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Design and Evaluation of a Healthcare Management Terminology Mobile Learning Application

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Abstract—The EZ-HCM App, a mobile learning tool for healthcare management terminology, is being developed in this project. We created a questionnaire using a five-point Likert scale based on the technology acceptance model (TAM) to explore students' impressions of the utility, ease of use, attitude toward usage, and intention to use the EZ-HCM App. Between July 2016 and June 2017, research participants were university students from Taiwan's fourth biggest Department of Health Care Management. To understand students' design needs for a healthcare management terminology translation dictionary and explanation, we use the persona technique. Following the development of the EZ-HCM App, 113 students from the department were asked to take part in pre- and post-testing surveys, as well as the EZ-HCM App Acceptance Questionnaire. There were seventy valid surveys returned. The findings revealed that the EZ-HCM App is widely accepted for its utility (mean=4.40, SD=0.46), ease of use (mean=4.49, SD=0.48), attitude toward usage (mean=4.42, SD=0.49), and intention to use (mean=4.15, SD=0.58). Participants' perceptions of the EZ-HCM App's usefulness and simplicity of use do not alter based on their frequency of smartphone use. The EZ-HCM App's acceptability is similar to that of other m-learning systems, with favourable attitudes toward usage (β =0.77, p.0001; β =0.47, p=.0002) and intention to use (β =0.87, p.0001; β =0.98, p.0001) among participating students.

Keywords—
Healthcaremanagement,Terminology,Technologyacceptancemodel,TAM,Mobilelearning

I. INTRODUCTION

The United States had a significant effect on the diffusion of healthcare management expertise in Taiwan. In the 1960s, Americans first brought the notion of healthcare management to Taiwan. In 1965, the first Taiwanese, Jin-Wen Zhang (1934–2012), received a master's degree in healthcare administration from a university in the United States [1]. In Taiwan, the first five-year

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junior college programme in healthcare management was founded in 1965. In the 1990s, university departments and graduate schools began to emerge [2]. The number of graduates has topped 350,000 since 1998 [3]. Prior to entrance, the majority of undergraduate students lacked relevant educational experience. Additionally, postgraduate students may come from a variety of disciplines, including nursing and business management.

There are fewer websites that provide learning resources on healthcare management than there are for medicine and nursing. Furthermore, since most healthcare management resources are written in English, students from non-English-speaking nations who utilise Chinese will have to spend more time looking for information. The breadth of healthcare management language, in particular, is quite broad. There are also those in health insurance policies, public health, healthcare-related legislation, and so on, in addition to management terms in health-care institutions. The most significant distinction in terminologies between medicine and nursing and healthcare administration is that the former may read a word and know what it means, but the latter requires knowledge of its historical context or specifics to completely comprehend its meaning. There are, however, a limited number of healthcare management terminology learning assistant software and systems available on the market.

To make studying healthcare management terminology simpler, we created the first English-Chinese and Chinese-English healthcare management terminology mobile learning application (called the EZ-HCM App). In addition, we asked students in a Department of Health Care Management who are native speakers of Chinese and were chosen using a purposive sampling method to complete an online healthcare management terminology test to determine their knowledge of healthcare management terminology and an online healthcare management terminology test based on the EZ-HCM App to confirm the students' abilities to use the app for assistance to complete an online healthcare management terminology test. Finally, we created a survey for students to fill out in order to indicate their approval of the EZ-HCM App. In a nutshell, the study's goal and the research issues we'd want to investigate are as follows:

- To create the EZ-HCM App, which will help university and postgraduate students understand healthcare management terms.
- Do students' perceptions of the EZ-HCM App's usefulness and simplicity of use alter depending on their frequency of smartphone usage?
- How do students feel about the EZ-HCM App's utility, simplicity of use, attitudes toward utilising it, and intend to utilise it?
- Is the EZ-HCM App's technology acceptability approach the same as that utilised in previous studies for educational apps?

II. METHOD

A. Participants

When conducting this research, the National Taipei University of Nursing and Healthcare

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Sciences, which is Taiwan's fourth-largest health care management department, was chosen since it has the seventh-largest number of students in this sector in Taiwan. We selected three sophomore and junior college students for interviews using purposive sampling in order to learn what healthcare management terminology they thought was most frequently used and what needed translation, as well as the functional requirements for the EZ-HCM App. They all agreed to participate. There were 49 freshmen, 22 sophomores, 13 juniors, 14 seniors and 15 postgraduate students recruited to participate in the study to assess the app using a convenience sample method. Informed permission forms were signed by all participants, and they were aware that they might withdraw from the study at any moment.

