3%
	Slightly applied	4	10.8%
	Not at all	10	27.0%
Computerized management of cash flow	Fully applied	15	40.5%
	Moderately applied	9	24.3%
	Slightly applied	4	10.8%
	Not at all	9	24.3%
4. The computerization of employees' payroll makes	Fully applied	16	43.2%
working easy.	Moderately applied	8	21.6%
	Slightly applied	6	16.2%
	Not at all	7	18.9%
. Easy billing to suppliers is quick because of automation.	Fully applied	14	37.8%
	Moderately applied	8	21.6%
	Slightly applied	7	18.9%
	Not at all	8	21.6%
	Total	37	100 %

The table above presents that 74 out of 185 or 40% are fully applied and 45 out of 185 or 24% are not fully applied in terms of Finance Management. The emergence of mobile payments due to the rise of e-commerce and online shopping has gained popularity due to their convenience, better features, and quality of service (Yang, Wu, & Huang, 2020), especially in this period of the pandemic. It is therefore imperative that colleges and universities should adopt this kind of mobile convenience to help students and parents pay for their school obligation.

Table 6 Disaster Preparedness and Emergency Response (note: 100% for each question)

Item	Scale	Frequency	Percentage
1. There is a monitoring and playback of CCTV	Fully applied	17	45.9%
whenever available.	Moderately applied	8	21.6%
	Slightly applied	7	18.9%
	Not at all	5	13.5%
2. Information Education Communication is available	Fully applied	17	45.9%
on the university website.	Moderately applied	10	27.0%
	Slightly applied	6	16.2%
	Not at all	4	10.8%
3. Announcements are readily available on most	Fully applied	27	73.0%
social media platforms.	Moderately applied	9	24.3%
	Slightly applied	1	2.7%
	Not at all	0	0%
4. There is an automated disaster recovery system to	Fully applied	10	27.0%
process with ease and less downtime	Moderately applied	13	35.1%
	Slightly applied	5	13.5%
	Not at all	9	24.3%
5. The automated disaster recovery system has scheduled	Fully applied	11	29.7%
backups and security checks	Moderately applied	12	32.4%
	Slightly applied	4	10.8%
	Not at all	10	27.0%
	Total	37	100 %

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In terms of disaster preparedness, 82 out of 185 or 44% are fully applied and 28 out of 185 or 15% are not fully applied. This should also be given priority as the Philippines is one of the world's most disaster-prone countries (Bolletino, Alcayna, Enriquez, & Vinck, 2018). Automation in disaster management aims to mitigate the potential damage from the disasters, ensure immediate and suitable assistance to the victims, and attain effective and rapid recovery (Sinha, Kumar, Rana, Islam, & Dwivedi, 2019).

Table 7 University Registrar's Record (note: 100% for each question)

	Item	Scale	Frequency	Percentage
]	1. There is a student portal where students can enroll	Fully applied	21	56.8%
	and view their grades online	Moderately applied	7	18.9%
		Slightly applied	3	8.1%
		Not at all	6	16.2%
	2. The request for grades, transfer credentials, and	Fully applied	16	43.2%
	transcript of records are available online	Moderately applied	6	16.2%
		Slightly applied	9	24.3%
		Not at all	6	16.2%
3	3. Restoration of old decomposing academic records	Fully applied	12	32.4%
	thru the use of a high-definition camera or scanner.	Moderately applied	10	27.0%
		Slightly applied	8	21.6%
		Not at all	7	18.9%
4.	Automated students' record is equipped with privacy	Fully applied	15	40.5%
	encryption for security measures.	Moderately applied	9	24.3%
		Slightly applied	9	24.3%
		Not at all	4	10.8%
5.	Postings and announcements are seen on most social	Fully applied	24	64.9%
	media platforms.	Moderately applied	9	24.3%
		Slightly applied	3	8.1%
		Not at all	1	2.7%
		Total	37	100 %

In this part, 88 out of 185 or 48% are fully applied and 24 out of 185 or 13% are not fully applied when it comes to the university registrar's record. Through automation, the workload for teachers will be reduced drastically (Bhila, 2018). Limited storage area, misclassification, misplacement of the document, document security, termite and pest attacks, difficulty in monitoring, and difficulty in document retrieval are some of the issues of no automation (Caluza, 2017).

