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DETERMINANTS OF THIRD-YEAR NURSING STUDENTS' SATISFACTION WITH DISTANCE LEARNING AT THE HIGHER INSTITUTES OF NURSING PROFESSIONS AND HEALTH TECHNIQUES IN TETOUAN

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ABSTRACT

This study seeks to explore the underlying factors influencing the satisfaction of third-year nursing students regarding distance learning at the Higher Institutes of Nursing Professions and Health Techniques in Tetouan. An extensive questionnaire was distributed to 86 third- year students. We integrated the Technology Acceptance Model (TAM) and the Expectation Confirmation Model to delineate the seven variables under investigation, encompassing perceived usefulness and ease, facilitating conditions, social influence, expectation confirmation, continuity of use, and student satisfaction. The proposed conceptual model underwent rigorous testing and evaluation via bivariate statistical analysis and discriminant analysis. The study results substantiate the efficacy of the proposed scale, grounded in the TAM and expectation confirmation models, in elucidating the factors that significantly impact student satisfaction. Notably, the findings highlight the close interdependence between technology acceptance and user satisfaction, the latter being implicitly influenced by perceived usefulness and ease, facilitating conditions, social influence, expectation confirmation, and continuity of use.

INTRODUCTION

The onset of the Covid-19 pandemic in early 2020 compelled higher education institutions worldwide to adopt measures to ensure the continuity of learning for their students. This swift transition induced profound changes in teaching processes (Murphy, 2020). Consequently, the continuity of educational programs was maintained through distance learning as an alternative to the physical classroom environment (Dhawan, 2020).

Simultaneously, the importance of technology use by university institutions to enhance their training programs and adopt new teaching strategies and methods became imperative (Toquero, 2020). In 2019, the Moroccan Higher Council for Education, Training, and Scientific Research recommended the integration of distance learning devices into public education policies as a form of pedagogical innovation.

However, despite the efforts made by Moroccan authorities, survey results involving 358 university students in public higher education institutions in Morocco indicate that students are dissatisfied with their experiences with distance learning (Marhoum et al., 2020). Several empirical studies emphasize that student satisfaction can be a crucial determinant of the overall acceptance of distance learning (Ben Romdhane, 2013; Nikou, 2021; Sørebø et al., 2009).

Given these findings, we conducted an assessment of distance learning at our institute among third- year

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students through a survey based on a questionnaire targeting a small group of students. The results revealed perceived dissatisfaction, with the majority of students stating that the platform of the Higher Institute of Nursing Professions and Health Techniques (ISPITS) dedicated to distance learning is not fully utilized, and each teacher employs various technological means for online teaching.

It is within this context that we undertake this study to understand the determinants of student satisfaction with distance learning at the ISPITS of Tetouan.

THEORETICAL FRAMEWORK

Distance learning is an instructional method that does not require physical attendance. Students engage in coursework from home, allowing for flexible study times. Courses often include exercises reviewed by the instructor. In recent years, educational institutions have transitioned from traditional to computerized modes, employing digital tools (email, chat, video, etc.) to facilitate learning and interaction between students and instructors (Marhoum et al., 2020). The theory of social acceptability comprises two categories: one that conceptualizes acceptability in terms of satisfaction and another that addresses users' perception of technology (University of Michigan & Bagozzi, 2007).

When a technology is successful, user satisfaction can be assumed. This concept gave rise to DeLone and McLean's Technology Success Model (1992; 2003), positing that satisfaction is an evaluation of technology through the user's experience.

In 1989, Davis introduced the Technology Acceptance Model (TAM), an extension of Fishbein and Ajzen's Theory of Reasoned Action (1975). The model suggests that the intention to use technology is linked to perceived ease of use and perceived usefulness by users (Ahmad, 2018).

TAM underwent two iterations, TAM2 (Wu et al., 2011) and TAM3 (Jeffrey, 2015). Four determinants of technology acceptance were removed, namely expected performance, expected effort, social influence, and facilitating conditions.

Facilitating conditions refer to the level at which users acknowledge that technical devices are necessary for system operation, directly influencing user intention and predicting the use of new information and communication technologies. Facilitating conditions impact user-perceived satisfaction.

A high-level platform accompanied by quality technical support for students develops acceptance of distance learning devices and, of course, satisfaction with the ease of operating digital systems (Venkatesh et al., 2012).