B. The EZ-HCM App Design and Evaluation

EZ-HCM Software, our first app for healthcare management students, was created using the persona method, which allowed us to categorise students according to their learning styles into two categories for the sake of analysing the app's requirements (see Fig. 1). A more user-friendly interface may be created using the persona approach than with conventional system design [20, 21] because it better understands the demands of various types of users. Also included in our definitions were English and Chinese translations, as well as links to existing videos on YouTube that explain healthcare management terminology in both languages. The authors' own videos were also included. The EZ-HCM App uses Google Sheets to save the aforementioned information for future use. To ensure the accuracy of the information, we had a professor from the Department of Health Care Management check it. Cacoo and jQuery mobile were used to create the EZ-HCM App's function display. Both iOS and Android versions were available for download.

The EZ-HCM App has three features: the most recent news, a terminology dictionary, and a timeline of terminologies. As we release new versions, we'll let you know which terminology and how many of them have been modified or added. There is also an alphabetical list of healthcare management terms in both English and Chinese. Use of terminologies in the chronology of terms may help users better comprehend the link between various healthcare management plans and services as well as insurances and other types of insurance (see Fig. 2).

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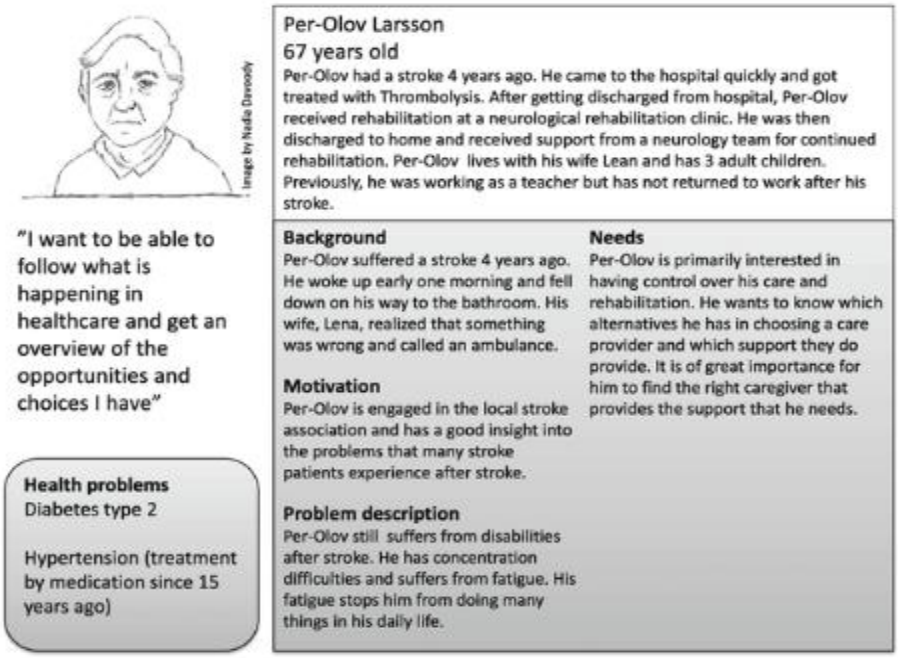

Figure 1 An example of a persona that represents a user group. The data is not from a real individual.

Figure 2 The evolution of language across time.

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A pre- and post-test consisting of ten online multiple-choice questions on healthcare management terminology was administered to participants before and after the course. For each correct answer, students received ten points, for a possible score of 100. There were two different sorts of questions. Two types of translations were made: one from English to Chinese, and the other from Chinese to English. Sample 20 words from the EZ-HCM App's extensive vocabulary. Participant comprehension of healthcare management language is determined by doing pre-testing without the use of any learning aids or resources. Participant usage of the EZ-HCM App is allowed during the post-testing. A better score in post-testing indicates that a participant's ability to acquire healthcare management terminology has been aided by the app. In the beginning of 2017, there was a pre-testing phase. In May of 2017, when the app was completed, it was put through post-testing. Participant training is not required prior to post-testing.