Table 8 Information and Communications Technology (ICT) (note: 100% for each question)

Item	Scale	Frequency	Percentage
1. Ensures that all departments/offices have WI-	Fully applied	24	64.9%
FI/internet connectivity.	Moderately applied	8	21.6%
	Slightly applied	4	10.8%
	Not at all	1	2.7%
2. An ICT department for data management, marketing,	Fully applied	23	62.2%
communication, and process improvement.	Moderately applied	7	18.9%
	Slightly applied	5	13.5%
	Not at all	2	5.4%
3. There is an innovation in providing instructional	Fully applied	20	54.1%
materials such as LMS (Learning Management System).	Moderately applied	10	27.0%
	Slightly applied	5	13.5%
	Not at all	2	5.4%

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Table 8 Information and Communications Technology (ICT) (note: 100% for each question) (Continue)

	Item	Scale	Frequency	Percentage
4.	Allows innovative ways to use data cyber security and	Fully applied	15	40.5%
	network administration.	Moderately applied	15	40.5%
		Slightly applied	3	8.1%
		Not at all	4	10.8%
	5. Manages students and faculty institutional g-mail	Fully applied	22	59.9%
	accounts reliably and efficiently.	Moderately applied	9	24.3%
		Slightly applied	3	8.1%
		Not at all	3	8.1%
		Total	37	100 %

For ICT, 104 out of 185 or 56% are fully applied and 12 out of 185 or 6% are not fully applied. The research entails that the benefits brought about by ICT to schools provide new strategic opportunities to increase business value (Coombs, Hislop, Taneva, & Barnard, 2020).

Table 9 University Clinic (note: 100% for each question)

Item	Scale	Frequency	Percentage
1. It provides online medical and dental consultations	Fully applied	11	29.7%
and online referrals if needed.	Moderately applied	5	13.5%
	Slightly applied	12	32.4%
	Not at all	9	24.3%
2. There is an automated database where students' and	Fully applied	10	27.0%
employees' medical and dental information are stored.	Moderately applied	7	18.9%
	Slightly applied	7	18.9%
	Not at all	13	35.1%
3. Medical announcements are readily available on	Fully applied	18	48.6%
social media platforms	Moderately applied	5	13.5%
	Slightly applied	8	21.6%
	Not at all	6	16.2%
4. There is an automated inventory system of medicines	Fully applied	10	27.0%
and other medical supplies	Moderately applied	8	21.6%
	Slightly applied	10	27.0%
	Not at all	9	24.3%
5. There is an automated appointment schedule system to	Fully applied	6	16.2%
remind thru E-mail/SMS if the time of appointment is near.	Moderately applied	12	32.4%
	Slightly applied	8	21.6%
	Not at all	11	29.7%
	Total	37	100 %

Table 9 shows 55 out of 185 or 30% fully applied and 48 out of 185 or 26% not fully applied. Automation in health care helps clinicians with the goal of providing exceptional patient care in a timely and efficient way (O'Connor, 2020). With enormous benefits, it is therefore encouraged that this section of automation is given priority in this period of the pandemic.

Table 10 Physical Facilities, Equipment, and Security (note: 100% for each question)

	Item	Scale	Frequency	Percentage
1.	There is an installed Building Automation System,	Fully applied	9	24.3%
	for electrical and mechanical monitoring.	Moderately applied	6	16.2%
		Slightly applied	8	21.6%
		Not at all	14	37.8%
2.	There is an inventory system that facilitates the	Fully applied	13	35.1%
	monitoring of supplies and equipment.	Moderately applied	12	32.4%
		Slightly applied	8	21.6%
		Not at all	4	10.8%

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Table 10 Physical Facilities, Equipment, and Security (note: 100% for each question) (Continue)

Item	Scale	Frequency	Percentage
3. A public address system is an audio signal from the	Fully applied	10	27.0%
security system to the public address system for paging	Moderately applied	6	16.2%
purposes.			
	Slightly applied	9	24.3%
	Not at all	12	32.4%
4. The university provides state of the art instruction	Fully applied	18	48.6%
facilities such as smart TVs, computers, and projectors	Moderately applied	11	29.7%
	Slightly applied	8	21.6%
	Not at all	0	0.0%
5. The university offices are furnished with necessary	Fully applied	17	45.9%
computer equipment, furniture, and fixtures.	Moderately applied	17	45.9%
	Slightly applied	3	8.1%
	Not at all	0	0.0%
	Total	37	100 %