Social influence is a form of condition that explains users' intentions regarding technology use, taking into account the influence of users' social circles. Introduced in the UTAUT in 2003 and based on the Theory of Reasoned Action (TRA), social influence affects technology adoption and user expectations through social pressure exerted by their circles (Venkatesh et al., 2012). Social influence impacts user perception regarding the utility of distance learning (Nikou & Economides, 2017).

Perceived ease of use is a key determinant of technological acceptance, representing the degree to which users believe system use would be easy. When using an information system is perceived as easy, users are likely to continue using that technology in the future (Nikou, 2021). Several previous studies have demonstrated that perceived ease influences the adoption of distance learning and user satisfaction (Zogheib et al., 2015).

According to the Expectation Confirmation Model (ECM), expectation confirmation can positively impact users' perceived usefulness of technology. The theory posits that user satisfaction increases through successful technology use experiences. Students believe that new information and communication technologies are highly useful, and their usage experiences meet or exceed initial expectations, replicating user satisfaction. Empirically, several studies have shown a significant relationship between expectation confirmation and student satisfaction (Lin & Sun, 2009).

For Davis, perceived usefulness means the extent to which a person believes that using a system can improve their job performance. Users then analyze the contribution of this technology in terms of personal

efficiency, as well as expected results and perceived consequences. Perceived usefulness can be defined as the degree of satisfaction with which students believe that distance learning helps them achieve their goals (Lin et al., 2011). Previous research suggests that perceived usefulness is a key factor in the acceptance of distance learning systems (Lee et al., 2013; Wu et al., 2011; Jeffrey, 2015).

In the context of our research, the perceived usefulness of distance learning by students may have a positive impact on their satisfaction with this mode of online training. This causality is justified by Helson's Adaptation Level Theory (1964) (Altintas et al., 2010).

Satisfaction in management sciences is a crucial factor for ensuring users' intention and continuity of product use. Similarly, the ECM considers satisfaction as a primary determinant of system continued use. In our study, student satisfaction has a direct impact on the acceptability of distance learning because this satisfaction influences users' decisions regarding their continued use of online services (Lin & Sun, 2009). Several empirical studies suggest that student satisfaction can be a significant determinant of the complete acceptability of distance learning (Ben Romdhane, 2013; Nikou, 2021; Sørebø et al., 2009).

3-METHODOLOGY

Our investigation is grounded in the case study method. Exploratory surveys helped frame our research question, formulate hypotheses derived from the literature, and develop our conceptual model. The collected data were analyzed and processed to derive actionable results. The research hypotheses that facilitated the development of the conceptual model are presented below:

- **H1:** Perceived usefulness positively influences student satisfaction at ISPITS regarding distance learning.
- **H2:** Perceived ease of use positively influences student satisfaction at ISPITS regarding distance learning.
- **H3:** Facilitating conditions positively influence student satisfaction at ISPITS regarding distance learning.
- **H4:** Student expectation confirmation at ISPITS has a positive influence on their satisfaction with distance learning.
- **H5:** Social influence positively influences student satisfaction at ISPITS regarding distance learning.
- **H6:** Continuity of use has a significant influence on student satisfaction at ISPITS regarding distance learning.

This research model will serve as the foundation for our empirical investigation, aligning the explanatory variables (independent) with the variable we seek to explain (dependent). The study will employ statistical techniques to test the hypotheses and validate the proposed relationships within the model. The aim is to provide insights into the determinants of student satisfaction with distance learning at ISPITS.

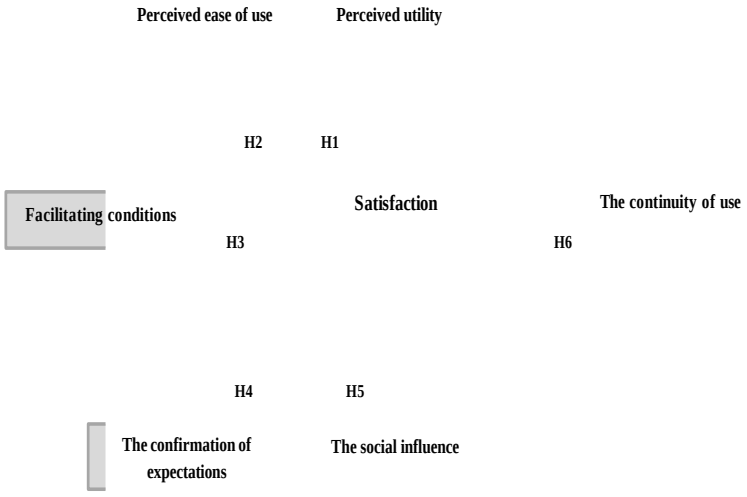


Figure1: Conceptual Framework

3.1. Measurement Scale of the Model

To investigate the determinants of student satisfaction with distance learning, we combined the Technology

Acceptance Models (TAM1, TAM2 and TAM3) and the Expectation Confirmation Model (ECM). TAM and ECM models consist of 7 constructs that assess the key determinants of technology acceptance.

