

Learners' Perception Of Using Microsoft Teams Predicted By Technology Acceptance Model At University Of Technology And Applied Sciences, Oman

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Abstract— The report summarizes findings of action research conducted among students (n = 96) at the University of Technology and Applied Sciences, Al Musannah (UTAS-A) about their perception of using MS Teams for online lessons based on principles of Technology Acceptance Model (TAM). A 5-point Likert scale survey questionnaire was used to collect quantitative data, and some qualitative data was also collected as part of the survey to know learners' general opinion on issues that are not covered in Likert scale questions. The quantitative data were analyzed using descriptive and inferential statistics and triangulated with qualitative data findings for interpretation. The correlation-coefficient between perceived ease of use and perceived usefulness of Microsoft Teams demonstrated a positive relation (Pearson $r = 1$), and the comparison of male and female data revealed some gender influence which is not statistically significant ($p > 0.05$).

Keywords— perception, Microsoft Teams, Online learning, technology acceptance model.

I. INTRODUCTION

For last few decades, the integration of technology in education has been taking momentum across all levels of education especially tertiary level education in Oman matching with global pursuit of ICT in education. To illustrate, technology integration in education has been emphasized in the preamble of the summary of The National Strategy for Education 2040 [1] that education sector has witnessed fundamental changes in ‘‘scientific developments and the information technology revolution’’ (p.4, line 19). In this background, education sectors across Oman have felt an ever-urgent need for appropriating technology in imparting education during the period of Covid 19 pandemic and subsequent nationwide lockdown by switching schools, colleges, and universities from offline mode to online mode, and UTAS-A was not an exception. The university has embarked on online teaching using MS Teams with the available Internet and other electronic devices coordinating and communicating well with administration, teachers, and students in addition to using existing Moodle LMS. The researchers, staff at different departments (ELC and IT) of the university, therefore, have felt the need to study on learners' perception on the use of MS Teams after their engagement with the technology for about a semester (Semester 1,

2020 – 2021). Consequently, this study on UTAS-A Learners' Acceptance of MS Teams for Online Learning during Covid 19 Lockdown Predicted by TAM was planned and carried out.

II. LITERATURE REVIEW

This study in relation to the topic has reviewed some secondary sources (relevant articles) on MS Teams and TAM (Technology Acceptance Model) [9] to gain necessary knowledge in preparation for data collection, interpretation, and conclusion from the primary source..

A. Microsoft Teams (MS Teams)

MS Teams being a comparatively newer interactive application launched in 2017 has been widely used in the field of education. Though there are not many studies on MS. insights from a few research have contributed to this study. O'Neill [2] defines "Microsoft Teams is cloud-based team collaboration software that is part of the Microsoft 365 and Office 365 suite of applications. The core capabilities in Microsoft Teams include business messaging, calling, video meetings and file sharing." Furthermore, Hai-Jew [3] remarks that Teams rolled out in 2017 was generally used for accomplishing collaborative projects; nevertheless, lately, it has been used for teaching and learning particularly due to sudden shift to online mode of learning in Covid 19 period. This is quite true of USTA-A in the context of this study.

Hai-Jew [3] mentions the following four main features of MS Teams as a socio-technological system.

- i. "Channels" for publishing posts, files including folders in SharePoint, and a Notebook.
- ii. Tabs to the Navigation at the horizontal bar can be added with other technologies and tools.
- iii. A global navigation for each user is located down the left side. Members of a team can find the activity feed, a live chat feature, assignments, a navigation button for their other Teams, files, and access to different applications such as OneNote, a video hosting site, Notebooks, a task planner, and others.
- iv. A "More apps" feature enables learners to add different apps for data collection, education, project management, etc.

In addition to these MS Teams has breakout rooms for group work, and assignment tabs for creating assignments and quizzes. Moreover, the owner can create private channels in each Team.

Since MS Teams is comparatively a new socio-technological educational software, there is an increased scope for research about its use and impacts on the users in addition to fewer research published in this regard.

B. TAM – Technology Acceptance Model

TAM is a theory first introduced by Davies [7] in his article which included different models of TAM based on the Theory of Reasoned Action (TRA) [8]. Finally, in 1989, the widely accepted model of TAM (Fig. 1) was recognized publicly [9], [7]. Wibowo [5] wrote that Davis appropriated theories such as Channel Disposition Model [10], self-efficacy theory [11] Evaluation of Information Reports [12] and Marketing and Human-Computer Interaction (HCI) [13], and Cost-Benefit paradigm form behavioral decision theory [14] to form TAM 1.

