MINISTRY OF EDUCATION, YOUTH AND SPORT

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BUSINESS INSTITUTE

AIB RESEARCH SERIES

VOLUME II

PHNOM PENH, 2022

The Institute for your successful professional career

EDITORS AND REVIEWERS

Key Remarks from Managing Director of AIB

ACLEDA Institute of Business, the leading business school with the highest quality standard to develop future generations to support the socio-economic development in Cambodia and the Region is a subsidiary company of ACLEDA Bank Plc's, which recognized by the Royal Government of Cambodia in 2016 as a private higher education institution was transformed from ACLEDA Training Center (ATC). The mission of AIB is to provide learners with the superior quality of higher education services and professional training in business education so that they can develop their knowledge, skills, experiences, ethics and networking in order to enhance their professional future careers.

As per basic of applied research have currently been a central focus in order to transform Cambodia into a digital economy, AIB has been committed to take part of contribution of promoting a research culture of Cambodia in line with its vision and mission. AIB has integrated industry attachment and lifelong learning into teaching and learning curriculum and extracurricular activities. For instance, the programs of AIB are conducted by using problem-based, inquiry-based, project-based, mini-research, and presentation.

As part of a strategic leadership, AIB has encouraged outstanding students to conduct thesis writing in order to fulfill their graduate requirements; and several of the top quality papers have been selected systematically by using double-blind review and editorial process, so that they could be published in AIB Research Series. Furthermore, AIB has integrated research publications into career development scheme, especially for the full-time faculty members, so that they could be promoted from a senior lecturer to an assistant professor and all the ways up to a professor title.

Last but not least, AIB is going to publish the Research Series two issues per volume annually; moreover, a local and a regional researcher will be invited to publish his or her work in AIB Research Series, so that an academic community can be initially created and sustainably developed in Cambodia and the Region.

Phon Narin, Ph.D.
Managing Director

Key Remarks from Editorial Board

Academic Affairs Committee is a technical arm of the Board of Directors of AIB to advise on teaching, learning and research domains. Quality and relevance of teaching and learning are our priority to ensure that students will be useful citizens and well accepted in the world of work after their graduation from AIB. We are committed to the empowerment of the faculty members through capacity building and professional development for the betterment of their respective services.

AIB Research Series is the first attempt to promote a sharing of knowledge. Against this backdrop, I would like to draw your attention that authors take weeks, months and years to conduct research and write research articles, but you may spend only hours and days to read and comprehend their articles. Thus, I would like to congratulate the authors on their efforts and I also encourage you to read with interest for your professional development.

On behalf of the Committee, I would like to wish the faculty members and the students of the AIB every success in their future endeavors and academic society.

Dy Samsideth, Ph.D.
Chairman of the AACO and Editorial Board

Key Remarks from Editor-in-Chief

We are delighted to celebrate the launch of the AIB Research Series II after the series I. This AIB Research Series will be another important contribution to the advancement of knowledge and improvement of relevant situations. On behalf of the AIB Editorial Team, I would like to extend a very warm welcome to the readership of the AIB Research Series. I would like to take this opportunity to express my sincere thanks to all authors, board members, editors, and reviewers, all of whom have contributed to the success of the Research Series, which is developed in line with one of the missions of AIB to promote research activities within its academic community to ensure quality education.

The AIB Research Series II primarily focuses on research examining issues centering around the fields of business and education. This provides a crucial forum to address important issues and share research findings, and discuss various aspects in business and education, from which the readership in the field can benefit. This volume consists of a variety of research topics which include customer satisfaction, training and development, blended learning, etc., in which the research employs qualitative and quantitative approaches.

We believe that the regular research publications in the AIB Research Series involving various topics will pave the way for AIB to become the leading institution in academic research and development in Cambodia.

Sam Chanphirun, Ph.D.
Editor-in-chief

Key Remarks from Editor-in-Chief for AIB Research Series

It is our great pleasure to bring you this second volume of AIB Research Series. This series may have been a relatively small contribution to knowledge production in the fields of finance, education, and ICT4D, yet the dire need to build and document the experiences and developments in Cambodia and from Cambodian perspectives has made this series highly valuable. The authors and editorial and reviewing team are highly commended for bringing together such a collection of knowledge.

This second volume brings together efforts to understand the problem of technological innovation and acceptance around mobile payment applications from different experiences, as well as document several instances of career and skill developments in Cambodia. However, limited these efforts may be in terms of theoretical approaches and settings, the articles in this volume provide a rather rich illustration of diverse behaviors and motivations involving current major developments in Cambodia. I believe this collection is a foundation for further knowledge building both at AIB and within the country.

Peou Chivoin, Ph.D.
Editor-in-chief

TABLE OF CONTENTS

Promoting Research Productivity at Cambodian Higher Education Institution from Leadership Perspective: The Case Study of ACLEDA Institute of Business

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ABSTRACT

Research productivity can be developed only if there is stakeholder involvement, especially from a leadership perspective. Thus, this study attempts to examine how institutional and leadership characteristics influence research productivity at a Cambodian higher educational institution. The study employed a qualitative approach, including document analysis, interviews, and focus group discussions in order to seek insights into research productivity at ACLEDA Institute of Business (AIB). Using theme-based analysis, the study has found that research productivity at AIB is currently at a very early stage of development – so-called infant stage, at which research articles are mainly produced by both lecturers and students. The study has also found that most of the institutional characteristics such as clear coordinating goals, research emphasis, culture, positive group climate, communication with professional networks, resources, sufficient work time, communication, rewards, brokered opportunities, decentralized organization, and assertive participative government do exist at AIB. However, there were some characteristics missing concerning the institutional factors, namely recruitment and selection, mentoring, and size, experience and expertise. More importantly, leadership characteristics such as scholarship, research orientation, capability fulfilling all critical leadership roles, and participative leadership do play important roles in promoting research productivity at AIB.

Keyword: research productivity, institutional characteristics, leadership characteristics

1. Introduction

The Cambodian government has recently focused on research activities in order to make Cambodia become a knowledge-based society. According to the Royal Government's Rectangular Strategy (Phase IV 2014-2018), the Royal Government in the sixth Legislature of the National Assembly has emphasized "creating mechanisms to help weak students with concrete incentives, research, and development of new teaching and learning methods" (p.21). Likewise, as stated in the Cambodia Industrial Development Policy 2015-2025, the Royal Government also focuses on strengthening education quality for research development. In line with the strategy, as summarized in Heng (2020), the Ministry of Education, Youth and Sport (MoEYS) has developed several policies namely Policy on Research Development in Education Sector, Master Plan for Research Development in Education Sector, Policy on Higher Education 2030, and Education Research Council (a policy think tank). Furthermore, in order to promote research and publication, MoEYS has implemented two projects namely Higher Education Quality and Capacity Improvement Project (HEQCIP) and Higher Education Improvement Project (HEIP). These efforts have been initiated because research and publication in Cambodia falls behind several countries in the region (Barrot, 2017; and Heng, 2020).

More importantly, these efforts can be implemented effectively with the participation from all levels of stakeholders. According to Heng (2020), the macro or national level is responsible for policy formulation and ensuring the effectiveness and efficiency of implementation; the meso or institutional level is responsible for creating a conducive and supportive environment for promoting research culture; and the micro or individual level, referring to an individual academic or researcher, needs to have a strong commitment and intrinsic motivation to engage in research culture. The same study also noted that the micro could fully participate in the research culture only if there is emotional and financial support from the meso and macro levels. Sam and Dahles (2017) have suggested that stakeholder collaboration needs to be promoted by policymakers and institutional leaders in order to push research and development forward in Cambodia to respond to the global context of knowledge-based economy.

As cited in Cheetham (2014), research culture is crucial not only for a research-focused institution but also for a teaching-focused institution (Blackburn et al., 1991). Currently, many institutions globally are pressured to develop research culture and faculty research production (Youn & Price, 2009). One of the major forces is the institutional reputation, and research publication, especially citations per faculty, is one of the criteria for QS (Quacquarelli Symonds) world university ranking (Writer, 2021).

Promoting stakeholder collaboration at the macro level has currently been in place. Ngin and Kao (2017) remark that promoting a research culture among students and lecturers is one of the keys to producing skilled and innovative human resources in Cambodia. However, it is still a question at the institutional level, especially the role of leadership. Kian-Woon et al. (2010) have found research culture and research capacity to be limited in many universities in

Cambodia; and the study acknowledges the importance of academic governance and leadership in promoting research culture and capacity. Eam (2018) has also claimed that leadership plays an important role in the transitional period of research development in Cambodia. The study shows some evidence that leaders of some higher education institutions are the game changers who contribute to the development of research activities within their own institutions.

In order to respond to the abovementioned issue and rationale, this study attempts to examine how institutional and leadership characteristics influence research productivity at a Cambodian higher education institution by using the case of the ACLEDA Institute of Business (AIB). In order to shed light for the study, three research questions have been raised: What are the current institutional leadership characteristics of AIB? What are the current developments of research activities of AIB? And how do AIB's institutional leadership characteristics shape its research productivity?

In response to the above research questions, the study follows three steps. First of all, the study analyzes key literature, namely policy, structure, and operating manuals and procedures of AIB. Secondly, the study conducts in-depth interviews and focus group discussions with key participants. Finally, the study discusses the key findings with the existing pieces of literature so that a meaningful conclusion can be made.

The Setting

This study focuses on the institutional level, that is, the ACLEDA Institute of Business (AIB), which is a subsidiary institution of ACLEDA Bank Plc. AIB was recognized by the Cambodian Ministry of Education, Youth and Sport in 2016 as a private higher education institution, which was transformed from ACLEDA Training Center (ATC).

This study selected AIB as the case among other 128 higher education institutions (HEIs) in Cambodia because research activities have become one of the priorities emphasized by its management and leadership even though it is a newly established HEI. This study attempts to explore how institutional and leadership characteristics influence research productivity at AIB.

2. Literature Review

2.1 Definition of research productivity

According to Ngin and Kao (2017), research productivity is composed of publications, citations, patents, research completions, and research funds. The administrators refer to the research productivity of the faculty as the number of publications produced by the faculty members; however, the faculty members argue that the assessment of research productivity should be based on "the quality of publications not the number of the publications" (Quimbo & Sulabo, 2014, p.1957). In short, "research productivity is defined as the product of research activities" (Caminiti et al., 2015, p.2). The research productivity can be measured at the early stage of research culture process, that is, gestation stage.

According to Olvido (2021), gestation or initiating, is a production stage which involves producing research and writing manuscripts. This stage requires the institutions to invest in capacity building for the faculty members and research production can be produced by both faculty members and students. The second stage is the expansion or developing, at which the institutions reach a stable phase, where a quality of research activity and output increases. Moreover, Olvido (2021) has found that paper presentations, dissemination, and publication of research articles exist at the expansion (flourishing) stage, and the publication of students' works is suggested to include in this stage as well. At the third stage, so-called the maturation, the research outputs benefit academia, community, and industry; therefore, research culture is fully developed, and research becomes evidence-based, influencing policies and introducing technology.

As a result, research productivity is one of the keys to increase institutional reputation as well faculty advancement (Dundar & Lewis, 1998). In order to increase research productivity, leaders have to play an important role in developing and implementing policy, encouraging teamwork, and motivating.

2.2 Leadership, individual, and institutional characteristics in promoting research productivity

Bland et al. (2002) describe that research productivity reaches the highest level when there is a relationship between individual characteristics and institutional characteristics, which are mediated by leadership characteristics. The below list shows that research culture and productivity can be fully developed through the interaction between individual, institutional and leadership characteristics (Bland et al., 2002).

2.3 Individual characteristics

According to Bland et al. (2002), the individual characteristics refer to the knowledge, skills, attitude and motivation of the faculty members within the institution. These characteristics include socialization, motivation, content knowledge, basic and advanced research skills, simultaneous projects, orientation, autonomy and commitment, and work habits.

2.4 Institutional characteristics

Cheetham (2014) remarks that the second characteristics are the institution ones, which are shaped by three main themes such as importance of collegiality, long-term goals, and already-present characteristics. Several studies support that institutional characteristics, especially a well-established one, play an important role in promoting the research productivity (Creswell, 1985; Dundar & Lewis, 1998; Bland et al., 2002). First, institutions that influence research productivity should recruit and select faculty members who are equipped with research skills and are motivated and committed to doing research. Second, there should be clear coordinating goals, which are shared among faculty members. Third, the institutions should emphasize research, which is equivalent to or even greater than other goals. Fourth, the institutions should emphasize a culture, in which research-related values and practices have been

shared among members. Fifth, the institutions should create a positive group climate, which is "characterized by high morale, a spirit of innovation, dedication to work, receptivity to new ideas, frequent interactions, high degree of cooperation, low member turnover, good leader/member relationships, and open discussion. Sixth, faculty members should be assisted by the mentors who are scholars. Seventh, there should be a communication with professional research network both inside and outside the institutions. Eighth, there should be enough resources such as funding, facilities, and especially human ones for supporting faculty members. Ninth, there should be sufficient work time for faculty members to be commited to doing research. Tenth, there should be large enough faculty members obtaining experience and expertise in order to produce research result. Eleventh, there should be clear communication channels so that all faculty members are kept informed. Twelfth, there should be equity and comparable rewards such as money, promotion, recognition, and new responsibilities. Thirteenth, faculty members should be offered brokered (professional development) opportunities regularly so that they can grow continuously. Fourteenth, the structure of the organization should be centralized and flat. Fifteenth, faculty members expect an assertive participative governance which clear and common goals are shared by assertive and participative leadership (Bland et al., 2002; Marchant, 2009; Cheetham, 2014).