Two sections were included in the EZ-HCM App Acceptance Questionnaire (see Appendix I). Attitude toward use (ATU), perceived utility (PU), perceived ease of use (PEOU), and behavioural intention to use (BIW) were all changed in the first section, which included 14 questions (BI). From one point (strongly disagree) to five points (strongly agree), we developed a 5-point scale (strongly agree). Positive language was used in all sections. The EZ-HCM App has a higher rating if more people use it. Gender, grade level, educational background, previous experience using other applications to search for healthcare management terms and frequency of smartphone usage were the six questions in the second portion of the questionnaire (i.e., the frequency of smartphone use and amount of time spent accessing the internet when using a smartphone).

C. Acceptance Survey and Hypothesis

The hypotheses for testing are shown in Fig. 3. It is easier for students to use cellphones if they have been using them for a longer period of time. This means they are more likely to be assertive in making decisions about whether or not to adopt new m-learning systems. Students who don't commonly use cellphones, on the other hand, may depend on the opinions of their peers when determining whether or not to use it.

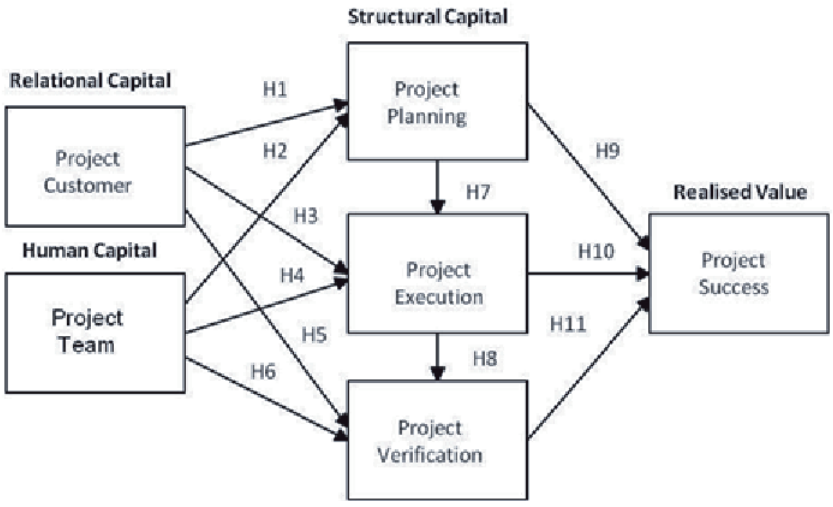

Figure3. Model and hypothesis of research

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More experienced smartphone users are more likely to see the value in new systems, and this is especially true for students. However, they have a lower level of acceptance of new systems' ease of use. Students with greater internet experience care more about search results than user friendliness, as an example. Students with less online experience, on the other hand, are more prone to get perplexed by the wide variety of information available and hence more concerned with and sensitive to user friendliness. The following four hypotheses are the focus of this investigation.

H1a: The EZ-HCM App has a varied degree of PU depending on how often students use their smartphones.

H1b: The PU of the EZ-HCM App varies depending on how much time students spend online through their cellphones.

H2a: Frequency of smartphone usage by students affects the EZ-HCM App's PEOU.

H2b: The EZ-HCM App's PEOU levels vary depending on how much time students spend on their cellphones accessing the internet.

PU and PEOU are significant TAM factors, according to Davis Bagozzi and Warshaw's research. M-learning has the potential to enhance student performance and quality of performance, allowing students to complete learning assignments at any time or place, according to a study by Purdue University. As a result, the following are the three possibilities put out by this investigation:

H3: PEOU has a beneficial effect on the EZ-HCM App's popularity.

In H4a, the EZ-HCM App's ATU is improved by the presence of PU. H4b: The EZ-HCM App's ATU is influenced favourably by PEOU.

The degree to which a person intends to make advantage of m-learning is captured by BI. Students are likely to be more inclined to utilise m-learning compared to other learning approaches. ATU, according to Davis Bagozzi and Warshaw and other researchers, is the most important aspect in students' m-learning BI, and it has a direct impact on BI. The following two theories are thus put up by this investigation:

ATU has a favourable impact on the EZ-HCM App's BI. H5b: EZ-HCM App's BI is favourably influenced by PU.