The main interconnected variables in TAM 1 are Perceived Ease of Use (PEU), Perceived Usefulness (PU), Attitude towards Use, and Intention to Use a technology. TAM 1 is useful for researchers to find out the perception of users of some information systems that are in the early stage of usage. This study has made use of TAM 1 as UTAS-A students under study use MS Teams for the first time, and TAM 1 is considered a better model for understanding users' perception at the developmental stage of using a technology [4]. Moreover, its simplicity and ease of administration are also reasons for its choice [15].

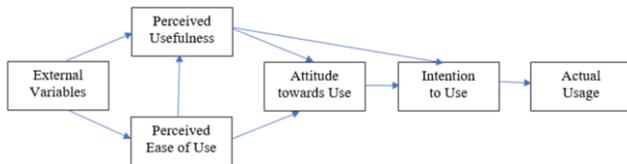


Fig.1. Technology Acceptance Model – TAM 1 (Davis, 1989, Venkatesh & Davis, 1996)

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III. RESEARCH OBJECTIVE

To measure UTAS-A Level 4 Students' Perception about Using MS Teams based on principles of Technology Acceptance Model (TAM) in terms of easiness, usefulness, attitude, and intention, and to find out the relationship between the perceived easiness and the perceived usefulness of using MS Teams at tertiary level education.

IV. RESEARCH QUESTIONS

Based on the research objective, the following research questions were formed. They are:

- A. Question 1. What is learners' perception about ease of using (PEU) MS Teams?
- B. Question 2. What is learners' perception about the usefulness (PU) MS Teams?
- C. Question 3. What are learners' attitude and behavioral intention towards using MS Teams?
- D. Question 4 Is there a correlation between learners' perceived ease of use (PEU) and perceived usefulness (PU) of MS Teams?
- E. Question 5. Is there a gender influence on learners' perception of using MS Teams?
- F. Hypothesis

Two hypotheses, as mentioned below, were formed for questions 4 and 5 for testing.

1. There is no correlation between learners' PEU (Perceived Ease of Use) and PU (Perceived Usefulness).
2. There is no gender influence on the learners' perception of using MS Teams..

V. SCOPE AND LIMITATION

The study was limited to general foundation program (GFP) students who volunteered (n = 96) to take the survey at UTAS-A, semester 2, AY 2020 – 2021. Moreover, since MS Teams was comparatively a newer socio-technology applied in education, there were only a limited number of secondary sources, of which a few are referred in the literature review. Furthermore, this study analysed data derived from learners' responses to selected TAM items.

VI. METHODOLOGY

As detailed in section 2, Technology Acceptance Model (TAM, Fig. 1) was used for the study. The constructs of TAM: a) perceived ease of use (PEU), b) perceived usefulness (PU), c) users' attitude (AMTU) and d) users' behavioral intention (BI) are focused in the data collection (Table 1). Perceived ease of use and perceived usefulness being main constructs of TAM, learners were surveyed to respond to three items under each in accordance with research questions. They are:

TABLE 1. TAM CONSTRUCTS AND ITEMS USED IN THE RESEARCH.

Question 1. What is learners' perception about ease of using (PEU) MS Teams?	
	PEU 1. Learning to use MS Teams has been easy for me.
	PEU2. It is easy to gain access to MS Teams to meet my study needs.
	PEU 3. It is easy for me to become skilful in the use of MS Teams.
Question 2. What is learners' perception about the usefulness (PU) MS Teams?	
	PU 1. Using MST would improve my study performance (the way I study).
	PU2.Using MST would improve my productivity (my actual learning / successful completion of varied tasks).
	PU3.Using MS Teams increases my learning effectiveness (learning the right thing quickly).
Question 3. What are learners' attitude and behavioural intention towards using MS Teams?	
	AMTU1. I would find MST easy and good to use.
	BI. I presently intend to use MS Teams regularly in my studies.

The verbal responses for each point were counted to find the overall percentage of each using descriptive statistics in Excel, and the numerical data was calculated using inferential statistics to find the correlation between the two main constructs of TAM (PEU and PU in Questions 1 & 2). Pearson r (Pearson's correlation coefficient ranging from -1 to +1) was used to find the correlation which means if the statistical significance is between -1 and 1, the correlation is positive. However, if it is 0 or -1, the relation is nil or negative, respectively [15].

A. Quantitative Data Analysis Method

Two descriptive questions were used to collect quantitative data to find out some probable reasons for learners' difficulty in using MS Teams, and their suggestions for improvements for getting better insights about quantitative data through the process of triangulation. For this, the quantitative responses were thematised and coded for analysing and interpreting using techniques of induction [15] i.e., narrowing down raw data into important key sets of themes and subthemes.

VII FINDINGS AND ANALYSIS

The following sections summarise findings and analyses of the study against each research question.

A. Question 1. What is learners' perception about the ease of using (PEU) MS Teams?

Three items were presented to learners for their responses in 5-point Likert scale questionnaire under research question 1 measuring learners' perception about the ease of using MS Teams. They are PEU 1, PEU 2 and PEU 3 (V. Methodology).