Table 1: List of Description of Individual, Institutional, and Leadership Characteristics

Individual characteristics	Institutional characteristics	Leadership characteristics
1.Socialization	1.Recruitment and selection	1.Scholar
2.Motivation	2.Clear coordinating goals	2.Research Oriented
3.Content knowledge	3.Research emphasis	3.Capability fulfills all critical leadership roles
4.Basic and advance research skills	4.Culture	4.Participative leader
5.Simultaneous projects	5.Positive group climate	
6.Orientation	6.Mentoring	
7.Autonomy and commitment	7.Communication with professional network	
8.Work habits	8.Resources	
	9.Sufficient work time	
	10.Size/experience/expertise	
	11.Communication	
	12.Rewards	
	13.Brokered opportunities	
	14.Decentralized organization	
	15.Assertive participative governance	

Adapted from (Bland et al., 2005)

2.5 Leadership characteristics in promoting research productivity

The leadership characteristics, which include scholar, research oriented, capability of fulfilling critical leadership roles, and participative leader, are the connectors between individual and institutional characteristics.

Leadership has been central focuses for researchers over these last decades. According to Yukl (2013), leadership has been defined in terms of traits, behaviors, influence, interaction patterns, role relationships, and occupation of an administrative position. Rauch Jr and Behling (1984) define leadership as the process of influencing and organized group toward accomplishing its goals; as actions that focus resources to create desirable opportunities (Campbell, 1991); as the process of creating conditions for a team to be effective (Ginnett, 1996); and as the process of getting results through others and the ability to build cohesive, goal-oriented teams (Hogan, Curphy, Kaiser, & Chamorro-Premuzic, 2018).

Even though individual is the active agent in producing research publication, they need to be supported and motivated from the institution, which is mediated by leadership characteristics (Cheetham, 2014 & Bland et al., 2005). They mainly share four main characteristics or behaviors. First of all, the leaders have to be *idealized influence* (Dubrin et al., 2006), who "have to be scholars who play role model as sponsor, mentor, and peer for other group members." (Bland et al., 2002); Secondly they have to be *inspirational motivation* (Dubrin et al., 2006), who "have to be research oriented which can be the foundation for translating research mission to other group members." (Bland et al., 2002); Thirdly, they have to be *intellectual stimulation* (Dubrin et al., 2006), who "are capable fulfilling critical leadership roles, namely managing people and resources, raising fund, advocating group, aligning mission and goals, and attending research activities conducted by individual and institution as much as possible." (Bland et al., 2002); Finally, they have to be *individualized consideration* (Dubrin et al., 2006), who "have to use assertive and participative style of leadership. They have to hold frequently meetings, set expectations, make high-quality information, and vest ownership of project." (Bland et al., 2002).

3. Methods

This study employed a qualitative method, which involves a document analysis, a focus group discussion, and an interview (Schindler, 2019). The document analysis is crucial in this study since it "provides background and context, additional questions to be asked, supplementary data, a means of tracking change and development, and verification of findings from other data sources" (Bowen, 2009, p.30). The focus group discussion is very useful when inserting some activity-oriented questions adapted to the topic, and it potentially enriches data collection, reduce drops in attention, and eases in talking about sensitive and complex topic (Colucci, 2007). Finally, as cited in Sam (2017), the interview provides interaction setting for exploring experiences and perspectives of their partners (Schostak, 2005).

3.1 Key participants and relevant documents

The key participants include the Chairman of Academic Affairs Committee (AACO), Managing Director, Deputy Managing Director (DMD & CAA) in charge of academic affairs,

and editor in chief. The relevant documents involve policy, operating manuals and procedures for analysis.

3.2 Research tools

This study employed two useful tools in the qualitative methods. The first tool is an interview guide of the unstructured interview. According to Edwards and Holland (2013), the unstructured interview allows the interviewee to talk from their perspective using their frame of reference and ideas and meanings that are familiar to them. Moreover, the interview guide outlines the topics or themes to be covered during the actual interview (Esterberg, 2002), and the questions of the interview cover themes related to leadership and institutional characteristics, which mainly benchmark from Bland et al., (2005). The second tool is a focus group guide. According to Kelly (2003), focus group interview guide allows interviewer to lay out question design to achieve the richness of data during time together with participants. The study develops questions, which explicitly address the key themes with clear phrases and appropriate sequences.

3.3 Data collection

First of all, the study collected all relevant documents related to organizational productivity and chart, code of conducts, code of ethics, term of reference, recruitment and selection manuals, training and development manuals, performance appraisal manuals, and research manuals and procedures for bachelor's degree, master's degree, and AIB Research Series. Secondly, the study conducted unstructured interview with the managing director and deputy managing director. Last but not least, the study conducted focus group discussion with key participants from AIB, namely representative of the Board of Directors (BoD), who is the Chairman of Academic Affairs Committee (AACO), DMD & CAA, and the editor in chief.

3.4 Data analysis

To capture the insights of the institutional and leadership characteristics, the study first reviewed and analyzed all the relevant documents. The interviews and focus group discussions were then transcribed and coded based on themes and subthemes from each research participant. The subtheme on the current stage of research development at AIB was coded as TH01; and the relationship between institutional characteristics and research productivity, reasons for promoting research productivity, the roles of leadership in promoting research productivity, challenges in promoting research productivity, coping with the challenges, and strategies to promote research productivity including long-term and short-term planning relevance to research activities were coded as TH02, TH03, TH04, TH05, TH06, and TH07, respectively. Codes such as P1, P1, P3 and P4 were assigned for the four key research participants and exemplary quotes were used as the evidence for the explanation of the relevant themes.

3.5 Ethical consideration

In order to ensure integrity and ethical standard, the researchers sent the consent form the key participants by indicating the confidentiality and voluntary participation. Before interviewing them, the researchers presented the consent form and asked permission from them to record the interview for in-depth analysis including note taking during the interview. Likewise, the researcher also asked permission from the participants to record the discussion session during the focus group discussion. Last but not least, the researchers analyze the data carefully in order to make sure that the findings are reliable and accurate.

4. Findings

4.1 Background of ACLEDA Institute of Business

The Vision of AIB is to be the leading business school with the highest quality standard to develop future generations to support the socio-economic development in Cambodia and the Region. Moreover, the mission of (AIB) is to provide learners with the superior quality of higher education services and professional training in business education so that they can develop their knowledge, skills, experiences, ethics and networking in order to enhance their professional future careers (AIB, n.d.-a).

Like his parent company, AIB is structured with a strong culture of professional ethics, quality, accountability and transparency. Five main functions of AIB are currently managed and lead by a managing director, namely Academic Department, Finance Department, Graduate School, Centre for Internal Training, and Centre for Entrepreneurship Training and Development. Practicing a good governance, Board of Directors (BoD) acts on behalf of the shareholder who is hundred percent owned by ACLEDA Bank Plc. BoD has to ensure that the executive body, headed by the managing director, performs his function well; moreover, BoD plays roles as strategic advice to the managing director so that the vision and mission can be achieved and as compliance and audit body to shareholder so that ethics and transparency can be maintained. Academic Affairs Committee is a technical arm of the BoD, to advise on the quality of teaching, learning, and research domains.

4.2 Research activity at AIB

Seventeen students of the first batch participated in thesis writing on finance and banking and all of them were successful in their final thesis defense. Currently, there are nine students of the second batch participating in thesis writing on mobile banking and Bakong payment system. AIB Research Series, Volume I, which is a double-blind peer review, has been successfully published in the Business Review of AIB's website. AIB is currently organizing the faculty members into team to produce research articles for the Volume II of AIB Research Series, which will be published in 2022. AIB's planning to organize an internal conference and

inter-university conference, which provide opportunity for the faculty members to present their papers and outreach the public.

4.3 The current stage of research development at AIB

Based on the document analysis and the interviews, the study found that the research activities at AIB is currently at the very early stage of development. Outstanding students are encouraged to write thesis and transform their theses into research articles, coauthored with their supervisors and co-supervisors. The faculty members have been formed into group, led by Technical Team Leader (TTL), to produce the research articles. Most of the research articles are reviewed before publishing at AIB Research Series.

4.4 The relationship between institutional characteristics and the research productivity

The work environment of AIB is conducive for promoting research productivity because of the policy and practice, operating manual and procedure, supportive leadership, teamwork, supporting offices such as Center for Research & Innovation. P1 states,

"The culture of work, which is (Start small and do well) at ACLEDA, is really fit with the development of research activity."

Furthermore, P3 states,

"*Our culture is teamwork and very supportive. We have developed operating manuals and procedures in order to set standards and guidelines for the organizational practices*."

4.5 Reasons for promoting research productivity

The current higher educational institution (HEI) focuses on three core missions, namely teaching, research, and entrepreneurship as stated by P4. Research and publications can help build the image of AIB and upgrade the capacity of the faculty members and the students. P2 states,

"We want to differentiate AIB from many other HEIs in Cambodia. AIB focuses on research activity because it can broaden new-and-updated knowledge to faculty members and students and it can build the reputation." He continues, "Many HEIs get success because of research … research contributes to student's decision making as well HEIs' decision since new findings can improve current situation especially top universities such as Harvard and Chulalongkon."

More importantly, research and publications help categorize AIB into the top university ranking in the region and build bridge to the public, professional practice and community. This is in line with the mission of AIB. P1 states,

"We want AIB to become a Research University in 2030. We want to see AIB to become top 500 university in Asia or top 200 university in Southeast Asia." He continues, "We want AIB's researchers to outreach to the public by presenting and publishing the papers. We want to see (PLC, which means Professional Learning Community) and (COP, which means Community of Practice) at AIB"

4.6 The roles of leadership in promoting research productivity

Leadership plays important role in promoting research productivity as it mediates the relationship between the individual and the institution characteristic. In order to promote the research productivity, the leaders, first of all, have to be scholar. The study found most of the top leaders of AIB meet this characteristic since they hold high qualifications. For instance, the Chairman of Academic Affairs Committee (AACO) is a very highly regarded as a scholar, holding Ph.D. from Japan, and publish several recognized research articles, journals and book chapters. At the top executive level, the managing director graduated in the field of Business Administration from a local university, and he has written thesis at his master program and dissertation at his doctoral program. He used to publish a research article on special economic zone at the university he graduated as well.

Secondly, the study found the leaders of AIB are inspired and motivated. They set high vision and mission for AIB and they work with the relevant managers to set clear mechanisms to achieve the long-term mission. For instance, Chairman of AACO proposed the Centre for Research & Innovation to lay out 10-years planning by breaking them into 5-year planning twice. In the first 3 years, the strategic priorities are concerned with the capacity development of faculty members and strengthening research publications. Chairman of AACO has spent at least twice a year conducting a research seminar or workshop.

Thirdly, the study found that most of the leadership characteristics of AIB meet the criterion of intellectual stimulation. The management team of AIB pay full attention to the research activity, especially participating in every research training seminar from the start to the end. Moreover, the study found that the leaders nominate the head and manager of each center/department/office based on their relevant qualifications, year of experiences, and good attitudes.

Finally, the study found the leaders of AIB use both assertive and participative style of leadership. They hold meetings frequently; for instance, EXCO conduct meetings to solve issues, initiate strategic priority, and assign new actions every week. The Centre for Research & Innovation has initiated a meeting with the assigned group of faculty members every week to ensure that they can produce the research article timely. The study also found there is a facilitating mechanism for the students who are going to write a thesis.

4.7 Challenges in promoting the research productivity

Promoting the research productivity is still a major challenge. First of all, AIB is a newly established HEI and most of the faculty members at AIB have few experiences in research. They have problems in using statistical software. P3 states,

"AIB is relatively new to higher education section, thus it is a bit struggling for building research culture. Several years ago, AIB used to provide several trainings on research, but it was less likely effective since there was a lack of mechanism to support faculty members to produce a research article." He continues, "the faculty members have more than 10 years of

experience in a banking sector; however, the research task is new to them, especially their knowledge about research methods and statistical tools is limited."

Moreover, the budget of research was allocated based on the need of each department. Last but not least, the inclusion of research requirements in recruitment and selection process, mentoring, and size/experience/expertise are all missing.

4.8 Coping with these challenges

Most of the challenges in promoting research productivity come from the individual characteristics. Therefore, in order to cope with these challenges, capacity building, resource allocation and facilitating process are needed. P1 states,

"The management should arrange the faculty members based on their traits and capacity. For instance, the management should assign the maximum teaching hours (stated in the policy) to those faculty members who are good at teaching and teaching-focused; and assign a certain number of teaching hours (ranging from 6 to 10 hours) per week to those faculty members who are good at and willing to do research."

Furthermore, the study found that AIB has initiated workshop series on topics related to research, namely Introduction to Research Publications, How to Conduct Literature Review, Research Methodology, Quantitative Data Analysis, and From Hypothesis Building to Hypothesis Testing. P3 states,

"We invite PhD Trainer from outside to conduct training seminars related to research topics to our faculty members as part of the capacity building."

Another remedy to cope with the challenge is that AIB has initiated research teamwork and facilitating process in order to inspire the faculty members to participate in producing research articles. P2 states,

"We create a research team. Most of the Technical Team Leaders (TTL) lead and guide each research activity. We have delegated DMD & CAA to take this research responsibility. We have developed research manual for thesis writing and AIB research series. We have also delegate power to each relevant department/unit to do all this task." P3 continues, "Even I, myself, have formed a group of three who are the management."