D. Data analysis

Three experts in the area evaluated the EZ-HCM App acceptance questionnaire's validity. One point was given for things that were clearly improper, while three points were assigned for those that were clearly acceptable (four points). A Content Validity Index (CVI) is used as a measure of validity, calculating both the Item CVI and Scale CVI for each item (S-CVI). The I-CVI is calculated by dividing the total number of experts who gave a three-point rating for each item by

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the number of experts who gave a three-point rating. If all experts give an item three or more points, it is referred to be an S-CVI item. According to academics, a tool with strong content validity has an I-CVI more than or equal to 0.78 and an S-CVI greater than or equal to 0.8. A Cronbach's alpha value of more than or equal to 0.7 is considered acceptable for the internal consistency of the variables (dimensions).

III. RESULTS

A. *ResearchInstrument'sValidityandReliability*

There were 14 questions on the EZ-HCM App Acceptance Questionnaire, and one item had an I-CVI of 0.67, while the other 13 had an I-CVI of 1. 0.93 was the S-CVI Because one of the three experts disagreed, the I-CVI was lower than 0.78, resulting in a lower score. In addition, reliability a was more than 0.7 for the four dimensions PU, PEOU, ATU, and BI, showing that the questionnaire's internal consistency was rather strong (0.835, 0.778, 0.911, and 0.826).

B. *Respondents Descriptive Analysis*

More than six out of ten of the 70 students that took part in the survey were students in their freshman, sophomore, junior, and senior years. Table I summarizes the demographics of the participants in this research using descriptive statistics. The majority of the pupils (n=63, 90%) were female, with the same number of students in each grade level. In a vocational high school, students from the Dept. of Data Processing (n=22, 31.4 percent), followed by the Dept. of Business Affairs (n=21, 30 percent) had the most educational background. However, the majority of students (n=45, 64.3%) had never used an app to search for healthcare management terms. Only 36% of students used their smartphones more than once every 30 minutes (n=36, 51.4 percent), but when they did, they stayed online for an average of 57.1 minutes each visit.

Table 1: Demographics of those who took part.

Measure	Items	Frequency	Percentage
Gender	Male	37	40
	Female	56	60
Age	<21	22	24
	21–25	27	29
	26–30	20	22
	31–35	6	6
	36–40	5	5
	41–45	5	5
	46–50	4	4
	51–55	4	4
	>55	0	0
Education	Graduate studies or degree	31	33
	Undergraduate studies	14	15
	Some college studies	45	48
	High school	3	3

C. *Hypotheses Testing*

Online healthcare management terminology pre-testing scores (mean=71.86, SD=18.04) were

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not significantly different across students of various grades and educational backgrounds (p=.284; p=.621) who did not use the EZ-HCM App. With the EZ-HCM App, there was no statistically significant change (p=.53; p=.27) in post-testing scores (mean=96.43, SD=7.81).

TABLE 2. TECHNOLOGY ACCEPTANCE MODEL ANALYSIS

Tobit Analysis	*β*	*p*-value
H3 (PEOU→PU)		
H3: PEOU → PU	0.86	<0.0001***
H4 (PU, PEOU→ATU)		
H4a: PU → ATU	0.77	<0.0001***
H4b: PEOU → ATU	0.47	0.0002**
H4 (PU, ATU→BI)		
H5a: ATU → BI	0.98	<0.0001***
H5b: PU → BI	0.87	<0.0001***
Notes: ** *p*<.001, *** *p*<.0001; PU=Perceived usefulness; PEOU=Perceived ease of use; ATU=Attitude toward using; BI= Behavioral intention to use		

