



INFLUENCE OF STRATEGIC OPERATION ON E-LEARNING DEVELOPMENT IN THE COVID-19 ERA A CASE OF UNIVERSITY
OF EDUCATION PÄDAGOGISCHE HOCHSCHULE KARLSRUHE, GERMANY

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ABSTRACT

The study was to assess the influence of strategic operation on e-learning development in the covid-19 Era case of University of Education Pädagogische Hochschule Karlsruhe, Germany. A descriptive research design was adopted using both qualitative and quantitative approaches. The target population for the study was 94. With a sample size $n=76$. The researcher used Questionnaires. The researcher used Data analysis using statistical package for social sciences. The results revealed that there was a positive significant relationship between time management, cost-effectiveness, quality control, efficiency of ICT and e-learning development with values $r=0.712$, $r=0.949$, $r=0.810$ and $r=0.938$ respectively.

Keywords: Strategic, operation, e-learning, development, Covid-19

I. INTRODUCTION

Education is one of the major factors that contribute to the country's economic development, industrialization, and economic recovery in the whole world. However, during the outbreak of the Covid-19 in 2019 many schools, colleges, universities, and other government institutions have been suspended to deal with the pandemic. Amid these hard times, teachers have been utilizing E-learning platforms to impart education to the students. The outbreak of COVID-19 in Germany required urgent changes to the plans for the summer term at German universities that have the potential to fundamentally transform teaching for the foreseeable future. Although technology-enhanced learning already played an important part in most German universities, the COVID-19 pandemic has required to expand the existing infrastructure and highlighted areas that universities should focus on in their digitalization strategy. Furthermore, this challenge has greatly accelerated the digitalization of the German higher education sector. However, it needs to be highlighted that most schools and some universities in Germany are not adequately equipped to handle the current transformation towards fully-digital forms of education (Kerres, 2020). Furthermore, most forms of technology-enhanced learning in German universities are limited to auxiliary services, such as providing lecture slides or literature as a digital supplement to real-life classes. Importantly, this crisis required substantial efforts in creating new infrastructure to enable more demanding forms of technology-enhanced learning such as video conferencing (Kerres, 2020).

The objectives of the paper are:

- i. To identify the influence of time management on e-learning development amid covid-19.
- ii. To determine the influence of cost-effectiveness on e-learning development amid covid-19.
- iii. To analyze the influence of quality control on e-learning development amid covid-19
- iv. To ascertain the influence of efficiency of ICT on e-learning development amid covid-19.

II. LITERATURE REVIEW

E-learning is the extraordinary apparatus that has added to the circulation of learning materials and procedures through the web. To maintain a strategic distance from the computerized separate

marvel which may bring hindrance to a specific gathering of understudies? It is vital to give the broadest access to E-learning offices (Collis & Moonen, 2011). Through electronic learning, this has led to the development and this is measured in terms of advanced education, corporate preparation, and clarification of the usage of electronic innovations in supporting, improving, and conveying instruction and learning (Barberà, 2010).

In today's modernized world, time management is a very important skill to people in all sectors, especially when managing a crisis like the Covid-19 pandemic. More time is spent at home due to the closure of businesses and restricted movement in some countries in order to manage the Covid-19 outbreak. Traditionally, many countries have been using a teacher to a student approach in the education sector but because of the pandemic, countries have shifted to blended learning. There is a reasonable distance between a student and the teacher. Good time management allows a student to be stress-free, relax and enjoy education.

In strategic planning, the cost is an important factor to look at before embarking on any project or plan. The cost of E-learning can increase or reduce depending on the medium of learning used, the number of participants, and the distance covered to acquire education. The prices for education have increased during the Covid-19 pandemic because of transport restrictions across the borders and the abruptness of the outbreak.

According to the World Bank (2021), the Korean government and the Ministry of Education (MoE) invested USD \$250 million to address the impact of Covid-19 on education, which is about a 4% increase from the total education budget in 2020. Cost analysis should be carried out in order to understand how the variables work together.