In Table 10, there are 67 out of 185 or 36% fully applied and 30 out of 185 or 16% not fully applied. This indicates that some schools are not fully automated when it comes to this section. Building automation is designated as the mechanism that is used to automate building operations such as climate control, lighting, and access control (Graveto, Cruz, & Simoes, 2021). Higher output and increased productivity have been two of the biggest reasons for justifying the use of automation (https://www.britannica.com/technology/automation/Advantages-and-disadvantages-of-automation)

Table 11 Organizational Communication (note: 100% for each question)

Item	Scale	Frequency	Percentage
Computer gadgets have security software implemented	Fully applied	16	43.2%
to make sure they are not accessible by intruders.	Moderately applied	11	29.7%
	Slightly applied	3	8.1%
	Not at all	7	18.9%
2. Electronic forms (eForms) are readily available on	Fully applied	10	27.0%
the university website.	Moderately applied	13	35.1%
	Slightly applied	7	18.9%
	Not at all	7	18.9%
3. There is a workplace technology setup where	Fully applied	14	37.8%
speaking to people in real-time is possible.	Moderately applied	14	37.8%
	Slightly applied	1	2.7%
	Not at all	8	21.6%
4. Employees depict integrity and allegiance to the school	Fully applied	18	48.6%
organization by using social media (Facebook, Twitter,	Moderately applied	11	29.7%
etc)	Slightly applied	8	21.6%
	Not at all	0	0.0%
5. The official University Webpage & other social media	Fully applied	21	56.8%
platforms are accessible, informative, and relevant.	Moderately applied	10	27.0%
- -	Slightly applied	6	16.2%
	Not at all	0	0.0%
	Total	37	100 %

The table above presents that 79 out of 185 or 43% are fully applied and 22 out of 185 or 12% are not fully applied. Automation in organizational communication illustrates technology's impact on work, work systems, and organizations (Cascio, & Montealegre, 2016). Furthermore, automation provides a great impact on various aspects of organizations.

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Table 12 Research and Extension (note: 100% for each question)

	Item	Scale	Frequency	Percentage
Meetings with	coordinators are done virtually thru	Fully applied	24	64.9%
Zoom, G	Google Meet, MS Teams, etc.	Moderately applied	8	21.6%
		Slightly applied	2	5.4%
		Not at all	3	8.1%
Request and s	submission of forms and reports are	Fully applied	16	43.2%
	done virtually	Moderately applied	11	29.7%
		Slightly applied	6	16.2%
		Not at all	4	10.8%
There is an au	tomated database where researchers	Fully applied	12	32.4%
& ex	tension reports are stored.	Moderately applied	7	18.9%
		Slightly applied	12	32.4%
		Not at all	6	16.2%
There is an online	subscription to published reports.	Fully applied	10	27.0%
		Moderately applied	7	18.9%
		Slightly applied	5	13.5%
		Not at all	15	40.5%
5. Completed research	& extension reports are published on	Fully applied	7	18.9%
the	university website.	Moderately applied	8	21.6%
		Slightly applied	6	16.2%
		Not at all	16	43.20%
		Total	37	100 %

For this section, 69 out of 185 or 33% are fully applied and 44 out of 185 or 24% are not fully applied. The possibility of automation in the research laboratory is likely to be an increasingly critical component (Holland, & Davies, 2020). Likewise, communication by each member of the team provides performance and job satisfaction (Proctor, 2014).

 Table 13 Curriculum and Instruction (note: 100% for each question)

Item	Scale	Frequency	Percentage
1. There is a remote online grading system where	Fully applied	22	59.5%
faculty can submit virtually.	Moderately applied	10	27.0%
	Slightly applied	3	8.1%
	Not at all	2	5.4%
2. Request and submission of forms and reports are	Fully applied	16	43.2%
done online.	Moderately applied	16	43.2%
	Slightly applied	4	10.8%
	Not at all	1	2.7%
3. Online classes are done virtually thru Zoom,	Fully applied	29	78.4%
Google classroom, MS Teams, etc.	Moderately applied	5	13.5%
	Slightly applied	3	8.1%
	Not at all	0	0.0%
4. There is an online group chat where students and faculty	Fully applied	30	81.1%
can exchange information.	Moderately applied	4	10.8%
	Slightly applied	3	8.1%
	Not at all	0	0.0%
5. Meetings with school officials (i.e. deans/directors) are	Fully applied	26	70.3%
done virtually thru an online account.	Moderately applied	7	18.9%
-	Slightly applied	3	8.1%
	Not at all	1	2.7%
	Total	37	100 %



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In terms of curriculum and instruction, 123 out of 185 or 66% are fully applied and 4 out of 185 or 2% are not fully applied. This is already a good sign that most colleges and universities are ready to fully automate most processes in the educational setting. It will eliminate the need to go to an actual school (https://leadaz.org/2021/04/08/how-automation-will-change-education).