3.2. Participant Sample and Study Setting

We selected a population of 110 S6 students from ISPITS Tétouan. This choice is justified by inclusion factors requiring participants to have a minimum of more than 2 years of distance learning in the same institution, excluding S4 and S2 students.

Cohen's Kappa	Interpretation
0	No agreement
0.10 - 0.20	Slight agreement
0.21 - 0.40	Fair agreement
0.41 - 0.60	Moderate agreement
0.61 - 0.80	Substantial agreement
0.81 - 0.99	Near perfect agreement
1	Perfect agreement

3.3. Study Type: Quantitative and Qualitative

This study incorporates both qualitative and quantitative components. Qualitative research allows for in-depth exploration of subjects, identifying issues or opportunities that can become hypotheses for validation through quantitative study.

3.4. Study Period

The study was conducted from April 4, 2022, to June 15, 2022.

3.5. Data Collection Methods and Tools:

The data were gathered employing a validated 5-point Likert scale questionnaire. Participants were invited to complete the survey online via the Google Forms platform to ensure confidentiality and convenience.

3.6. Ethical Considerations

Participants were informed of the study's objectives and provided informed consent. They independently completed the questionnaire, encouraged to respond honestly and objectively.

3.7. Measured Variables

Key variables assessed include perceived usefulness, perceived ease of use, facilitating conditions, social influence, expectation confirmation, continuity of use as explanatory variables, and student satisfaction as the response variable.

3.8. Data Analysis Methods and Tools

Collected data were analysed using IBM SPSS Statistics 26. Statistical analyses, including confirmatory factor analysis (CFA) to validate the model structure and linear regression models to examine relationships between variables were employed.

3.9. Reliability and Convergent Validity of Constructs

For reflective models, evaluating indicator reliability, convergent reliability, and construct validity is essential (Shiau et al., 2019). Reliability analysis provides Fleiss' kappa statistics for multiple judges, assessing agreement between measurement scales to determine the reliability of different instruments. Higher concordance implies greater reliability in reflecting true circumstances judged by participants (Brun & Smaïli, 2004).

Table 1: Interpretation of Kappa coefficient values (Landis and Koch, 1977).

RESULTS AND ANALYSIS

4.1. Descriptive analysis

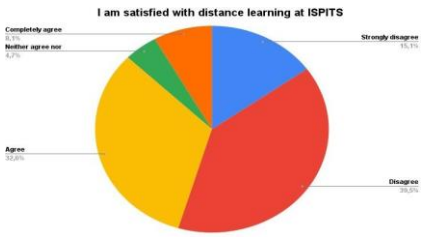
Table 2: Socio-demographic characteristics of students

Variables	Description	Frequency	Valid percentage
Gender	Men	26	30.2
	Woman	60	69.8
Age	Between 18 and 20	5	5.8
	Between 20 and 30	76	88.4
	More than 30	5	5.8
Kind option	Family health nurse	12	14.0
	Multi-skilled nurse	64	74.4
	Mental health nurse	10	11.6
Geographical origin	Urban	78	90.7
	Rural	8	9.3

- The sample is characterized by 69.8% females and 30.2% males.
- The majority of respondents fall within the age range of 20 to 30 years, comprising 88.4%.
- The predominant option among respondents is a multi-skilled nurse, accounting for 74.4%.

- A significant portion of respondents resides in urban areas, constituting 90.7%.

Figure 2: Students' overall satisfaction with distance learning



➢ The study concludes that 55% of students at ISPITS are dissatisfied with distance learning in their institution, while 44% express satisfaction.

4.2. Statistical analysis of results

4.2.1. Reliability and convergent validity of constructs:

Table 3: Overall agreement

Kappa		Asymptotic			95% asymptotic confidence interval	
		Standard error	z	Sig.	Lower terminal	Upper terminal
Overall agreement	,767	,002	246,53	,000	,767	,768

a. The sample data contains 86 effective subjects and 34 indicators.

b. Classification category values are case sensitive.

Source: Myself.

➢ Since the kappa is between 0.61 and 0.80, the strength of agreement is good.