The Covid-19 pandemic is a health concern and it has affected the quality of education in higher institutions of learning. Many schools closed down. E-learning is disrupting both the parents and the students in terms of productivity and raising the academic scores respectively. According to Lavy (2015) the total weekly hours of instruction in mathematics, language and science is 55% higher in Denmark than in Austria (as cited in Burgess & Sievertsen, 2020). Therefore, there is a notable decline in the quality of education during the Covid-19 pandemic.

The global education sector is facing many challenges as a result of the Covid-19 crisis. A total of 191 countries had closed their schools to deploy social distancing measures in accordance with the World Health Organization (WHO) recommendations (UNESCO, 2020). More than 1.5 billion students from pre-primary to university level have been affected by these closures, with classroom-based learning interrupted for indefinite periods of time ((UNESCO, 2020).

To catch up with the crisis, ICT (Information Communication Technology) has been incorporated into learning and many students have adapted to the use of E-learning portals and with the help of electronic media. E-learning is considered as a branch that emerged with the use of information communication technology and this is integrated into university education programs during the outbreak of the Covid-19 pandemic.

According to the research done by the Committee (2010), the factors that influence the students' to adapt to E-learning include competitive advantages, observability, and trialability. Additionally, perceived compatibility and enjoyment are also other factors to put into considerations.

A survey done by Roberts in 2012, found out that there are six factors, which influence the effectiveness of Electronic learning design. These factors are providing a lot of learning experiences to meet the students' requirements, improving the lecturers' motivation through giving the required skills and training, allowing universities to carry out self-reflection and getting the right feedback on the tasks concerning the learning process.

A study done by Nichols and Anderson (2015), in Damietta addressing the required technology needed and management required to implement online education found out that skilled human labor like the managers, administrators are key factors when implementing long distance education. Secondly, materials such as the right technology and the required programs should also be provided in addition to the management.