TABLE 2. LEARNERS' PERCEIVED EASE OF USING (PEU) MS TEAMS

5-point Likert scale	Perceived Ease of Use (PEU)MS TEAMS			
	PEU 1	PEU 2	PEU 3	Average
Strongly agree	21%	8%	9%	13%
Agree	46%	56%	54%	52%
Neutral	23%	22%	22%	22%
Disagree	10%	9%	14%	11%
Strongly Disagree	0%	4%	1%	2%

Regarding PEU 1, most respondents (46%) felt that learning to use MS Teams had been easy of them. While no one strongly disagreed with the statement, 10% disagreed with it. Furthermore, more than half of respondents (56%) agreed that it was easy for them to get access to MS Teams to meet their study needs. As for PEU 3, more than half the respondents (54%) said that it was easy for them to become skilful in the use of MS Teams (Table 2). Table 2 states that nearly quarter of respondents remained neutral about all constructs.

B. Question 2. What is learners' perception about the usefulness (PU) MS Teams?

The second important variable of learners' perception about the usefulness of MS Teams included three factors - PU1, PU2 and PU3 (Methodology). These are analysed below

TABLE 3. PERCEIVED USEFULNESS OF MS TEAMS

5-point Likert scale	Perceived Usefulness of MS TEAMS			
	PU1	PU2	PU3	Average
Strongly agree	17%	13%	9%	13%
Agree	41%	38%	48%	42%
Neutral	27%	31%	27%	28%
Disagree	13%	14%	15%	14%
Strongly Disagree	3%	5%	1%	3%

In detail, with regards, 41% and 17% of learners agreed and strongly agreed with it, respectively, whereas 13% (disagree). In terms of PU2, just above half of participants (51%) agreed and strongly agreed with it. With respect to PU3, 55% of respondents cooperatively approved it (Table 3). Moreover, the table illustrates that nearly 30% of participants did not express a convincing opinion about the given constructs, and the disagreement was 20% or less.

Fig. 8. Perceived Usefulness of MS Teams

C. Question 3. What are learners' attitude and behavioral intention towards using MS Teams?

TABLE 4. ATTITUDE AND BEHAVIORAL INTENTION

5-point Likert scale	Attitude and Behavioural Intention of Using MS Teams	
	AMTU1	BI
Strongly Agree	17%	16%
Agree	47%	52%
Neutral	27%	21%
Disagree	8%	10%
Strongly Disagree	1%	1%

About learners' attitude (AMTU), more than half of respondents (64%) demonstrated a positive attitude (agree and strongly agree) towards using MS Teams. Concerning learners' behavioral intention (BI) of using MS Teams, most respondents (68%, both agreed and strongly agreed) stated that they have a clear intention to use MS Teams for their future studies (Table 4).

D. Question 4. Is there a correlation between learners' perceived ease of use (PEU) and perceived usefulness (PU) of MS Teams?

TABLE 5. CORRELATION BETWEEN PEU AND PU

Correlation between PEU and PU				
PEU	Likert scale - 5	PU	Likert scale - 5	Pearson <i>r</i>
PEU 1	3.8	PU1	3.6	1.0
PEU 2	3.5	PU2	3.4	
PEU 3	3.6	PU3	3.4	

Perceived Ease of Use (PEU) and Perceived Usefulness (PU) are the most important variable in TAM to understand users' perception of the acceptability of any software [16], and the average of 5-point Likert scale was calculated using descriptive statistics for three items of PEU and PU (Table 5). The correlation between the two helps stakeholders to get better insights about planning and implementing technology in education.

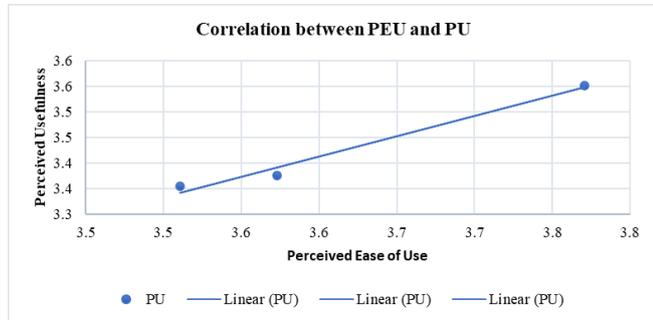


Fig. 2. Correlation between PEU and PU

A null hypothesis was formed to test correlation between PEU and PU using inferential statistics of Pearson r (Pearson's correlation coefficient ranging from -1 to +1). Pearson r test result of correlation coefficient was 1.0 which means there is a strong positive correlation between PEU and PU. The null hypothesis (IV), therefore, was rejected (Fig. 2).