Table 4: Concordance with distinct categories

Concordance with distinct categories [a,b]

Classification category	Conditional probability	Kappa	Asymptotic			95% asymptotic confidence interval	
			Standard error	z	Sig.	Lower terminal	Upper terminal
	,003	,005	,005	1,066	,286	,005	,005
Agreed.	,341	,487	,005	106,992	,000	,487	,487
Between 18 and 20	,002	-,002	,005	-,376	,707	-,002	-,001
Between 20 and 30	,026	-,027	,005	-5,861	,000	-,027	-,026
Woman	,021	-,021	,005	-4,602	,000	-,021	-,021
Men	,009	-,009	,005	-1,971	,049	-,009	-,009
IP	,022	-,022	,005	-4,915	,000	-,023	-,022
ISFSC	,004	-,004	,005	-,905	,365	-,004	-,004
ISM	,003	-,003	,005	-,754	,451	-,004	-,003
Neither agree nor disagree	,031	,075	,005	16,526	,000	,075	,076
No agreement	,312	,474	,005	104,204	,000	,474	,475
I totally disagree	,076	,168	,005	36,925	,000	,168	,168
Only 30	,002	-,002	,005	-,376	,707	-,002	-,001
Urban	,027	-,027	,005	-6,020	,000	-,028	-,027
Rural	,003	-,003	,005	-,603	,547	-,003	-,002
I totally agree	,119	,326	,005	71,713	,000	,326	,327

a. The sample data contains 86 effective subjects and 34 indicators.

b. Classification category values are case sensitive.

Source: Myself.

We employ kappa to evaluate the level of concordance in nominal or ordinal ratings conducted by multiple assessors during the analysis of the same samples. Hence, we can deduce a moderate concordance on the scale of agreements and disagreements, with an average concordance on the scale of entirely in agreement.

4.2.2. Bivariate Analysis:

We seek to integrate satisfaction as the dependent variable with other independent variables: facilitating conditions, social influence, and perceived ease of use, perceived usefulness, confirmation, and continuity of use.

Table 5: Correlation Study between the Dependent and Independent Variables

Pearson chi-square	**Value**	**Ddl**	**Asymptotic significance (bilateral)**	**p < 0.05**
Facilitating conditions and satisfaction	61,051[a]	20	,000	both variables vary in the same direction
Social influence and satisfaction	65,775[a]	16	,000	both variables vary in the same direction
Perceived ease of use and satisfaction	63,719[a]	16	,000	both variables vary in the same direction
Perceived usefulness and satisfaction	81,459[a]	20	,000	both variables vary in the same direction
Confirmation of expectations and satisfaction	114,894[a]	16	,000	both variables vary in the same direction
Continuity of use and satisfaction	88,297[a]	16	,000	both variables vary in the same direction

A value of P<0,05 was considered significant in all tests.

4.2.3. Discriminant analysis

We intend to apply Confirmatory Factor Analysis (CFA) to investigate correspondences between the modalities of the two characteristics.

Table 6: Discriminant analysis (CFA)

Variance represented	Loss				
Iteration number	Total	Increase	Total	Contact details for	Centroid restriction and vector coordinates
0[a]	15,425133	,000134	42,574867	38,200659	4,374208
36[b]	20,276549	,000010	37,723451	32,967031	4,756420

a. Iteration 0 displays the statistics of the solution with all variables, except those with an optimal Multiple Nominal coding level, which are treated as numeric.

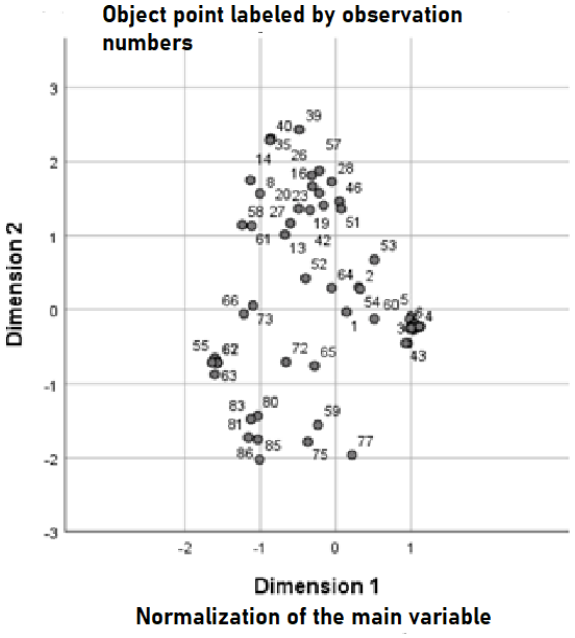
b. The iteration process has been interrupted because the convergence test value has been reached. Centroid.