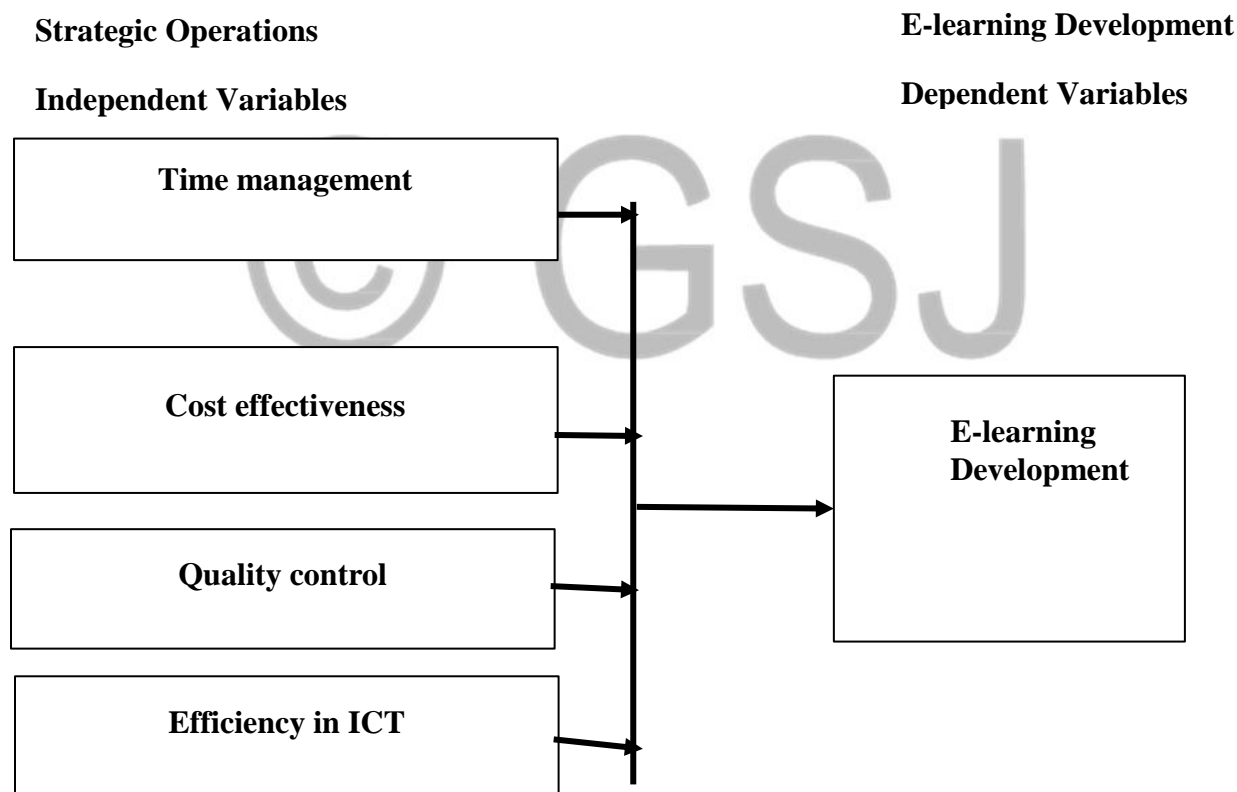


Figure 2.1 Conceptual framework

Source: Researcher (2021)

Figure 2.1 shows important aspects such as theoretical literature, which is constructed based on viewpoints of different researchers on strategic operations and electronic learning. The empirical evidence reflecting past studies is clearly indicated and research gap identification is highlighted to build and bring evidence to the current situation or reality. The theoretical framework and conceptual framework are established. The overall conclusion is that strategic operations influence electronic learning in different learning environments as this has helped to overcome some challenges related to diseases for human beings in a social working environment during the Covid-19 crisis.

III. RESEACRH DESIGN AND METHODOLOGY

The researcher adopted the descriptive survey design: this is an appropriate choice to gather and analyze data collected based on the depictions on the ground regarding the influence of strategies operation on E-learning development during Covid-19 era. Slovenes formula (1967) involves in calculating the sample size from target population: when the population is 94, the possible sample is 76.

$$n = \frac{N}{1 + Ne^2}$$

Source: Slovenes. 1967

N : stands for the target population

e : precision level equals to (5%)

n : Sample size

$$n = \frac{94}{1+94(0.05)^2} = 76.11 = 76.$$

The study used simple random sampling techniques to select categories of respondents under the study. This was done to achieve research objectives and the distribution of respondents were in four categories including University Management officers, University Students, University ICT Officers, and University lecturers. The use of this technique was more effective as it gave an equal probability of respondents being selected. Both men and women were selected equally to collect views from both genders.

The researcher used different research instruments including questionnaires, interview guides and documentation. The questionnaire was the list of questions developed by researchers to test respondents. Questionnaires were given to three categories of research participants as University Students, University ICT Officers, and University lecturers.

In this research, researchers used different secondary source documents such as textbooks, novels, organization reports, magazines, internet sources as well as websites.

IV. DATA ANALYSIS AND RESULTS

The total number of the respondents was 76 and they were made of 9 ICT Officer, 21 management officers and 46 Lecturers.

Questionnaires were distributed to 21 ICT officers, 21 Management officers and to 46 Lectures.

The questionnaire return rates were 100% of those who returned their questionnaires. The return rate is computed in table 4.5

Table 4. 1 Questionnaire return rate by the category of respondents

		Frequency	Percent
Valid	ICT Officer	9	11.8
	Management Officer	21	27.6
	Lecturer	46	60.5
	Total	76	100.0

Source: Primary data

The findings from the study indicated that 100% of all participants returned their questionnaires. The main purpose of this study was to assess the influence of strategic operation on e-learning development during Covid-19 period at University of education Pädagogische Hochschule Karlsruhe, Germany. To achieve this objective, the researcher used three specific objective that were: To identify the influence of time management on e-learning development amid covid-19, To determine the influence of cost-effectiveness on e-learning development amid covid-19, To analyze the influence of quality control on e-learning development amid covid-19 and to ascertain the influence of efficiency of ICT on e-learning development amid covid-19.