4.9 Strategies to promote research productivity including long-term and short-term planning relevance to research activities

The study found that in order to promote a research productivity to reach the expansion stage, the management of AIB is going to lay out long-term strategy. AIB has created a research standard, conducted a capacity assessment and developed mechanism to build research capacity for the faculty members. P2 states,

"The research operating manuals and procedures have been developed in line with AIB's strategy. Moreover, the Center for Research & Innovation has been created in the purpose of supporting research activity."

Furthermore, P1 has laid out a road map for AIB to promote the research productivity and activities as follows:

- Trainable (provide more training as part of the capacity building)

- Arrange the faculty members in a group who are good at research

- Initiate Inter-University Conference (with university partners)

- Strengthen quality research (evidence-based policy)

- Think Tank University (provides advice to MoEYS, government, and so forth)

Moreover, P1 recommends AIB to establish a critical mass and to update the professorship title as the followings:

- PhD holders with many years of teaching experiences (Professor who is good at teaching)

- PhD holders with Research experiences plus publications (Professor who is good at research)

- Master holders with ability to mobilize research grant (Professor who is good at developing proposal for grant)

4.10 Discussion

The research activity at AIB is currently at the very early stage of development, which research articles are produced by both lectures and students. Thus it is at the beginning of the initiating stage as mentioned by Olvido (2021).

Moreover, the key findings indicate that individual agents (faculty members) are motivated to participate in the research activity which is consistent to Bland et al. (2002); yet their research skills and knowledge of statistical tools are limited since they have more than 10 years of practical experiences in banking industry.

Through document analysis, interview and focus group discussion, the study found that a large amount of the institutional characteristics of AIB are consistent with (Bland et al., 2002), which can influence research productivity, namely clear coordinating goals, research emphasis, culture, positive group climate, communication with professional network, resources, sufficient work time, communication, rewards, brokered opportunities, decentralization organization, and assertive participative governance. However, the missing characteristics of the institutional factor are recruitment and selection, mentoring, and size/experience/expertise, which have already been stated in the solution to cope with challenges. The managing director has actioned DMD & CAA to integrate research requirements into the process of recruitment and selection new full-time faculty members. Moreover, the Chairman of AACO suggests to hire recognized, experienced researchers, adjunct professor, and visiting professors to mentor and share experiences to the full-time faculty member.

More importantly, the study found leadership characteristics of AIB play crucial roles in promoting research productivity, which are in line with (Bland et al., 2002). Members of Strategic Board and Chairman of AACO are very recognized scholars. Even the managing

director obtains expert power (Marchant, 2009) and he used to write thesis from master to doctoral programs. Also, the research activity is one of the major ambitions of the shareholder. In the Business News Category of AIB's website, the research articles on business, economy, technology, and so forth have been posted regularly (AIB, n.d.-b). The Chairman of AACO wish AIB to become a university in 2030 and a research university in 2050. Both the Chairman of AACO and the managing director envision research at AIB to be evidenced-based policy and think tank to MoEYS/relevant stakeholders in the field of business and banking. The Chairman of AACO is very inspirational motivation (Dubrin et al., 2006) who inspire and motivate executive body to participate in research. Both the managing direcotr and DMD & CAA are intellectual stimulation and individualized consideration as they are good at allocating resources, aligning mission and goals, attending every research activity, holding frequently meetings, and set high expectation. These are consistent with (Dubrin et al., 2006 ; Bland et al., 2002).

5. Conclusion

The study explores the influence of institutional and leadership characteristics on research productivity at a higher education institution, especially from the practice of ACLEDA Institute of Business (AIB). By adopting the model of (Bland et al., 2002), the study employed document analysis, interview, and focus group discussion of the qualitative method. The key participants are the Chairman of AASO, the managing director, the deputy managing director in charge of academic, and the editor in chief of AIB Research Series. The study collected policy, strategy, research operating manual and procedures of AIB and analyzed them into themes. Then the study compared these themes with the findings from interview and focus group, and synthesized with the existing pieces of literature.

The study found that the research at AIB is currently at the very early stage of development – so-called infant stage, in which research articles are mainly produced by both lecturers and students. The study has shown that faculty members are motivated to participate in the research activity even though their research skills and knowledge of statistical tools are limited. They have lots of practical experiences in banking industry rather in academic setting.

The study has also found that the institutional characteristics such as clear coordinating goals, research emphasis, culture, positive group climate, communication with professional network, resources, sufficient work time, communication, rewards, brokered opportunities, decentralization organization, and assertive participative government do exist at AIB. However, there have remained some characteristics which have been found missing concerning the institutional factor, namely recruitment and selection, mentoring, and size/experience/expertise. Despite this, these characteristics have been identified as the solutions to overcome the challenges.

More importantly, the study has indicated that leadership characteristics such as scholarship, research orientation, capability fulfilling all critical leadership roles, and participative leader do play important roles in promoting the research productivity at AIB.

5.1 Implication of the study

Most of the institutional and leadership characteristics play the important roles in promoting the research productivity at AIB; however, there are still missing some of the characteristics. Therefore, the study suggests the following:

- AIB should develop long-term, medium-term, and short-term strategic plan in order to promote research culture to reach the expansion stage and build research ecosystem at AIB.
- AIB should conduct capacity assessment among faculty members so that the result can help pinpoint those who are prioritized to be invested in capacity building.
- AIB should integrate research capacity in the job requirements for the recruitment and selection process of full-time faculty.
- AIB should hire adjunct professors and visiting professors who are very experienced and recognized in research, especially members of Strategic Board, to coach and mentor AIB's faculty of members.
- AIB should update the qualification requirements for promoting professorship title to the faculty members, namely assistant professor, associate professor, and professor.
- AIB should allocate annual budget plan for research so that faculty members are motivated to participate in producing the research articles.
- AIB should create a platform such as research conferences/ conference proceedings/ workshops which allow faculty members to share their experiences and research findings.

5.2 Research limitations and future research

The study focuses only at the institutional and leadership characteristics at a higher education institution in building the research productivity, especially from the real practice at AIB. It is hard to generalize the whole picture of research productivity at the higher education institutions (HEIs) in Cambodia. The study suggests including an in-depth study on the individual characteristics at AIB and expand the scope of the study on the institutional and leadership characteristics in promoting research productivity at other HEIs in Cambodia.

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Impact of Training and Development on Employee Performance through Job Satisfaction: A Case Study at ACLEDA Bank Plc.

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ABSTRACT

Training and development are critical to producing the effectiveness of the employees in an organization. So far, organizations have seen it vital to maximize their human capital through significant investments in thorough and practical Training & development. This study aims to quantitatively investigate the impact of Training & development on employee performance through job satisfaction. Employees from ACLEDA Bank Plc. have been selected to answer the structured questionnaire. There are four hypotheses to mainly be investigated with the sample banking staff assigned from particular branches of ACLEDA Bank Plc. in Phnom Penh city. The relationships between Training & development, job satisfaction, and employee performance were tested and elaborated. The finding showed that there is a significant impact on each hypothesis testing above.

Keywords: Training & development, Employee Performance, Job Satisfaction, Working Productivity.

1. Introduction

1.1 Background of study and problem statement

Human resource development has been considered one of the priorities in the Royal government Cambodia in Rectangular Strategy IV. Organizations take measures to ensure that people have access to necessary knowledge and skills. In this sense, providing long-term and systematic training and development (T&D) programs for their employees has become essential in the organizations because all aspects and activities of the unit involve people (Younas et al., 2018). When a company employee lacks training, he or she loses the necessary skills for the improvement of his or her performance. Importantly, T&D lead to improved profitability and more positive attitudes toward profit orientation, improves job knowledge and skills at all levels of the organization, improves workforce morale, and helps the employees identify with organizational goals (Sims et al., 1990). Chaudhary and Bhaskar (2016) have found a strong correlation T&D and job satisfaction. Tabassum and Rafiq (2021) have also found that there is a positive correlation between T&D practices and job satisfaction among the faculty and staff of educational institutions. Nguyen (2020) has shown that, in the Vietnamese organizations, job satisfaction, job satisfaction, and job performance have contributed to the retention of young employees. Choo and Bowley (2007) assert that the effectiveness and efficacy of a training program are dependent on evaluation of training quality, course design and learning experience.

Notably, not much research has been conducted on the impact of T&D on employee performance through job satisfaction at ACLEDA Bank Plc. It is to this end that this paper seeks to critically examine the relationships between T&D, job satisfaction, and employee performance.

1.2 Research objectives

Objective 1: To determine the impact of training & development program on the employee performance at ACLEDA Bank Plc.

Objective 2: To determine the influence of job satisfaction on employee performance at ACLEDA Bank Plc.

1.3 Research question

Does T&D program have an impact on employee performance at ACLEDA Bank Plc.?
Does job satisfaction influence employee performance at ACLEDA Bank Plc.?

2. Literature Review

2.1 The conceptions of Training & Development (T&D)

T&D are generally believed as prominent factors to determine the work productivity in the organization and, therefore, have been defined differently. Based on the study by Imran and Tanveer (2015), training is described as workforce capacity improvement. Development is more

on self-reliance with self-motivation to explore the ways for personal growth (Imran & Tanveer, 2015). In human resources management, T&D are concerned with the aspects of development that mainly focus on the employee, human resources, and learning improvement (Harrison, 2005 as cited in Kennedy, 2009). However, training focuses of training have been traditionally conceptualized as the skills, knowledge, and attitudes that involve designing and supporting learning activities to achieve the desire levels of performance (DeCENZO & Robbins, 1998 as cited in Kenndy, 2009).

Khan et al., (2011) assert that training emphasizes current jobs and the development is all about preparing employees for their career development. T&D have been designed to improve staff performance through practical methods and programs. It is determined as a long-term professional development to equip staff with a highly skilled workforce (Swart et al., 2012 as cited in Samwel, 2018). Kennedy (2009) cited that small enterprises' work productivity and profitability can be maintained when employees engage with a culture supporting continuous training and learning (Solomon, 1999). Ahmad et al., (2014) cited that since organization aims to improve individual performance at collegial and organizational levels, T&D play an essential role in providing understanding, knowledge, techniques, and practices (Sandamali et al., 2018).

2.2 Training & development and employee performance

In order to perform well, newly recruited employees really need knowledge, skills, attitudes that match the needs of the organization and an understanding of the work culture. As well as the current employees, they often face many different problems while completing the work and require new knowledge to make their performance more efficient. Therefore, a proper T&D program from their institution is really essential to help them perform better. Mozael (2015) has found that employees who have been trained perform their work efficiently than untrained employees because of their capabilities, skills, knowledge, and attitude contributed by training. Employees who are given the proper training are highly satisfied with their task and improved their performance (Khan et al., 2016). Appiah (2010) have found that improved performance, knowledge and skills through the training programs are planned and sysematic. T&D is a tool that helps human resources explore their skills (Nda & Fard, 2013).

Effective training leads to enhanced staff performance quality. Kum et al. (2014) asserts that effective development programs help organizations to retain employees who can substitute employees who may leave the company or relocate. Training promotes the ability to work with any type of staff, even non-professional and new employees. It drives the staff's professionalism to a higher level (Farooq et al., 2011). Training develops skills, competency, and ability and finally advances employee performance and organizational output (Elnaga & Imran, 2013). The more trained employees are, the more effective their level of performance will be (Afroz, 2018). Karim et al. (2008) also shows that T&D result in higher staff performance, and suggested that T&D should be made compulsory for all staff in order to improve performance. It is therefore hypothesized that:

H1: Training & development of employees have a positive impact on employee performance.

2.3 Training & development and job satisfaction

T&D provided for employees in particular companies will maximize employee satisfaction and lower employee turnover (Wagner, 2000). Jehanzeb and Bashir (2013) assert that employees get many benefits from the T&D, and they realized it is significant for them. Wagner (2000) has found an essential relationship between job satisfaction and job T&D. Some key components include duration, methods, and contents to be delivered, provided by the workplace. Shelton (2001) conducted a study on the effect of employee and training programs on job satisfaction. He found that T&D played a significant role in increasing employee satisfaction and promoting staff retention. Naraharisetti et al. (2007) have shown a correlation between T&D and job satisfaction. Owens Jr. (2006) has found a strong relationship between T&D and job satisfaction and organizational commitments. Badhu and Saxena (1999) suggest that T&D be precise with a policy and training manual because it helps improve managers' productivity, efficiency, and effectiveness. Yew (2011) asserts that T&D play a part in providing career development opportunities for employees, which is considered a crucial aspect of human resource management practice. It is therefore hypothesized that:

H2: Training & development has a positive impact on job satisfaction.

2.4 Job satisfaction and staff performance

The success of the organization requires the contribution of employees. Employees who are satisfied with their job will perform more effective than those who are not, especially in the service sector where they offer services directly to customer. The achievement of any organization depends on employees who love their jobs and feel rewarded by their efforts (Balouch & Hassan, 2014). Job satisfaction is one of the key aspects of organizational performance. Employees who are satisfied with their job will make a pleasant atmosphere in the organization and perform better and efficiently (Latif et al., 2013). Pushpakumari (2008) has found that the quality and quantity of employees' performance will increase by their positive attitude. For instance, in the banking sector, Mishra et al. (2020) argue that "focusing on employee satisfaction, managers can keep the employees more focused, engaged and committed to their work and enhance overall productivity of the organization". Several studies have also found that job satisfaction has a positive impact on job performance (Abdullah & Wan, 2013; Mira et al., 2019) in Malaysia, in Bahrain (Alromaihi et al., 2017), in Turkey (Bakan et al., 2014), in Pakistan (Balouch & Hassan, 2014; Latif et al., 2013), in India (Mishra et al., 2020). It is recognized as the factors that influence individual bank employees and their performance as a service provider (Hyz, 2010). Employee job satisfaction is necessary to meet the dynamic and growing challenges of maintaining organizational productivity by keeping their employees steadily engaged and motivated (Mishra et al., 2020). It is therefore hypothesized that:

H3: Job satisfaction has a positive impact on employee performance

2.5 Training & development, job satisfaction and employee performance

Khan et al., (2016) assert that T&D and job happiness have a favorable impact on employee performance. Employees will be more satisfied with their jobs as a result of T&D, and they will perform at their best. Okechukwu (2017) has found that T&D and employee performance positively impact job satisfaction. There is a considerable link between T&D, employee performance, and job satisfaction. T&D and employee performance have been proved an effective and supporting strategy for the success of the business and its employees.