Overview of models

		Variance represented	
Dimension	Cronbach's Alpha	Total (Own value)	of variance
1	,978	18,041	62,212
2	,572	2,235	7,708
Total	,985[a]	20,277	69,919

a. Iteration 0 displays the statistics of the solution with all variables, except those with an optimal Multiple Nominal coding level, which are treated as numeric.

The model as a whole is homogeneous as the alpha is close to 1.



From the above map, and after reading the coordinates of the different modalities in relation to the two axes, we can deduce that all constructs of the model are in agreement: they are homogeneous on both dimensions.

DISCUSSION

The results obtained from our study allow us to emphasize that perceived usefulness has a positive influence on student satisfaction, as the results were statistically significant, leading to the validation of the first hypothesis (H1). This conclusion aligns with the literature of (Lee et al., 2013; Sørebø et al., 2009). Similarly, perceived ease of use has a positive influence on student satisfaction, as the results were statistically significant, validating the second hypothesis (H2). This result confirms that the perceived ease of use of a distance education device is strongly impacted by the degree of satisfaction expressed by students, in line with the studies of (Marhoum et al., 2020; Nikou & Economides, 2017; Zogheib et al., 2015).

Moreover, facilitating conditions positively influence student satisfaction, with statistically significant results validating the third hypothesis (H3). A high-level platform accompanied by quality technical assistance for students develops acceptance of distance education devices and, of course, satisfaction with the ease of operating digital systems, aligning with the works of (Nikou, 2021). Additionally, the confirmation of expectations has a positive influence on student satisfaction, with statistically significant results validating the fourth hypothesis (H4). This confirms that student satisfaction increases if their expectations regarding distance education are well confirmed, consistent with the advancements of (Jeffrey, 2015; Lee et al., 2013; Wu et al., 2011).

Furthermore, social influence positively affects student satisfaction, as the results were statistically significant, confirming the fifth hypothesis (H5) of our conceptual model. Thus, it can be concluded that when students receive continuous encouragement from their surroundings, they develop a certain satisfaction with distance education through the importance of use. This synthesis is consistent with the works of (Chan et al., 2020; Nikou, 2021). On the other hand, the continuity of use has a significant influence on student satisfaction, as the results were statistically significant, leading to the validation of the sixth hypothesis (H6). Therefore, it can be inferred that the coherence between satisfaction and

the continuity of use can be triggered by intrinsic motivation after a successful experience in distance education practices, as satisfaction, as modeled in this research, is based on a personal experience reflecting positive or negative feelings towards distance education.

Moreover, the analysis of these results allows us to validate our conceptual model. To ensure student satisfaction at ISPITS with a distance education device, it is necessary to take into consideration the same determinants of technology acceptance and adoption, such as perceived usefulness, perceived ease of use, social influence, confirmation of expectations, continuity of use, and facilitating conditions, in the conceptualization and implementation of distance education devices in ISPITS in Morocco.

Finally, this study has shown two things. Firstly, ISPITS students are motivated by this type of education, which is in extension mode in general training. It has allowed them to have more confidence in themselves and has encouraged them to make more efforts in self-learning situations. Secondly, student dissatisfaction highlights how distance education is still in development in terms of psychopedagogical and didactic aspects. Nevertheless, the results obtained can be exploited to improve the complexity of distance education and help institution officials better meet student expectations by applying more appropriate pedagogical methods.

CONCLUSION

In the scope of our study, we developed a theoretical and conceptual framework by presenting the main theoretical currents related to distance learning and learning strategies, emphasizing the relationship between student satisfaction and technology acceptance models and the expectation confirmation model.

This research provides insights into the opinions of ISPITS de Tétouan students regarding the determinants influencing the adoption and acceptance of distance learning devices. This information will assist decision-makers in understanding how they could enhance this mode of teaching. Since each user's behavior varies based on cultural, social, situational, belief, and technology acceptance factors, and the results of our study are specific to the context of ISPITS de Tétouan, it would be preferable to examine whether our developed model can be applied in the context of all ISPITS in Morocco to study if there are differences between regions in the kingdom.

The prospective vision to develop is an innovative form of blended learning that harmonizes between face-to-face and distance learning modes compatible with nursing and health sciences training practices.

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