Table 4. 3 Time management was important aspect of strategic operations

		Frequency	Percent
Valid	Strongly Agree	60	78.9
	Agree	16	21.1
	Total	76	100.0

Source: Primary data

The findings indicated in table 4.3 and the results revealed that the respondents showed their perception and how they understand the time management as an important aspect of strategic operations. Study wanted to know how the respondents value their time as a factor of strategic operations. Out of 76 respondents, 78.9% strongly agreed and 21.1% agreed that time management

was an important aspect of strategic operations. It means that all respondents surely agreed that time management was an important aspect of strategic operations.

Table 4. 4 There was cost effectiveness while using electronic learning.

		Frequen cy	Perce nt
Valid	Strongly Agree	6	7.9
	Agree	18	23.7
	Neutral	7	9.2
	Disagree	39	51.3
	Strongly Disagree	6	7.9
	Total	76	100.0

Source: Primary data

The second statement highlighted was how the respondents were concerned about cost effectiveness while using electronic learning, where out of 76 respondents, 7.9% strongly agreed, 23.7% agreed, 9.2% were neutral, 51.3% disagreed and 7.9% strongly disagreed that cost was effective while using electronic learning during Covid-19. The results showed that many of the respondents (59.2%) disagreed, which means that according to the learning programme and strategic operations, the cost was not enough to successfully use electronic learning used well to all lecturers and students in university.

Table 4. 5 There was quality control in strategic operations to achieve electronic learning

		Frequency	Percent
Valid	Strongly Agree	26	34.2
	Agree	41	53.9
	Neutral	4	5.3
	Disagree	5	6.6
	Total	76	100.0

Source: Primary data

The third statement highlighted was how the respondents were concerned about quality control in strategic operations to achieve electronic learning. Out of 76 respondents, 34.2% strongly agreed, 53.9% agreed, 5.3% were neutral and 6.6% disagreed that quality control was available in strategic operations to achieve electronic learning in university of education Pädagogische Hochschule Karlsruhe, Germany. The results showed that 88.1% agreed, this showed that control was good however the low number of neutral and disagree indicated that the upgrading control was needed in order to successfully achieve effective electronic learning.

Table 4. 6 There were the factors surrounding E-learning development in an ICT during Covid-19

	Frequency	Percent
Valid	Strongly Agree	14.5
	Agree	65.8
	Neutral	3.9
	Disagree	10.5
	Strongly Disagree	5.3
	Total	100.0

Source: Primary data

The Fourth statement highlighted was how the respondents were concerned about factors surrounding e-learning development in ICT during Covid-19. Out of 76 respondents, 14.5% strongly agreed, 65.8% agreed, 3.9% were neutral, 10.5% disagreed and 5.3% strongly disagreed. The results showed that 80.3% agreed that surrounding e-learning development in ICT during Covid-19 there were the factors. Of course to develop e-learning the factors like costs, materials and awareness of using electronics were the factors needed to develop ICT in e-learning. The few neutral and disagree, may be they felt that what the university had were enough to apply e-learning in ICT during Covid-19 pandemic period.

Table 4. 7 Correlations

		Time Management	Cost_Effectiveness	Quality Control	Efficiency of ICT	E_Learning Development
Time Management	Pearson Correlation	1	.626**	.520**	.695**	.712**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	76	76	76	76	76
Cost_Effectiveness	Pearson Correlation	.626**	1	.856**	.897**	.949**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	76	76	76	76	76
Quality Control	Pearson Correlation	.520**	.856**	1	.730**	.818**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	76	76	76	76	76
Efficiency of ICT	Pearson Correlation	.695**	.897**	.730**	1	.938**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	76	76	76	76	76
E_Learning Development	Pearson Correlation	.712**	.949**	.818**	.938**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	76	76	76	76	76

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

Source: Primary data

The findings in this study showed that a high positive correlation, which shows that there is a significant relationship between strategic operations and e-learning development during Covid-19 pandemic period at the University of Education Pädagogische Hochschule Karlsruhe, Germany.