IV. DISCUSSION AND CONCLUSION

A. *ConclusionandDiscussion*

An app for learning Chinese and English terms and concepts in healthcare management was released initially, called EZ-HCM. Students from the Department of Health Care Management took part in the research, which included first-years as well as postgraduates. More than half of the respondents were female, had a background in data processing or business affairs at a vocational high school, and had never used an app to search for healthcare management terminology. They were also frequent smartphone users who regularly used their devices to surf the internet for more than 30 minutes at a time. There is no difference in the capacity of students from various grade levels and educational backgrounds to comprehend terminology. They were able to locate the necessary healthcare management terms with the help of the app. An average of 4.15 to 4.49 was given to the EZ-HCM App's usefulness, convenience of use, attitudes toward utilising it and intentions to use it by all participants, regardless of their smartphone use frequency. Students who have used the EZ-HCM App have expressed optimism that it would be made available for download on Google Play and the Apple App Store in the near future. Students' perceptions of the EZ-HCM App's effectiveness will be influenced by its ease of use, according to this and previous research on m-learning applications. Both the utility and the convenience of use of the EZ-HCM App have an impact on students' perceptions. Additionally, students' perceptions of the EZ-HCM App's utility and usefulness impact their willingness to utilise it.

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This inaccuracy happens if the characteristics of the respondents vary from the characteristics of those who did not participate in a poll or survey Respondents and non-respondents had comparable features in this study's purposive sampling method. Because all participating students had high perceptions about EZ-usefulness HCM's and ease of use, the endogenous variable smartphone use frequency (see Table 2) did not reach statistical significance. This could be because all students had high perceptions about the EZ-HCM App's usefulness and convenience.

Before and after the healthcare management terminology exam, all of the test takers had the same pre-test score. A three-credit course called "Introduction to Health Care Delivery Systems" may be to blame for this, since first-year students are required to complete the course for a semester. Findings are similar with those of previous research that have examined the link between the four dimensions.

Students will see the mobile app as a beneficial learning tool if they can readily utilise it. The relevance of ease of use has been emphasised in several research. In the event that students are required to put in a large amount of work in order to utilise m-learning, they are more likely to be dissatisfied with the system and hence less likely to use it in the future [16]. Designers of computer systems must thus enhance the user-friendly interface. Students' attitudes toward mobile learning and their opinions of the EZ-HCM App may be influenced by improving the system's simplicity of use.

B. Limitations

This research has two major flaws. To begin with, the study's time constraints meant that an assessment survey couldn't be conducted after the participants had been using the EZ-HCM App for a long time. In order to get the most accurate answers from the poll, students' subjective short-term perceptions play a large role. Purposive sampling for questionnaire distribution and analysis only covered fewer than 7 percent of prospective users throughout the nation; consequently, the findings of the study cannot be extrapolated to other departments and graduate schools of health management in the United States.

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References

[1] Mohapatra, D. P., Mohapatra, M. M., Chittoria, R. K., Friji, M. T., & Kumar, S. D.

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DOI: 10.47750/cibg.2019.25.01.021

(2015). The scope of mobile devices in health care and medical education. International Journal of Advanced Medical and Health Research, 2(1), 3.

[2] Kanstrup, A. M., Boye, N., &Nøhr, C. (2007). Designing m-Learning for Junior Registrars: activation of a Theoretical Model of Clinical Knowledge. In Medinfo 2007. Proceedings of the 12th World Congress on Health (Medical) Informatics: Building Sustainable Health Systems (pp. 1372-1376). IOS Press.

[3] Napoleon, A. E., &Åke, G. (2014, November). On mobile learning with learning content management systems: A contemporary literature review. In International Conference on Mobile and Contextual Learning (pp. 131-145). Springer, Cham.

[4] McCarthy, A., Maor, D., &McConney, A. (2019). Transforming mobile learning and digital pedagogies: An investigation of a customized professional development program for teachers in a hospital school. Contemporary Issues in Technology and Teacher Education, 19(3), 498-528.

[5] Winters, N., Oliver, M., & Langer, L. (2017). Can mobile health training meet the challenge of 'measuring better'?. Comparative Education, 53(1), 115-131.

[6] Guo, P., Watts, K., &Wharrad, H. (2016). An integrative review of the impact of mobile technologies used by healthcare professionals to support education and practice. Nursing Open, 3(2), 66-78.

[7] Boulos, M. N. K., Brewer, A. C., Karimkhani, C., Buller, D. B., &Dellavalle, R. P. (2014). Mobile medical and health apps: state of the art, concerns, regulatory control and certification. Online journal of public health informatics, 5(3), 229.

[8] Fu, Z., Hong, S., Zhang, R., & Du, S. (2021). Artificial-Intelligence-Enhanced Mobile System for Cardiovascular Health Management. Sensors, 21(3), 773.