5. Conclusion and Recommendations

It is, therefore, concluded that most universities and colleges are now using technology to automatically record and process to optimize the efficiency and effectiveness of their school management. Since there are still institutions that are in the process of automation, it is highly recommended that they should address these concerns to fully comply with technological change. Based on this assessment, some educational institutions in the Philippines are ready in terms of digital SPMP in managing the performance of their colleges/universities. It is now a challenge to them how they can adapt to the new normal considering many institutions are on their way to coping with the prevailing situation. Strategic Performance Management Program (SPMP) is an automated mechanism for verifying the many tasks of an employee to link with the overall performance of the organization. It is in that way that employees can check whether the achievement of goals is met or aligned. It can also be a way to help employees (staff and faculty) in improving their performance set by the institution.

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7. References

- Alves, P., Miranda, L., and Morais, C. (2017). The Influence of Virtual Learning Environments in Students' Performance. Universal Journal of Educational Research 5(3):517-527. DOI: 10.13189/ujer.2017.050325.
- Bhila, T. (2018). The Benefits and Generic Procedure of Automating an Academic Student System in Primary and Secondary Schools as an Impetus for Educational Technology. International Journal of Innovative Science and Research Technology. Vol. 3, Issue 11.
- Black, S. (2015). Current Practices for Product Usability Testing in Web and Mobile Applications. Honors Theses and Capstones. 226. https://scholars.unh.edu/honors/226
- Bolletino, V., Alcayna, T., Enriquez, K., and Vinck, P. (2018). Perceptions of Disaster Resilience and Preparedness in the Philippines. Harvard Humanitarian Initiative. (retrieved from: https://hhi.harvard.edu/publications/perceptions-disaster-resilience-and-preparedness-philippines last January 18, 2022)
- Brewer, L., Rick, H. & Grondin, K.A. (2017). Improving digital library experiences and support with online research guides. Online Learning, 21(3), 135-150. doi: 10.24059/olj.v21i3.1237
- Caluza, L. (2017). Development of Electronic Document Archive Management System (EDAMS): A Case Study of a University Registrar in the Philippines. International Journal of Digital Information and Wireless Communication (IJDIWC) 7 (2): 106-117. The Society of Digital Information and Wireless Communications.
- Cascio, W. and Montealegre, R. (2016). How Technology is Changing Work and Organizations. Annual Review of Organizational Psychology and Organizational Behavior 3(1):349-375. DOI:10.1146/annurev-orgpsych-041015-062352.
- Cataudella, S, et al. (2021). Teaching in Times of the COVID-19 Pandemic: A Pilot Study on Teachers' Self-Esteem and Self-Efficacy in an Italian Sample. Int. J. Environ. Res. Public Health, 18 15). https://doi.org/10.3390/ijerph18158211.