Table 4. 8 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.974 ^a	.948	.945	.236

a. Predictors: (Constant), Efficiency of ICT, Time Management, Quality Control, Cost-Effectiveness

Source: Primary data

The results revealed that R Square was equal to 0.948, it was clear that 94.8% of all variables in university of education can be explained by one of all variables of independence.

V. DISCUSSION

This part details the enquiry discoveries on each objective and the inhabitant situation of participants to the research has good impact on results.

The study revealed a high positive correlation, which shows that there is a significant relationship between strategic operations and e-learning development during Covid-19 pandemic period at the University of Education Pädagogische Hochschule Karlsruhe, Germany.

The study revealed that at the University of education Pädagogische Hochschule Karlsruhe, Germany time management is an important aspect of strategic operations. The correlation between time management and e-learning development was $r=0.712$ which indicates that there was statistically a positive significant relationship between time management and e-learning development during Covid-19 period in university of education Pädagogische Hochschule Karlsruhe, Germany.

The study revealed that according to the learning programme and strategic operations, the cost is not enough to successfully use electronic learning use well to all lecturers and students. The correlation between cost-effectiveness and e-learning development was $r=0.626$ which indicates that there was statistically a positive significant relationship between cost-effectiveness and e-learning development during Covid-19 in university of education Pädagogische Hochschule Karlsruhe, Germany.

The study revealed that the upgrading control is needed in order to successfully achieve effective electronic learning. The correlation between quality control and e-learning development was $r=0.818$, which indicates that there was statistically a positive significant relationship between quality control and e-learning development during Covid-19 period in university of education Pädagogische Hochschule Karlsruhe, Germany.

The study revealed that to develop e-learning the factors like costs, materials and awareness of using electronics were the factors needed to develop ICT in e-learning. The correlation between efficiency of ICT and e-learning development was $r=0.938$, which indicates that there was statistically a positive significant relationship between efficiency of ICT and e-learning development during Covid-19 period in university of education Pädagogische Hochschule Karlsruhe, Germany.

VI. CONCLUSION

The research revealed that at the university of education Pädagogische Hochschule Karlsruhe, Germany the strategic operations factors of time management, cost-effectiveness, quality control and efficiency of ICT influenced e-learning development during Covid-19 era. A university effectively used those factors of strategic operation in the way of developing the e-learning system and in purpose of enhancing the performance with proper network in education to the students, lecturers and also to the management officers. Time management is very necessary to operate and accomplish the educational works in university that show that e-learning was developed. 100% agreed that time management influenced electronic learning within education services, the results showed that they accepted that electronic learning succeeded based on the efficiency of time management of university. And cost effectiveness needed to fully operate with requirements used to develop e-learning in education, 85.5% of respondents agreed that overall cost effectiveness in achieving electronic learning was at least the level of 16%. And if the quality control takes place in strategic operation influences on e-learning, the 100% agreed that quality control in strategic operations was determined by speed and desired outcome. And efficiency of ICT is one factor of strategic operation that influences e-learning. 80.3% agreed that surrounding e-learning development in ICT during Covid-19 era were the factors. The results concluded that there was a positive significant relationship between time management and e-learning development with $r=0.712$, a positive significant relationship between cost-effectiveness and e-learning development with $r=0.949$, a positive significant relationship between quality control and e-learning development with $r=0.810$, and a positive significant relationship between efficiency of ICT and e-learning development with $r=0.938$ during Covid-19 era in university of education Pädagogische Hochschule Karlsruhe, Germany.

VII. FUTURE RESEARCH

Since the study has presented that it will be supportive to universities of education, it is suggested that further studies should be carried to recognize many factors of strategic operations that may be effectively used to develop e-learning in universities of education.

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