H4: Training & Development has a positive impact on employee performance through job satisfaction.

2.6 Research model

This study will focus on the impact of T&D on employee performance through job satisfaction in some selected ACLEDA banks in Phnom Penh city. Based on the above literature, the following model is conceptualized as shown in figure 1.

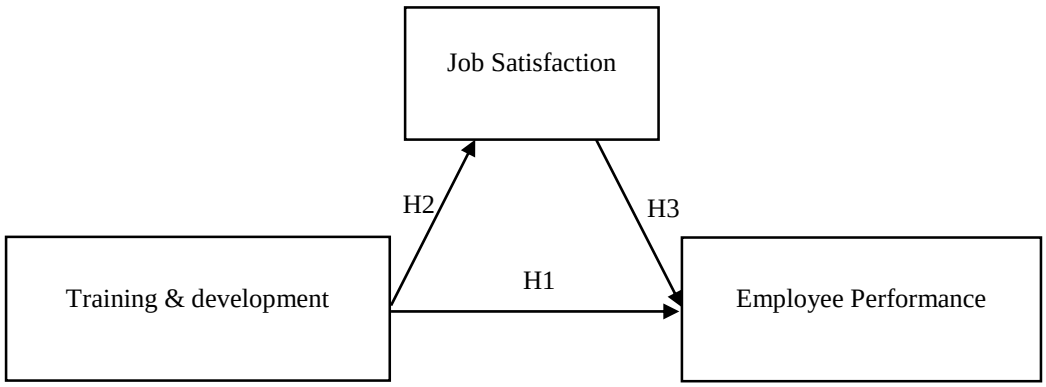


Figure 1: Conceptual model

3. Research Methodology

3.1 Research design

This study used descriptive analysis to identify the influence of the variables such as T&D and employee performance on staff job satisfaction at ACLEDA Bank Plc. This study particularly employed a descriptive method following the study of Hair and Babin (n.d).

3.2 Data collection method

Because this study includes multiple variables, a questionnaire, following quantitative research design, was employed to collect data from respondents (i.e. T&D, employee performance, and job satisfaction). The coordinator of the Human Resource Division was approached for approval in distributing the questionnaires to the staff. The questionnaires were sent out to the managers of all branches in Phnom Penh by the survey link. Such a quantitative method is considered essential to generate measurable causes and effect relationships between

the variables (Creswell & Creswell, 2017). In collecting data, twenty items of T&D, staff performance, and job satisfaction were taken from Nguyen (2020) with reliability score of Cronbach's alpha value of 0.7 and above. The value is known as excellent reliability (Zikmund et al., 2000). All the items in sections A, B, and C of this study were measured using seven Likert scales. The Likert scales run from 1 to 7, with 1 indicating strong disagreement and 7 indicating strong agreement. The four items in section D about respondents' profiles were calculated using a nominal scale.

3.3 Population

This study's target group is Assistant Vice President (AVP) and Senior Managers. All ACLEDA bank branches in the city have an AVP and manager from marketing, credit, administration, and operations. The total population for this study is 96. The study selected 71 AVP and manager from marketing, credit, administration, and operations as a sample size. This sample size selection was appropriate because Green (1991) determined, "that N > 50 + 8 m is appropriate" for the best practice of regression analysis; and "m" represents the number of independent variables.

3.4 Data analysis techniques

The descriptive statistics technique was utilized to analyze the data collected. The test used was a frequency distribution test for the demography of the respondents. According to Sekaran & Bougie (2016), all of the study's personal data or classificatory variables are obtained using descriptive statistics of a frequency distribution. Moreover, correlation, and regression analysis, which is inferential statistics, were also used. The items measured were put through a reliability test to see if they were regularly correlated with one another. Sekaran and Bougie (2016) suggested that Reliability Cronbach's alpha is needed when measuring the internal consistency of the position of items. To analyze the link between all of the variables, a correlation test was used. The following rule of thumb, according to Cohen (1988), can distinguish the range and strength of the association's coefficient (+.10 to +.29 is small, +.30 to +.49 is medium, and +.50 to + 1.0 is large). The data was analyzed, using the Statistical Package for the Social Sciences (SPSS) 20.0.

4. Results and Discussion

4.1 Socio-demographic of respondents

Table 1 shows that 13 (18.3%) of respondents are female, and 58 (81.7%) are male. Around 54.9% of respondents are between 33 to 40 years of age, followed by respondents between 41 to 48 years of age, equivalent to 42%.

The study indicates that 50.7% and 49.3% of respondents obtained master's and bachelor's degrees, respectively. Notably, 45.1% of respondents have working experiences between 16 to 20 years, followed by 38% of respondents who have working experience between 11 to 15 years.

In addition, this study also finds that 80.3% and 19.7% of respondents are AVP and Manager and AVP and senior manager levels, respectively.

Table 1: Socio-Demographic Respondents

Item	Categories(N=71)	Frequency	Percentage
Gender	Female	13	(18.3%)
	Male	58	(81.7%)
Age	26-32 years old	2	2.8%
	33-40 years old	39	54.9%
	41-48 years old	30	42.3%
Degree	Bachelor	35	49.3%
	Master	36	50.7%
Experience	6-10 years	5	7%
	11-15 years	27	38%
	16-20 years	32	45.1%
	21-25 years	7	9.9%
Position	AVP & Senior Manager	14	19.7%
	AVP & Manager	57	80.3%

Table 2 shows that respondents strongly agree with the mean of 6.34 that T&D are crucial for promoting their position at the ACLEDA Bank Plc, receiving various opportunities to improve personal skills and utilize the knowledge. Regarding employee performance, the respondents strongly agree with a mean of 6.5 that they can complete the assigned tasks, fulfill all jobs requirement, fulfill job responsibilities, minimize mistakes at work, improve the adequate managerial and leadership skills, and enhance service quality.

Table 2 also indicates that the respondents strongly agree with a mean of 6.47, meaning they satisfied their jobs.

Table 2: Level of Agreement

Variable	Minimum	Maximum	Mean	Std. Deviation	Level of Agreement
(T&D)	5.25	7.00	6.3415	0.48778	Strongly Agree
(JobPer)	5.57	7.00	6.5010	0.39742	Strongly Agree
(JobSat)	5.50	7.00	6.4754	0.47086	Strongly Agree

*Note: Neutral: 3.58-4.42, Somewhat Agree: 4.43 – 5.28, Agree: 5.29 – 6.14, Strongly Agree: 6.15 – 7.00

4.2 Correlation analysis test

Table 3 shows the correlation matrix of all variables. This study finds that T&D positively and significantly correlated with job performance and job satisfaction. This result has proven that increasing T&D programs would increase staff's job performance and job satisfaction. In addition, job satisfaction has a positive and significant correlation with job performance, meaning that a higher degree of job satisfaction of the staff would enhance the staff's job performance.

Table 3: Pearson Correlation Matrix

	(T& D)	(JobPer)	(JobStat)
(T&D)	1		
(JobPer)	0.535**	1	
(JobSat)	0.463**	0.629**	1

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

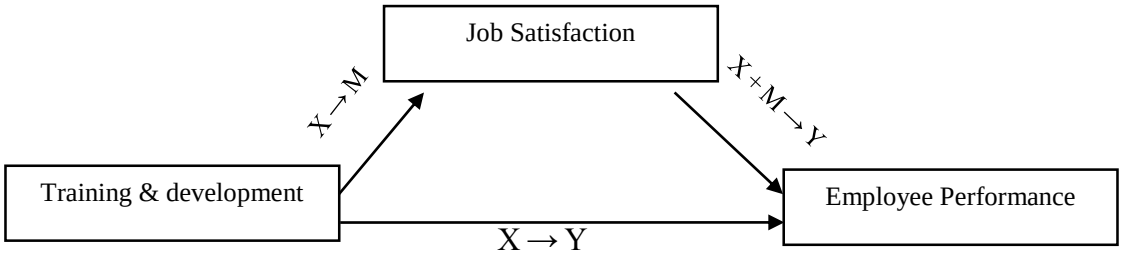
Table 4 shows the reliability of total items for scale, which is Cronbach Alpha is 0.775, implying that the test of the scale items is significant and reliable. The dependent variable is explained by independent variables 77.5%, while other variables might explain the other 22.5%. Regarding the reliability of each item for scale, Cronbach Alpha is more significant than 0.8, indicating that the test of scale item is significant and reliable.

Table 4: Reliability Test of Cronbach's Alpha on Each Variable

Variables	Item	Cronbach Alpha(n=71)
All Variables	3	.775
(T&D)	4	.829
(JobPer)	7	.874
(JobSat)	4	.829

4.3 Mediation analysis

To analyse mediation: Follow Baron & Kenny's steps: a mediation analysis is comprised of three sets of regression: X → Y, X → M, and X + M → Y. Then, use either the Sobel test for significance testing.



Step 1: X (TnD) → M (JobPe)

Y = a + bx + e

a is the intercept

Y (JobPe) as dependent variable

X (TnD) as independent variable

b is the coefficient of x, and

e is the error term

Table 5 shows the regression result. This study shows that T&D program has a positive and significant impact on job performance, indicating that increasing T&D programs increase job performance by 46.3%.

Table 5. Regression (T&D and JobPer)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.110	.553		7.432	.000
	T&D	.377	.087	.463	4.336	.000

a. Dependent Variable: JobPe

Step 2: X (TnD) → Y (JobSat)

Table 6 shows that T&D programs have a positive and significant impact on job satisfaction, indicating that an increasing number of training & development programs increase job satisfaction by 51.6%.

Table 6 Regression (T&D and JobSat)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.202	0.625		5.127	.000
	T&D	0.516	0.098	0.535	5.257	.000

a. Dependent Variable: JobSat

Step 3: M +X → Y

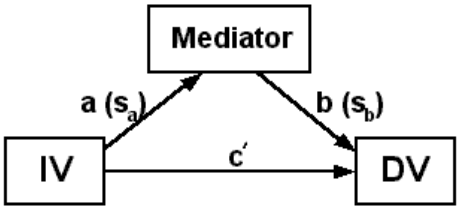
Table 7: Coefficients (JopSat and TnD on JoPe)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.668	0.564		4.734	0.000
	JobSa	0.451	0.092	0.534	4.874	0.000
	TnD	0.144	0.089	0.177	1.619	0.110

a. Dependent Variable: JoPe

4.4 Mediation effects and Sobel test

Sobel (1982) provided an approximate significance test for the indirect effect of the independent variable on the dependent variable via the mediator (Baron & Kenny, 1986).



a = raw (unstandardized) regression coefficient for the association between IV and mediator.
s(a) = standard error of a.
b = raw coefficient for the association between the mediator and the DV (when the IV is also a predictor of the DV).
s(b) = standard error of b.

To get numbers

- Run a regression analysis with the IV predicting the mediator. This will give a and s(a).
- Run a regression analysis with the IV and mediator predicting the DV. This will give b and s(b). Note that s(a) and s(b) should never be negative.

Based on results from table and table, we got:

a = 0.516, s(a)= 0.098

b= 0.451, s(b)= 0.092

Table 8: Sobel Test

	Input:		Test Statistic:	Std. Error:	p-value:
a	0.516	Sobel test:	3.58787415	0.06486181	0.00033339
b	0.451	Aroian test:	3.55370624	0.06548544	0.00037984
S_a	0.098	Goodman test:	3.62304694	0.06423212	0.00029115
S_b	0.092				

After running Sobel test, the result shows the p-value of 0.00033339, so Sobel test is significant and mediation exists. Job Satisfaction was the mediator between IV (Training & Development) effects on DV (Job Performance).

4.5 Results of hypotheses testing

Table 9: Results of Hypothesis Testing

Hypothesis	Sig	Result
H1: Training & development of employees have a positive impact on employee performance.	0.000	Supported
H2: Training & development has a positive impact on job satisfaction.	0.000	Supported
H3: Job satisfaction has a positive impact on employee performance.	0.000	Supported
H4: Training & development has a positive impact on employee performance through job satisfaction.	0.000	Supported

4.6 Discussion

The results from the correlation test have shown that T&D have an important influence on employee performance among the managers of ACLEDA Bank Plc. The result has also shown that employee performance has a significant impact on employee performance among the managers of ACLEDA Bank Plc. Branches in Phnom Penh.