E. Question 5. Is there a significant difference between males and female perceptions of using MS Teams in terms of gender influence?

TABLE 6. GENDER COMPARISON=T-TEST

t-Test: Two-Sample Assuming Unequal Variances		
	Males	Females
Mean	3.6	3.575
Variance	0.034286	0.019286
Observations	8	8
Hypothesized Mean Difference	0	
df	13	
t Stat	0.305505	
P(T<=t) one-tail	0.382409	
t Critical one-tail	1.770933	
P(T<=t) two-tail	0.764818	
t Critical two-tail	2.160369	

Since the study included both males and females, the researchers have felt the need to consider whether there is any gender influence on learners' perception of using MS Teams across different variables.

The independent t-test demonstrated (Table 6) that there is no statistically significant difference ($p > 0.05$) between males and females in terms of their perception. So, the hypothesis was accepted (IV).

B. Qualitative Data Analysis and findings

Two descriptive questions which are intended to be the part of the interview were attached to the questionnaire for learners to respond to them in writing. They are:

1. Do you like to continue your course through MS Teams? Why?
2. What are your suggestions to improve MS Teams learning experience?

Learners responded to both the questions briefly and Table 7 summarises the key themes of learners' responses which gave some valuable answers to the questions.

TABLE 7. SUMMARY OF QUALITATIVE FINDINGS

Qualitative Findings : Summary		
Criteria/ Themes	Codes/Subthemes	Sample Verbatim Extracts
Reasons for continuing to use MS Teams	Easy	S1. "because it is an easy program to study various skills remotely ... it is possible to communicate verbally or in writing at any time." S2. "because it easy to use"; S3. "because I benefited a lot from it. It is easy to take activities".
	Better communication	
	Speaking and writing	
	Helping different skills	
	Anytime use	
Reasons for discontinuing	Offline/face-to-face better	S4. "no, college better", S5. "No, because the information ... does not arrive quickly", S6. "No, because I do not have a laptop and the internet is weak.",
	Slow Internet	
	No laptop	
	Slow delivery	
Improvement	Use interactive whiteboard	don't have Wi-Fi until to enter online class." S16. "Provide a lot of learning experience." S7. "Exploitation of
	Use video for teaching	
	Provision of cheap Internet	
	Wi-Fi service	

	Better voice	application features by ... provide free or discounted internet subscriptions to the students” S8. “Make it more easier and improve the Voice there” S9. “An interactive whiteboard should be placed in the program.”;
	Use different applications	
	Diverse learning activities	

The qualitative data findings for questions are analyzed to find reasons for continuing to use MS Teams as easiness of use, better communication, anytime use and better communications. However, some respondents want to discontinue it because of slow Internet, and preference for face-to-face lessons. Finally, respondents have suggested some improvement measures such as interactive whiteboard, video for teaching, better Wi-Fi service (Table 7).

VIII DISCUSSION AND IMPLICATIONS

The triangulation of the qualitative and quantitative data [17] enabled the researchers to find reasons for learners’ positive and negative responses in the quantitative data findings (Tables 1 - 4). The qualitative data reveals some reasons such as Ease of use, better communication, easiness to speak and write, learning from home, helping different skills and anytime use as some of the reasons for learners’ overwhelming acceptance of MS Teams for online learning. One can logically connect these reasons to learners’ overwhelming positive perception of MS Teams constructively affecting their attitude (AMTU) and behavioral intention (BI) of using it as evidenced the quantitative data analysis.

Based on the study, the following recommendations are made to the stakeholders (UTASA management, Policy makers, teachers, future researchers, students, etc) for implementation and further investigations.

- Learners should be encouraged to continue to use MS Teams for meeting various academic needs for they are motivated to engage themselves with MS Teams.
- Flipped EFL lessons using MS Teams should be implemented for post Covid-19 offline lessons giving opportunity for learners to involve in MS Teams online activities off-class hours.
- Stake holders should feel the necessity to deliver academic lesson integrating MS Teams to sustain learners’ technical skills gained in using MS Teams for learning. Losing touch with the technology may negatively affect their perceived ease and usefulness of using MS Teams whenever a Covid-19 like situation arises in the future.
- Learners’ positive perception of using MS Teams constructively impacting their learning performance and productivity across academic disciplines should be appropriated to yield effective learning.

- Separate studies on UTAS-A teachers' and parents' perception of using MS Teams, and its various tools may be carried out to identify the perception among such population which is not included in the present study.
- Studies across tertiary level institutions, universities should be conducted to collect large volume of data for more reliable conclusions about different stakeholders' perceptions.
- Stakeholders should be aware of learners' challenges such as weak or no Internet, need for electronic devices (laptops, smart phones, etc), and taking necessary action to ensure learners are provided with the same.

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