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- Coombs, C., Hislop, D., Taneva, S., and Barnard, S. (2020). The Strategic Impacts of Intelligent Automation for Knowlede and Service Work: An Interdisciplinary Review. The Journal of Strategic Information Systems. Vol 29, Issue 4. https://doi.org/10.1016/j.jsis.2020.101600
- D2L (2022). Embracing Digital Transformation in Education. (retrieved from: https://www.d2l.com/enapac/resources/assets/embracing-digital-transformation-in-education last January 17, 2022)
- Grajek, S. (2020). How Colleges and Universities Are Driving to Digital Transformation Today. Educause Review Special Report. (retrieved from: https://er.educause.edu/articles/2020/1/how-colleges-and-universities-are-driving-to-digital-transformation-today last August 20, 2021).
- Graveto, V., Cruz, T. and Simoes, P. (2021). Security of Building Automation and Control Systems: Survey and Future Research Directors. Computers and Security. Vol. 112. https://doi.org/10.1016/j.cose. 2021.102527
- Hernandez, A. and Quintanilla, R. (2021). Managing School Interaction Networks During COVID-19 Pandemic: Agent-Based Modeling for Evaluating Possible Scenarios When Students Go Back to Classrooms. PLoS ONE 16(8): e0256363. https://doi.org/10.1371/journal.pone.0256363.
- https://leadaz.org/2021/04/08/how-automation-will-change-education (retrieved last January 19, 2022). https://www.britannica.com/technology/automation/Advantages-and-disadvantages-of-automation (retrieved last January 19, 2022)
- Hohn, G. (2017). The Enhanced Use of Digital Technologies in School Guidance Counselor and Student Activity. Sematic Scholar.
- Holland, I and Davies, J. (2020). Automation in the Life Science Research Laboratory. Front Bioeng Biotechnol 8:571777. DOI: 10.3389/fbioe.2020.571777.
- Ilahi, R., Widiaty, I., Wahyudin, D., and Abdullah, A.G. (2019). Digital Library as Learning Resources. Journal of Physics: Conference Series. 1402 (2019) 077044. IOP Publishing. doi:10.1088/1742-6596/1402/7/077044.
- Imran, M., Ramesh, A., & Rudran, T. (2020). The impact of automation on student's career decision. Embry-Riddle Aeronautical University. Retrieved from https://commons.erau.edu/ww-research-methods-rsch202/7 last January 18, 2022.
- Kumar, A., Sarkar, M., Davis, E. *et al.* Impact of the COVID-19 pandemic on teaching and learning in health professional education: a mixed methods study protocol. *BMC Med Educ* **21**, 439 (2021). https://doi.org/10.1186/s12909-021-02871-w
- Li, C. and Lalani, F. (2020). The COVID-19 Pandemic Has Changed Education Forever. This is how. World Economic Forum. (retrieved from https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning December 29, 2021).
- Mosca, M. (2020). Digitalization of HRM: A Study of Success Factors and Consequences in the Last Decade. (retrieved from http://essay.utwente.nl/82872/1/Mosca_MA_BMS.pdf, January 18, 2022)
- O'Connor, W. (2020). 17 Benefits of Automation in Healthcare. (retrieved from: https://tigerconnect.com/blog/17-benefits-of-automation-in-healthcare last January 19, 2022)
- Pokhrel, S. and Chhetri, R. (2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. Higher Education for the Future 8(1) 133-141. Sage Journals. DOI:10.1177/2347631120983481.
- Proctor, C. (2014). Effective Organizational Communication Affects Employee Attitude, Happiness and Job Satisfaction. (retrieved from: https://www.suu.edu/hss/comm/masters/capstone/thesis/proctor-c.pdf last January 19, 2022)
- Rakib, I. (2021). Benefit of Automated Scholarship Application Management. SimplyCast. (retrieved from https://www.simplycast.com/blog/benefits-of-an-automated-scholarship-application-management-solution/#post last January 18, 2022).
- Scavarda, A.; Dias, A.; Reis, A.; Silveira, H.; Santos, I. (2021). A COVID-19 Pandemic Sustainable Educational Innovation Management Proposal Framework. Sustainability, 13, 6391. https://doi.org/10.3390/su13116391.



29 APRIL 2022

- Sinha, A., Kumar, P., Rana, N., Islam, R., and Dwivedi, Y., 2019. Impact of Internet of Things (IoT) in Disaster Management: A Task-Technology Fit Perspective. Annals of Operations Research. 283, 759-794. https://doi.org/10.1007/s10479-017-2658-1.
- Suryahadikusumah, A and Nadya, A. (2020). Digital Literacy and Innovation for Guidance and Counseling Program. Advances in Social Science, Education and Humanities Research, Vol. 462. DOI:10.2991/assehr.k.200814.041
- United Nations (2020). Policy Brief: Education during COVID-19 and Beyond. (retrieved from: https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_august_2020.pdf last January 17, 2022).
- Valetsianos, G. and Kimmons, R. (2012). Assumptions and Challenges of Open Scholarship. (retrieved from: https://www.irrodl.org/index.php/irrod/article/viw/1313/2304 last January 17, 2022).
- Varadaraj, A. and AlWadi, B. (2021). A Study on Contribution of Digital Human Resource Management Towards Organizational Performance. International Journal of Management Science and Business Administration. Vol 7, Issues 5, Pages 43-51. DOI: 10.18775/ijmsba.1849-5664-5419.2014.7.1004.