The current research has found a significant impact among the managers of ACLEDA Bank Plc. Branches in Phnom Penh, achieving the study's objectives of examining the relationship between the two variables involved in this study. The result found on hypothesis 1 indicates that T&D of employees have a positive impact on employee performance. Hypothesis 2 further shows that job satisfaction has a positive impact on staff performance. T&D, according to Hypothesis 3, has a favorable impact on job satisfaction. Moreover, Hypothesis 4 shows that T&D has a positive impact on employee performance through job satisfaction. As a result, this research recognizes that T&D, employee performance, and job satisfaction are all linked to organizational success. Theoretically, this study contributes to the past studies by Mozael (2015); Khan et al. (2016); Appiah, (2010); Nda & Fard, (2013); Kum et al. (2014); Farooq et al. (2011); Elnaga & Imran, (2013); Afroz, (2018); and Karim et al., (2008) that employees who have been trained perform their work more efficiently than untrained employees because of their capabilities, skills, knowledge, and attitude contributed by T&D. The result supports the study of Gautam (2016); Balouch & Hassan (2014); Latif et al. (2013); Pushpakumari (2008); Mishra et al. (2020); Mira et al. (2019); Alromaihi et al. (2017) ;Bakan et al. (2014); Balouch & Hassan (2014); Hyz (2010); Mishra et al. (2020) that job satisfaction is one of the key aspects of organizational performance. Employees who are happy in their jobs create a positive atmosphere in the workplace, which leads to higher performance and more efficient work. Furthermore, this result of this current study has shown to be in line with those of the previous studies by Wagner (2000); Jehanzeb & Bashir (2013); Shelton (2001); Naraharisetti et al. (2007); Owens Jr. (2006) ;Badhu & Saxena (1999); and Yew (2011) that T&D played a significant role in increasing employee satisfaction and promoting staff retention.

5. Conclusion and Recommendation

5.1 Conclusion

The study objectives are to identify the impact of T&D programs on employee performance and determine the job satisfaction influence on employee performance at ACLEDA Bank Plc. Furthermore, the hypotheses in this research study are found significantly positive in that the finding is an addition to the body of knowledge, mostly in line with the previous studies. This study also concludes that other organizations in different sectors that exercise Human Resource Practice (HRP) need to understand which HRP influences staff job satisfaction and working performance and should employ more HRP related to job satisfaction for a conducive work environment.

5.2 Limitations and recommendations for future study

There are a few boundaries in this research. This study was limited to ACLEDA Bank Plc. This study examined the dependent variable (job satisfaction), independent T&D, and employee performance. These limitations were able to serve as a guide for future empirical research. First, to better understand why and how T&D employee performance influences job satisfaction among the staff of ACLEDA Bank Plc. Researchers can consider a case study method in the future because this approach allows researchers to understand the connection between the variables. Secondly, future studies could consider inspecting the research model on other ACLEDA Bank Plc. branches in provinces. In examining the research model on the components, the current research model can be generalized. Finally, future studies should consider analyzing mediator as an (organizational performance) variable to further clarify the relationship between T&D, employee performance, and job satisfaction. This recommendation covers the gap that the researcher could not accomplish in this study, hoping that further research will significantly cover qualitative and quantitative methods with bigger sample sizes.

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Equity Valuation in Practice: What shall be the share price of ACLEDA Bank Plc. (ABC)?

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ABSTRACT

This research paper aims to explore the intrinsic value of the ABC share and to determine whether the current share price is undervalued or overvalued. It employs the Dividend Discount Model (DDM) and the Free Cash Flow Models (FCFE and FCFF), through the Pro-Forma financial statements (2021 – 2025), predicted from the actual audited consolidated financial statements (2016 – 2020) with other publicly available information, from the ACLEDA Bank Plc., the International Monetary Fund, the Cambodia Securities Exchange, and the National Bank of Cambodia. Certain assumptions and proxies were incorporated into the research analysis. The forecasted share prices were $5.50, $10.13, and $32.63, under the DDM, FCFE, and FCFF models respectively, which were all undervalued, compared to the current share price of $4.28 (31/12/2020 closing price). The findings of this study contributed significantly to the financial markets, and especially to the equity valuation of corporations in Cambodia.

Keywords: Equity valuation, Pro-Forma financial statements, Dividend Discount Model (DDM), Free Cash Flow to Equity Model (FCFE), Free Cash Flow to the Firm Model (FCFF).

1. Introduction

Established as a Non-Governmental Organization (NGO) in 1993, ACLEDA Bank Plc. became a specialised bank in 2000 and a licensed commercial bank in 2003 with a headquarters in Phnom Penh, Cambodia. It is comprised of four subsidiaries, namely ACLEDA Bank Lao Ltd., ACLEDA Securities Plc., ACLEDA Institute of Business, and ACLEDA Microfinance Institution (MFI) Myanmar Co., Ltd. The bank has 262 branches, 38 branches, and 17 branches, in Cambodia, Laos, and Myanmar respectively (ACLEDA Bank, 2021).

According to the ACLEDA Bank Plc.'s audited consolidated financial statements, by the end of 2020, the bank had the total assets of $6,551,493,988 with the shareholders' equity of $1,089,625,507, and the net profit after tax of $141,492,590 – *See Table 1: ABC Financial Highlights*.

Table 1: ABC Financial Highlights

US$' 000	2020	2019	2018	2017	2016
Gross Income	579,221	550,128	510,655	493,879	471,330
Net Profit After Tax	141,493	120,860	119,314	86,766	122,923
Assets	6,551,494	6,175,162	5,683,574	5,247,094	4,673,975
Liabilities	5,461,868	5,210,700	4,830,734	4,496,871	3,996,657
Shareholders' Equity	1,089,626	964,462	852,840	745,661	673,641

Source: Adapted from Financial Highlights, ACLEDA Bank Plc. (2021).

ACLEDA Bank Plc. had been listed on the Cambodia Securities Exchange (CSX) on May 25, 2020, with an IPO price of about $4.05 – *See Table 2: ABC IPO Information and Price Volatility*.

Table 2: ABC IPO Information and Price Volatility

IPO Price (KHR)	16,200
Par Value (KHR)	4,000
No. of listed shares	433,163,019
No. of issued shares	4,344,865
1st trading date	25-May-20
1st closing price (KHR)	16,500
31/12/2020 Closing price (KHR)	17,100
28/10/2021 Closing price (KHR)	11,180

Source: Adapted from ABC Company Profile, Cambodia Securities Exchange (2021).

As can be seen from the table, the share price was fluctuated from the IPO price of $4.05 to a higher price of about $4.28 at the end of 2020, followed by about $2.80 at the end of October 2021. The doubts have been arisen from the downward trend amongst investors, stakeholders, and the public.

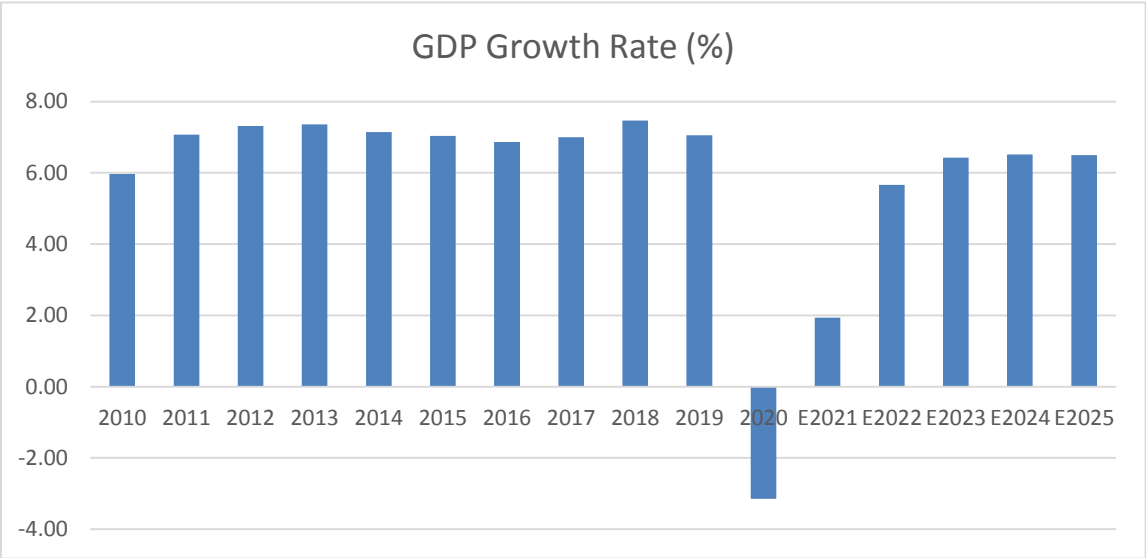
This research paper aims to explore the intrinsic value of the ABC share and to determine whether the current share price is undervalued or overvalued, by applying the Dividend Discount Model and the Free Cash Flow Models, through the Pro-Forma financial statements.

2. Pro-Forma Financial Statements

2.1 Revenue forecast

The revenue of ACLEDA Bank Plc., operated under an oligopolistic market structure, is mainly generated from the interest income, which is taken into account for forecasting the bank revenue. The Association of Banks in Cambodia has claimed, "Cambodia is a bank-based economy," meaning that the financial institutions, especially the commercial banks, are the primary source of funding (ABC, 2021). It is thus assumed that the interest income of the bank is highly correlated with the Gross Domestic Production of the economy. When the economy is growing, the demand for loans and credits, especially for micro-businesses and Small Medium Enterprises (SMEs), increases which in turn increase the revenue of the bank. In order to examine this relationship, a simple linear regression analysis was conducted. The past revenues of 11 years, from 2010 to 2020, were regressed against the nominal GDP, whereby the revenues were forecast in nominal dollars. Forecasting revenues in nominal dollars was because the forecast was mainly based on the financial statements' past-year data, which were in nominal terms while all the other financial indicators in this research were also interpreted in nominal terms.

Graph 1: Cambodian GDP Growth Rate



Source: IMF 2021 (World Economic Outlook Database, October 2021)

According to the International Monetary Fund (IMF), GDP growth rate of Cambodia is projected to be -3.14% for 2020, and recovered with 1.93% for 2021 to almost a normal growth of 6.50% in 2025 (WEO Database, October 2021) – *See Graph 1: Cambodian GDP Growth Rate.* Revenue data for ACLEDA Bank Plc. is available from its audited consolidated Financial Statements in the Annual Reports from 2010 to 2020. Therefore, a statistical analysis was conducted regressing Revenue data of the bank against the nominal GDP.

Table 3: ANOVA Result

	Coefficients	Standard Error	t Stat	P-value
Intercept	-145919413.3	38177644.78	-3.822116689	0.004076668*
Nominal GDP	0.025253314	0.001955124	12.91647529	4.10387E-07*

** $p < 0.05$.*

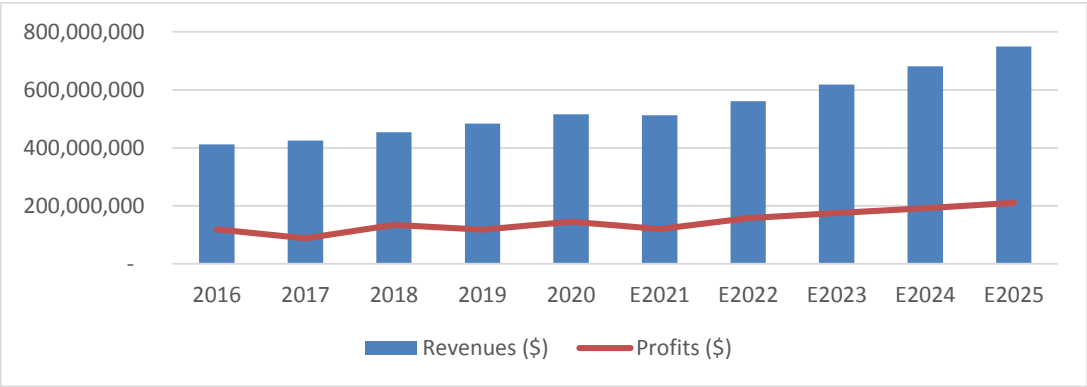
The regression provides $Revenues_i = -145{,}919{,}413 + 0.0252533\ GDP_i$

According to the regression output, it is very clear that the revenue of the bank is significantly dependent on GDP – *See Table 3: ANOVA Result*. The coefficient of GDP is statistically significant below all significant levels. This is evident from the higher T-test, the P-value and the confidence intervals. Considering the goodness of fit of the model, the R-square result indicates that almost 95% of the variance of the firm's revenue is explained by the GDP growth, which is very strong. Then, the revenues from 2021 to 2025 were forecast based on this regression result – *See Table 4: Revenues Forecast, and Graph 2: ACLEDA Bank' Revenue Forecast.*

Table 4: Revenues Forecasts

	E2021	E2022	E2023	E2024	E2025
Nominal GDP (m$) (IMF Forecast)	26,080	27,985	30,254	32,741	35,453
Revenues ($) (Interest Income)	512,687,019	560,794,583	618,094,352	680,899,345	749,386,332
Profits ($) (After Income Tax)	119,975,235	158,113,334	175,234,881	192,602,076	211,407,871

Graph 2: ACLEDA Bank' Revenue Forecast



However, there were some limitations of this estimate. The simple linear regression analysis was conducted based on ceteris paribus assumption; i.e., GDP growth is not the only factor, which affects the company revenues. There are other factors such as monetary policy, credit sectors, and regional and/or world economic growth, which have significant impacts on the company revenues since the bank is internationally operated. Due to the time constraints and limited resources, these variables were not taken into account for the analysis.

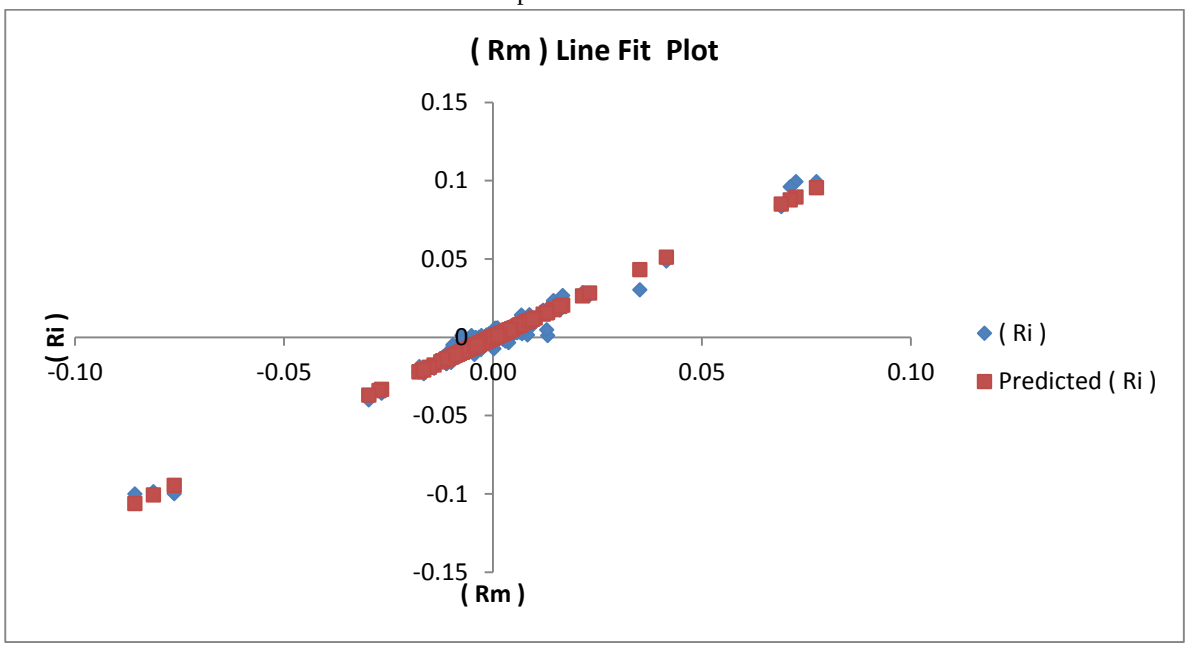
2.2 Debt/Equity (D/E) Ratio

D/E ratio was estimated, depending on the industrial Beta since the change in D/E will affect the risk of the company. Therefore, the company Beta was also computed. By using the daily price index adapted from Cambodia Securities Exchange for both ACLEDA Bank Plc. (ABC) and CSX Index, the returns of ABC (R_i) and the returns on market (R_m) were calculated. Then, the regression of R_i on R_m was conducted to find the leveraged Beta (β_L) – See Table 5: Daily Beta Summary, and Graph 3: Line Fit Plot.

Table 5: Daily Beta Summary

Period	Beta	Alpha	R-sq	P-value
25/05/2020 – 28/10/2021 (n = 344); (p < 0.05)	1.23692	-0.00013	0.97001	9.208E-262

Graph 3: Line Fit Plot



$\beta_L = 1.23692$ was selected because it was considered more reasonable compared to others from the weekly, and monthly data, with the highest n = 344 and the highest R^2 of 0.97. It is noteworthy that there is neither the current published beta for the company nor the industrial Beta from the Cambodia Securities Exchange.

By rearranging the leveraged β (Miles & Ezzell, 1980), the unleveraged β is obtained:

$\beta_U = \frac{\beta_L}{\left[1+\frac{D}{E}(1-T)\right]}$, where tax rate is 19.38%, and D/E = 5.01.

Then, $\beta_U = 0.24562$

The purpose of rearranging the β for financial leverage was to find out how the company could change their capital structure affected by the risk. The company can take advantage of more debts to finance investments due to the tax shield, but the more debts they have, the riskier it is. Hence, the company cannot borrow beyond the industrial risk ($\beta_{Industy}$); otherwise, they will face the bankruptcy cost. In other words, industry beta is considered the benchmark for D/E ratio since it will give a bad signal to the investors on bankruptcy cost if the company beta exceeds the industry beta. As there is no industrial beta available in Cambodia, the market beta is being used by assuming that the company would choose not to borrow beyond the market risk (β_M).

Therefore, the optimal D/E is:

$\beta_M = \beta_U \left[1 + \frac{D}{E}(1-T)\right]$, where $\beta_M = 1.00$

$1.00 = 0.24562 \left[1 + \frac{D}{E}(1 - 19.38\%)\right] \rightarrow \frac{\mathrm{D}}{\mathrm{E}} = 3.81$

2.3 Plug

As other items in the Pro-Forma Balance Sheet were fixed, debts and share capital were chosen for the plug. Debts were assumed to be the sum of deposits and placements of other banks and financial institutions, deposits from customers, borrowings, and subordinated debts. These debts were forecast based on their past-year proportional average of total debts – *See Table 6: Debts Assumption and Percentage Average*. Share Capital is the last plugging step, and must be plugged year by year to make the annual Balance Sheets balance, i.e., as in *Graph 4: Total Assets Vs. Total Liabilities and Total Equity*.

Table 6: Debts Assumption and Percentage Average

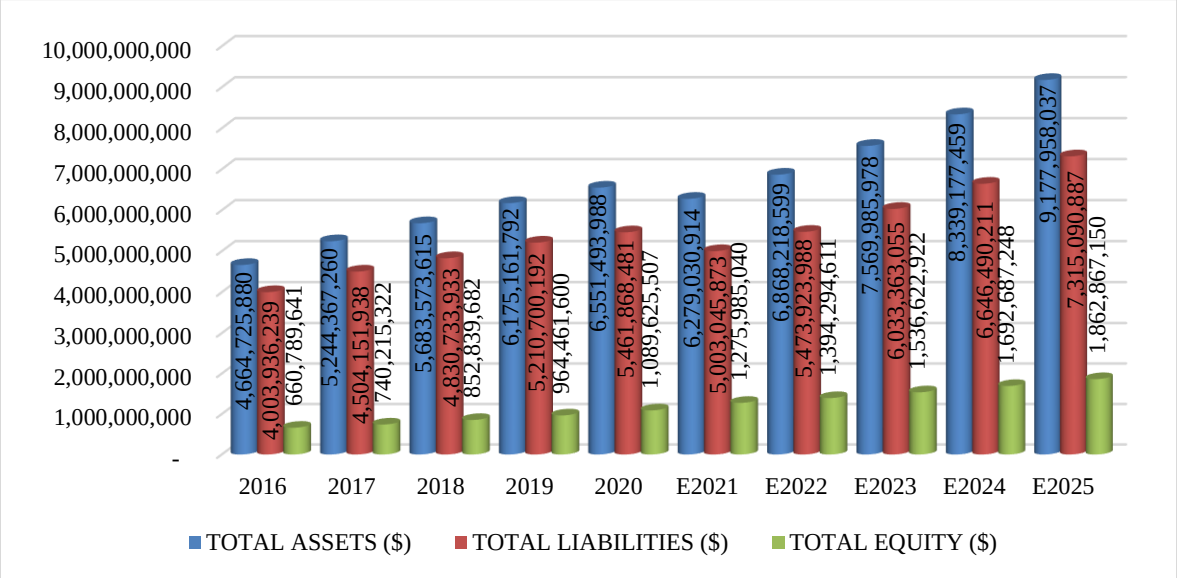
Debts Assumption	2016	2017	2018	2019	2020	Percentage Average
Deposits and placements of other banks and financial institutions	9.38%	4.93%	6.09%	5.62%	5.96%	6.40%
Deposits from customers	71.78%	71.72%	75.57%	80.49%	80.71%	76.05%
Borrowings	15.99%	20.85%	16.70%	11.14%	10.19%	14.98%
Subordinated debts	2.84%	2.50%	1.64%	2.75%	3.14%	2.57%
Total Debts	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Then the D/E ratio is incorporated into the plug, so that the company can maintain the D/E of 3.81 – *See Table 7: Plug Calculation* below.

Table 7: The Plug Calculation

	E2021	E2022	E2023	E2024	E2025
Total Assets	6,279,030,914	6,868,218,599	7,569,985,978	8,339,177,459	9,177,958,037
Total Liabilities without Debts	141,773,234	161,913,246	179,107,142	197,657,392	217,903,363
Equity	1,275,985,040	1,394,294,611	1,536,622,922	1,692,687,248	1,862,867,150
Total Debts	4,861,272,639	5,312,010,742	5,854,255,914	6,448,832,819	7,097,187,523
D/E ratio	3.81	3.81	3.81	3.81	3.81
Share Capital	**691,705,153**	**693,638,102**	**703,898,068**	**714,939,716**	**726,286,174**
Deposits and placements...(6.40%)	**310,994,359**	**339,829,814**	**374,519,329**	**412,556,707**	**454,034,458**
Deposits from customers (76.05%)	**3,697,165,920**	**4,039,967,831**	**4,452,364,032**	**4,904,560,326**	**5,397,656,495**
Borrowings (14.98%)	**728,023,325**	**795,525,783**	**876,732,324**	**965,776,055**	**1,062,873,540**
Subordinated debts (2.57%)	**125,089,035**	**136,687,314**	**150,640,229**	**165,939,731**	**182,623,030**

Graph 4: Total Assets Vs. Total Liabilities and Total Equity



3. Cost of Capital

The interest rate on deposits and loans in KHR, extracted from the National Bank of Cambodia (NBC), was used to find out the equity risk premium (R_m-R_f) – *See Table 8: Risk Premium*. The Cambodian government does not issue any treasury bills or bonds; therefore, the weighted average interest rate on saving deposits was used as a proxy for the R_f (Risk free rate). The CSX Index cannot yet represent the diversified market portfolio, and often generates

negative rate of returns. The normal rate of return in the market, especially for bank-based economy like Cambodia, is the interest rate on term deposits. In this sense, the weighted average interest rate on term deposits was used as a proxy of the R_m (Market Return).

Table 8: Risk Premium

Year	Term Deposits%	Saving Deposits%	Premiums%
Dec-15	5.90	1.17	4.73
Jun-16	6.71	1.41	5.30
Dec-16	6.44	1.47	4.97
Jun-17	5.29	1.15	4.15
Dec-17	4.70	1.19	3.51
Jun-18	5.28	1.00	4.28
Dec-18	5.09	0.59	4.50
Jun-19	3.99	0.62	3.37
Dec-19	4.10	0.60	3.50
Jun-20	5.05	0.69	4.36
Dec-20	5.34	0.60	4.74
Jun-21	4.47	0.61	3.86
A.A.	5.20%	0.92%	4.27%

Source: Adapted from Banks' Interest Rate on Deposits and Loans, NBC (2021).

Using the Capital Asset Pricing Model (CAPM), $R_e = R_f + \beta\ (R_m - R_f)$, developed by William Sharpe (1964), the cost of equity (R_e) was calculated to be 6.21%.

Cost of debt (R_d) was calculated as the average of the interest rate from the annual Finance Cost of the Interest-Bearing Debts, generated from the adjusted income statements and the adjusted balance sheets (2016 -2020), and the R_d was computed to be 3.52%.

Finally, the Weighted Average Cost of Capital (WACC), as referenced by Modigliani and Miller (1958), $R_a = \left[\frac{D}{V} * (1 - T) * R_d\right] + \left(\frac{E}{V} * R_e\right)$, was calculated based on these costs of capital and the D/E ratio – *See Table 9: Costs of Capital.*

Table 9: Costs of Capital

Cost of Equity			Cost of Debts	
Rf	0.92%		2016	3.88%
Beta (L)	1.2369		2017	3.89%
Rm - Rf	4.27%		2018	3.53%
			2019	3.32%
			2020	2.97%
Re	6.21%		Rd	3.52%
	WACC (Ra)	3.54%		

4. Explicit Forecast Period and Terminal Value

The length of the forecast period was decided to be 5 years because it was a medium-term forecasting. The 3-year forecast is considered to be moderately short for such valuations; whereas the 10-year one is considered to be too long, hence the valuation will not be that precise as the internal and external factors will change in the long run. The internal factors can be the company growth prospects, discontinuous earnings, new earnings, acquisitions, etc. The external factors can be the interest rates, the market sentiment, GDP growth rate, etc. Therefore, the ideal forecast should be in a medium term of 5 years, i.e., from 2021 to 2025.

The maximum dividend distribution ratio was taken as 50% of the net profits, as stated in the bank's dividend policy. Hence, the terminal value was calculated by discounted dividends or free cash flows with an incorporated growth rate of 2.27% in perpetuity. This growth was derived from the trailing fundamental P/E ratio as follows:

$$\frac{P_0}{E_0} = \frac{(1-b)(1+g)}{r-g} \rightarrow \frac{4.28}{0.33} = \frac{(1-50\%)(1+g)}{6.21\%-g} \rightarrow g = 2.27\%$$

Then, the Gordon Growth Model (GGM), $TV_t = \frac{CF_t(1+g)}{r-g}$, had been applied to derive the terminal value for both the dividend discount and free cash flow models. (Gordon & Shapiro, 1956).

5. Valuation

The valuation of the bank was made using discounted cash flow models, which are namely Dividend Discount Model (Gordon, 1959) and Free Cash Flow Model approaches (Damodaran, 1994). Under free Cash Flow approaches, it is basically examined how a company generates and consumes cash. There are two major sub approaches under the free cash flow: Free Cash Flow to Equity and Free Cash Flow to the Firm.

5.1 Dividend Discount Model (DDM)

Under Dividend Discount model, cash flows are defined as expected future dividends. In order to estimate the present value of the streamed of expected future dividends, the maximum dividend distribution ratio was taken as 50% of the net profits, since this ratio can be considered the sustainable ratio, taking into consideration of the bank's past trend of paying dividends. As estimated above, the cost of equity and the growth rate at perpetuity were taken as 6.21% and 2.27%, respectively.

$$P_o = \frac{Div._1}{(1+R_e)^1} + \frac{Div._2}{(1+R_e)^2} + \cdots + \frac{Div._t}{(1+R_e)^t} + \frac{TV_t}{(1+R_e)^t}$$

The result of the valuation was summarised in *Table 10: Dividend Discounted Model* below. Under this valuation method, the price per share was estimated to be $5.50. However, it should be noted that maintaining dividends are at the discretion of the management, especially in a situation where new owners have the discretion over dividend distributions; hence, the dividend policy may be affected. Therefore, valuation under Free Cash Flow models becomes more relevant.

Table 10: Dividend Discount Model

(DDM)		**E2021**	**E2022**	**E2023**	**E2024**	**E2025**	**TV**
		US$	US$	US$	US$	US$	US$
Expected Total Dividends		59,987,618	79,056,667	87,617,441	96,301,038	105,703,935	2,743,099,468
TPV (Re=6.21%)	2,383,382,767	56,481,117	70,084,475	73,133,365	75,682,875	78,216,698	2,029,784,237

# Shares	433,163,019
Intrinsic P_0	**$5.50**
Current P_0 (31/12/2020)	$4.28

5.2 Free Cash Flow to Equity Model (FCFE)

FCFE is the cash available to the common equity holders of the company after meeting all the operating, investing and financing needs. It considers the debt; i.e., the financing decision of the firm is taken into account. To estimate the cost of equity, the levered beta was taken in consistence with our forecast of relying more on debts. Furthermore, adjustments to cash balance were made, considering them parts of the working capital. As summarised in *Table 11: Free Cash Flow to Equity* below, the value of a share under this approach was more than that of under DDM model due to the estimated higher terminal value in perpetuity.

$$FCFE = (OCF + \Delta Cash) - ICF + NB + Other\ NCL$$

$$P_o = \frac{FCFE_1}{(1+R_e)^1} + \frac{FCFE_2}{(1+R_e)^2} + \cdots + \frac{FCFE_t}{(1+R_e)^t} + \frac{TV_t}{(1+R_e)^t}$$

Table 11: Free Cash Flows to Equity

(FCFE)	E2021	E2022	E2023	E2024	E2025
	US$	US$	US$	US$	US$
Free Cash Flows	(29,575,866)	147,037,018	162,404,862	180,678,011	200,936,495
PV (Re=6.21%)	(27,847,046)	130,349,694	135,557,646	141,994,642	148,684,995
TV	5,214,458,596				
PVTV	3,858,491,455				
TPV	4,387,231,386				
# Shares	433,163,019				
Intrinsic P_0	**$10.13**				
Current P_0 (31/12/2020)	$4.28				

5.3 Free Cash Flow to the Firm Model (FCFF)

Under FCFF model, debts are not taken into account since it considers cash available to firm after meeting the operating and investment needs, but before considering the distribution to (collection from) debts and equity holders. Therefore, the relevant discount rate is WACC. However, as explained above, the company should be more dependent on debts when considering the cost of financing. In that scenario, under FCFF, debts were underestimated. In consistence with these, the value of a share was higher than that under FCFE model – *See Table 12: Free Cash Flows to the Firm*.

$$FCFF = (OCF + \Delta Cash) + Int.(1 - T) - ICF + Other\ NCL$$

$$P_o = \frac{FCFF_1}{(1+R_a)^1} + \frac{FCFF_2}{(1+R_a)^2} + \cdots + \frac{FCFF_t}{(1+R_a)^t} + \frac{TV_t}{(1+R_a)^t}$$

Table 12: Free Cash Flows to the Firm

(FCFF)	E2021	E2022	E2023	E2024	E2025
	US$	US$	US$	US$	US$
Free Cash Flows	(22,296,383)	205,479,174	217,253,551	241,338,493	268,568,399
PV (Ra=3.54%)	(21,534,876)	191,683,072	195,745,060	210,018,958	225,732,862

TV	21,648,666,683
PVTV	18,195,794,812
TPV	18,997,439,888
# Shares	433,163,019
Intrinsic P_0	**$43.86**
Current P_0 (31/12/2020)	$4.28

V_0 (Debt)	4,861,272,639
V_0 (Equity)	14,136,167,249
Intrinsic P_0	**$32.63**

6. Investment Summary

The intrinsic value of ACLEDA Bank Plc.'s share price had been predicted under three discounted cash flow models, DDM, FCFE and FCFF, in order to compare them with the current share price (31/12/2020 closing price). It is clear from the table that the current share price of ABC was less than the entire three discounted cash flow models – *See Table 13: Share Prices Summary*. Therefore, ABC share price was "undervalued". Thus, based on these results, the recommendation for the both retail and institutional investors who want to invest in ABC share is a "strong buy". This is because the current share price is undervalued, and it is expected to increase to the intrinsic value in the future.

Table 13: Share Prices Summary

Models	FCFF	FCFE	DDM	Current price
Share price	$32.63	$10.13	$5.50	$4.28

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Adoption of Unified Theory of Acceptance and Use of Technology (UTAUT) Model on Students' Perceptions towards Online Learning

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ABSTRACT

During the Covid-19 outbreak, Cambodian universities, including AIB, forcibly adopted distance teaching and learning. This study used the Unified Theory of Acceptance and Use of Technology (UTAUT) to understand how online learning during the COVID-19 pandemic was accepted by undergraduate students at AIB. Based on a sample of 176 respondents, the study confirmed social influence and facilitating conditions positively impact students' behavioral intention to accept online learning, whereas performance expectancy and effort expectancy do not impact students' behavioral intention. Furthermore, the study validated UTAUT model as a useful framework in predicting online learning in a Cambodian context.

Keywords: UTAUT, Online Learning

1. Introduction

1.1 Background of the study

Due to COVID-19 pandemic globally, experts in public health recommended social distancing to reduce infections and total deaths. The Ministry of Education Youth and Sport (MoEYS) announced a nationwide closure of public and private higher education institutions (HEIs) in response to the global pandemic 2020 (Chealy & Serey, 2020). According to the Asia Foundation (Chheang & Khut, 2020) the MoEYS quickly found creative ways to promote learning outside the traditional school setting. The Ministry worked with private sectors to launch a new e-learning initiative. Lessons were pre-recorded and offered online through the ministry's Facebook page, YouTube channel, and an e-learning website for grades one through twelve".

1.2 Problem statement

Digital natives and transformation dominates in every field of life for today world. Digital technologies play more promising potential to improve learning via active learning approaches (Tamim et al., 2011). Activities and habits of learning in higher education have fastly changed in the last few decades with the features of the information and digitalism, wide-scale broadband internet access, proliferation of smart devices and available online mobile applications (Tick, 2019). Distance education in many forms, such as e-learning, mobile learning, and online learning, have become a must in higher eduction in the 21st Century (Tick, 2019).

ACLEDA Institute of Business, which has been providing academic and training programs to thousands of existing students and trainees, has been experiencing online learning with various digital learning platforms -Zoom, GoToMeeting, and Microsoft Teams. The Institute experiences both challenges and opportunities of technology advancement, but there is a lack of research on students' perceptions of such online learning.

1.3 Research objective

The paper adopts the UTAUT model to determine factors influencing students' intention to accept online learning.

1.4 Research question

To reach the objective, the researchers employed research questions as follow:
What are the key factors leading students to acceptance of online learning?

1.5 Significance of the study

The study contributed the significance for learners, ACLEDA Institute of Business (AIB) and management. It provides learners more practical application on concepts and psychological theories in education combined with technology for online learning with the help of Extended TAM (UTUAT model). ACLEDA Institute of Business (AIB) recognizes what main factors

influence teaching and learning online classes and determine the gap of education in today world. Lastly, management (stakeholders) may profit from acknowledgment of online learning class as a new form of 21st century education for making decision on whether to provide online learning to students or provide only physical class.

2. Literature Review

2.1 Overview of online learning

"Distance education is teaching and planned learning where the teaching occurs in a different place from learning, requiring communication through technologies" namely distance learning, the student's activity, and distance teaching, the teacher's activity, together make up distance education (Siemens et al., 2015, p.4). Online learning is a newer version or, and improved version of distance learning (Moore et al., 2011). Online learning involves in using technology as the mediator of the learning process, and teaching is delivered through the internet (Heng & Sol, 2020, p.3). "Online learning transforms education from instructor-centered (traditional classroom) to student-centered, where students have more responsibility for their learning" (Heng & Sol, 2020,p 3). Online learning involves in synchronous or asynchronous environments that different devices with internet access. Dhawan (2020) refers synchronous learning environment as students attend live lectures. This type of mode involves in real-time interactions between educators and learners; and there is a possibility of instant feedback. However, in asynchronous learning environment, students do not have to learn at the same time and place as their instructors are teaching (University of the People, 2020).

2.2 Theoretical & conceptual framework

Hanif et al. (2018) extended Technology Acceptance Model (TAM) by providing a relationship among three major constructs, namely the perceived ease of use(PEOU) perceived usefulness(PU), and behavioral intention (BI) on e-learning system (Hanif et al., 2018). According to (Liu et al., 2010, p.601), "perceived usefulness and perceived ease of use affected by the external variables considered in the original TAM model". The UTAUT model consists of four key constructs, performance expectancy, effort expectancy, social influence, facilitating conditions (Morris et al., 2003).

2.3 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT model was a comprehensive system and quantifying the degree of acceptance and/or use of any technology, and it unifies several preexistent theories (Sitar-Tăut, 2021). The researchers (Sitar-Tăut, 2021, Raman et al., 2014 Liu et al., 2010 and Attuquayefio, Samuel NiiBoi, 2014) witness the citation of the UTAUT model, include the theory of reasoned action (TRA) (Fishbein and Ajzen 1975), the theory of planned behaviour (TPB) (Ajzen 1991), the technology acceptance model(TAM)(Sharma et al., 2020).

The UTAUT model is used in different fields such as banking, marketing, business, and education. The extended UTAUT model (Bhatiasevi, 2016), employed to explain the adoption of mobile banking and the degree of influence of each one of the factors in Thailand. The article studied by (Yu, 2012), explored the factors affecting individuals to adopt mobile banking in used in business world with integration of mobile application in banking to understand the behavior of consumers in Taiwanese.

In the field of education institutions use information communication technology (ICT) in relation with e-learning, mobile learning, and online learning such as in Malaysia (Raman et al., 2014; Asghar et al., 2021; Badan & Igeria, 2018), mobile learning acceptance in social distance(Sitar-Tăut, 2021; Moore et al., 2011) online, m-learning, and e-learning. Chayomchai et al., (2020) studied the factors affecting acceptance and use of online technology with Thai people during COVID-19 quarantine.

2.4 Theoretical model constructs

The different theories and studies in several research by Ajzen and Fishbein (1980); Ajzen (1985); Davis (1986); Rogers (1983); Venkatesh and Davis (2000); Venkatesh, Morris, Davis, and Davis (2003), Davis (1989), (Dillon, 2006) use the UTAUT model as withness. The TAM theory suggested that two main factors, perceived usefulness (PU) and perceived ease of use (PEOU) as a drive for the adoption of a technology (Singh et al., 2017). TAM Davis (1986, 1989,1993) and Hanif et al., (2018) proposed the technology acceptance model (TAM) to investigate the impact of technology on user behavior.

"Perceived usefulness is that the user believes the technology will improve his/ her performance, while Perceived Ease of Use is the belief that using the technology will be free of effort" (Davis, 1989, p.447). Liu et al., (2010) adopted the work of Venkatesh and Davis (1996) and suggested perceived usefulness and perceived ease of use could be affected by external variables. Another researcher, Bhatiasevi, (2016) defined performance expectancy as ''the degree to which an individual believes that using the system will help or her to attain gains in job performance''. "Performance expectancy is driven from perceived usefulness (TAM/TAM2), relative advantage (IDT), extrinsic motivates (MM), job-fit (MPCU), and outcome expectations (SCT)" (Yu, 2012 , Badan & Igeria, 2018, Mahande et al., 2016 , Raman et al., 2014).

H1: Performance expectancy has positive relationship towards behavioral intention.

Bhatiasevi, (2016), (Yu, 2012 , Badan & Igeria, 2018, Mahande et al., 2016 , Raman et al., 2014) adopted concept of effort expectancy from (Morris et al., 2003) as ''the degree of ease associated with the use of the system', included concept of perceived ease-of-use (TAM/TAM2), complexity (MPCU), and easy-of-use in innovation diffusion theory (IDT) as the degree of ease associated with technology use".

H2: Effort expectancy has positive relationship towards behavioral intention

Social influence according to Venkatesh et al., (2003), Yu, (2012 , Badan & Igeria, (2018), Mahande et al., (2016) , Raman et al., (2014), Sharma et al., (2020), Bhatiasevi, (2016) ‘‘the degree to which an individual perceives that important others believe he or she should use the new system’’. According to Venkatesh et al. (2003, p.451) “social influence represents subjective norm in TRA, TAM2, TPB/DTPB, and C-TAM-TPB, social factors in MPCU, and image in IDT”.

H3: Social influence has positive relationship towards behavioral intention.

Facilitating conditions defined by Morris et al., (2003, p453) as ‘‘the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system”. Bhatiasevi, (2016), Yu, (2012), Venkatesh et al. (2003, p.452) Yu, (2012) , Badan & Igeria, (2018), Mahande et al., (2016) , Raman et al., (2014) defined “facilitating conditions as the degree to which an individual believes that an organizational and technical infrastructure exists to support technology use”.

H4: Facilitating conditions has positive relationship towards behavioral intention.

Psychological theories believe that individual behavior predicted and influenced by individual intention, and UTAUT contended and proved behavioral intention to have significant influence on technology adoption (Yu, 2012 , Badan & Igeria, 2018, Mahande et al., 2016 , Raman et al., 2014).

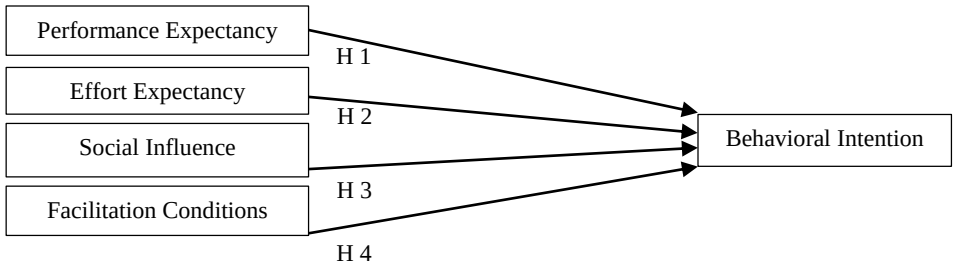

Figure 1: The Unified Theory of Acceptance and Use of Technology (UTAUT): Research Conceptual Model

3. Methods

3.1 Research design

This study used a correlational study, with descriptive and inferential statistic to investigate the relationships among the constructs of the proposed research model in which the independent variables predicting the criterion variable (dependent variables) (Kerlinger, 1986).

3.2 Research site

The research site was at ACLEDA Institute of Business located in the north of Phnom Penh Capital city. Researchers wanted to know perceptions of undergraduate students relevant to online learning during Covid-19 pandemic. The geographical site intended to conduct the study relevant to population criteria.

3.3 Population and sample

The target population in this study is the students of ACLEDA Institute of Business. Data obtained from the enrolment office, there are 1,315 students in different majors. The sample size of this study is 176. This is acceptable, according to Tabachnick & Fidell, (2017, p. 123) where "N ≥ 50 + 8m (where m is the number of IVs) for testing the multiple correlation and N ≥ 104 + m for testing individual predictors". Brooks & Barcikowski, (2012, p.2) also used practical issue in research for small sample size.

3.4 Research tools & measurements of constructs

Survey questionnaire designed with two sections, consisted of demography and research objectives using google form; some items regarding the measurement of constructs were adapted from previous studies and carefully reworded to fit online learning adoption context in Cambodia with ACLEDA Institute of Business (AIB). The items of the TRA model adapted from (Davis et al.,1989), TAM (Davis,1989), (Davis et al., 1989), the Theory of Planned Behavior (TPB) (Ajzen, 1991), the Combined-TAM-TPB (Taylor and Todd,1995), Model of PC Utilization (MPCU) (Thompson et al.,1991), Motivational Model (MM) (Davis et al., 1992), Social Cognitive Theory (SCT) (Bandura, 1986) and Innovation Diffusion Theory (IDT) (Rogers, 1995). The google form linked has sent to the respondents via google g-mail and telegram used to collect data. The data collection instrument was a self-administered questionnaire developed from the UTAUT item model (Venkatesh et al., 2003) using a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Instruments consisted of model constructs-performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC),and behavioral intention(BI) to actual acceptance of online learning(Mahande et al., 2016).

Table 1. Summary of measurement construct

Construct	Corresponding Items	Items Sources
Performance Expectance	Online learning helps me to complete my study courses Using online learning would save my time I would use online learning anyplace It is useful tools for me It increases my study result It provides me opportunities to explore more knowledge	Luarn and Lin (2005), Venkatesh and Zhang (2010), Foon and Fah (2011) (Dillon, 2006) (Yu, 2012)
Effort Expectancy	It is easy for me to access online learning through Microsoft Team It is easy for me to use online learning devices It is easy for me to access internet It is easy for me to get relevant knowledge from digital learning sources	Luarn and Lin (2005), Venkatesh and Zhang (2010), Foon and Fah (2011), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)

(continued)

Table 1. Summary of measurement construct (continued)

Construct	Corresponding Items	Items Sources
Social Influence	AIB requests me to learn online Lecturers who are in-charge in course encouraging me to learn online Other students also learn online classes My family thinks that I should learn online class I learn online because of Covid-19 pandemic	Venkatesh et al. (2003), Venkatesh and Zhang (2010), Foon and Fah (2011), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)
Facilitating Conditions	AIB's study resources are ready for me I have necessary resources to use the online learning I am able and capable to learn online AIB has specific person(group) to assist my online learning when I face difficulties during online classes	Venkatesh et al. (2003), Venkatesh and Zhang (2010), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)
Behavioral Intention	I plan it as a study condition during Covid-19 pandemic Following this plan to complete the courses I prefer to use online learning I Intend to use online learning I would use it as a study option	Venkatesh and Zhang (2010), Luarn and Lin (2005), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)

3.5 Result of the instrument test for reliability

Table 2. The Measurement of Variables' Reliability

Variables	Items of Measurements	Pilot Cronbach's Alpha (n=30)
Performance Expectancy(PE)	6	0.834
Effort Expectancy (EE)	4	0.713
Social Influence (SI)	5	0.660
Facilitating Conditions (FC)	5	0.773
Behavior Intention (BI)	5	0.721

According to DeVellis (1991), Nunnally & Bernstein, (1994); Robinson et al., (199). Cronbach's alpha is an estimator of test reliability that is suitable for use in single applications of a test, typically in cross-sectional designs(Connelly, 2011). The reliability scores of Cronbach's alpha ranges from value of 0.660 to .0834. Nunnally & Bernstein, 1994; Vaskeh, 2008) have suggested that alphas in the .65–.80 range are acceptable (Vaske et al., 2017). Nunnally (1994) asserts that the Cronbach's Alpha which has the value more than 0.7 indicates a high reliability; and as the result of all scores for the constructs of all variables that used in this survey are above the 0.7 point. The lowest alpha is 0.660 and the highest is 0.880. The result of Cronbach Alpha for all variables (PE, EE, SI, FC &BI) are 0.880.

3.6 Data collection

A cross-sectional descriptive study conducted in 2021 on the students of ACLEDA Institute of Business. Data was collected from undergraduate students of all years and majors:

finance and banking, accounting, logistics and insurance, Fintech and business IT, marketing, International business by using google form.

3.7 Data analysis

The researchers downloaded survey questionnaire from google form to Microsoft spreadsheet then encoded and transformed to numerical data. The software used for statistical analysis were IBM SPSS version 23. The study used descriptive statistics to describe demography, means, standard deviation of each factors, and referential statistical tools used to analyze the prepared data for population inference such as regression, correlation. The statistical techniques that allow a set of relationships between one or more independent variables (IVs) both IVs and dependent variables (DVs) can be factors or measured variables (Tabachnick & Fidell, 2017). The regression analysis is used to investigate the relationship between a dependent variable(DV) and more than one independent variables(IVs) and examine how strong the relationship is between the DV and IVs (Tabachnick & Fidell, 2017).

3.8 Ethical consideration

The researchers ethically considered of the literature, authors, publishers, secondary, primary and tertiary sources, sampling and non-sampling errors used in academic research and in consented with research committee and the institute's vision, missions and values as the key factors influencing and implementing this article.

4. Results and Discussions

4.1 The analysis of respondent demographics

Among the 176 respondents, 142 were female which comprised of about 80.7% and 34 were male which comprised of about 19.3%. The responses indicate that the participants from age under 20 years old, the highest response rate of 65.3%, 21% were between age 21 to 25 and over 25 year-old respondents were 13.6%. Another distribution of the sample shows that there were 74.4% of total participants studying finance and banking, some are studying accounting for 12.5%, and other major 13.1%. More than half of students are actually, have experience of online learning, comprise of 55.1% while the rest experience less than one year. Regarding to the learning devices, 41.5% students using laptop, learning with tablet 2.3% and others 56.3%. At the same time, the students use WI-FI at 43.8%, and more frequent using of network cable 56.3%.

Table 3. Demographic Factor Analysis

Respondents' demographic	Category (n=176)	Frequency	Percentage
Gender	Male	34	19.3
	Female	142	80.7
Age	Under 20 years old	115	65.3
	between 21to25 years old	37	21.0
	Others	24	13.6

(continued)

Table 3. Demographic Factor Analysis(continued)

Respondents' demographic	Category (n=176)	Frequency	Percentage
Skills	Finance and Banking	131	74.4
	Accounting	22	12.5
	Others	23	13.1
Online Experience	One semester	60	34.1
	one year	19	10.8
	more than one year	97	55.1
Learning device	Laptop	73	41.5
	Tablet	4	2.3
	Others	99	56.3
Network Connection	WI-FI	77	43.8
	network cable	99	56.3

4.2 Result on research constructs

The research constructs range value from the lowest mean 6.1034 with standard deviation 1.08243 for Behavioral intention to the highest mean 6.1875 for Social Influence, which has standard deviation 0.75355.

Table 4. Research Construct Statistics Level of Agreement

Construct	N	Minimum	Maximum	Mean	Std.Deviation	Level of Agreement
Performance Expectancy	176	1.00	7.00	6.1193	0.94682	Agree
Effort Expectancy	176	1.00	7.00	6.1335	1.04331	Agree
Social Influence	176	2.00	7.00	6.1875	0.75355	Strongly Agree
Facilitating condition	176	1.00	7.00	6.1625	1.01608	Strongly Agree
Behavioral Intention	176	1.00	7.00	6.1034	1.08243	Agree

Table 5. Multiple Correlations Matrix

Items	1	2	3	4	5
1-Performance Expectancy	1				
2-Effort Expectancy	.375**	1			
3-Social Influence	.171*	.254**	1		
4-Facilitating condition	.470**	.364**	.067	1	
5-Behavioral Intention	.159*	.135	.171*	.366**	1

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5 indicate the correlation among constructs. The lowest value is .067, the correlation between facilitating condition with social influence and the highest value is facilitating condition correlates with performance expectancy (.470**). Tabachnick & Fidell (2017) mention that correlation is used when the intent is simply to investigate the relationship between the DV and the IVs.

Table 6. The Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	32.324	4	8.081	8.001	.000[b]
	Residual	172.714	171	1.010		
	Total	205.038	175			

The table shows that the model is significance for the study with significant values of 0.000[b] the result indicated that at least one independent variable among the Predictors (facilitating condition, social influence, effort expectancy, performance expectancy) impacts the dependent variable (Behavioral Intention) with F (4,171) =8.001, p<.001. Furtherly, r =.397 indicates that the model can predict 39.7% in variance of behavioral intention (BI).

Table 7. Correlations Matrix

Constructs	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	S.E	Beta	
Performance Expectancy	-.043	.094	-.038	.648
Effort Expectancy	-.032	.083	-.031	.697
Social Influence	.229	.105	.160	.030[*]
Facilitating condition	.409	.087	.384	.000[**]

a. Dependent Variable: Behavioral Intention

The table of coefficients shows the performance expectancy has β= -.038 with p-value of 0.648. The effort expectancy has β=-.031 and the p-value .697. The social influence has β .160 and P-value (statistical significance) .030[*]. The facilitating condition has β=.384 and p-value .000[**].

4.3 Hypothesis testing result

Table 8. Summary of hypothesis testing

Hypothesis	Regression weights	Beta coefficient	Sig. value	Result
H1	PE → BI	-.038	.648	Unsupported
H2	EE → BI	-.031	.697	Unsupported
H3	SI → BI	.160	.030[*]	Supported
H4	FC→ BI	.384	.000[**]	Supported

The dependent variable, behavioral intention (BI) was regressed by predicting variable, performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) to test hypothesis H1, H2, H3 and H4 respectively. The independent variables (PE, EE, SI, & FC) predicted dependent variable (BI), F (4, 171) = 8.001, p < 0.005, which indicates that social influence and facilitating conditions have significantly impact on BI, whereas performance expectancy and effort expectancy don't. Furthermore, R=.397 depicts that the model may explain 39.7% of the variance in behavioral intention (dependent variable).

4.4 Discussion

The coefficients table indicated the performance expectancy with β = -.038 and p-value .648. The result was unsupported. The effort expectancy with β =-.031 and the p-value=.697. This shown unsupported too. For social influence having β =.160 and P-value (statistical significance) = .030, this is supported result; and the facilitating condition has β =.384 and p-value= .000**, it has significantly positive result.

The finding of this study contradicted to the study of (Raman et al., 2014) which found that performance expectancy (PE) (β=0.418, p<0.01), social influence (SI) (β=0.238, p<0.01) and facilitating conditions (FC) (β=0.120, p<0.01) have positive influence towards behavioral intention (BI) to acceptance online learning in the context of the use of learning management system (LMS) with Moodle platform at Universiti Utara Malaysia. The inconsistent point is due to Raman et al (2014) studied on the curriculum designed for online with postgraduate students. The study conducted by Attuquayefio, S., & Addo, (2014) shown that effort expectancy (EE) (β =0.4, p <.05) significantly predicted behavioral intention(BI) to use ICT, while social influence (SI) and performance expectancy (PE) were statistically insignificant, as was Behavioral Intention (BI) on use behavior (UB). However, facilitating conditions (FC) (β=.26, p <.001) significantly influenced UB. The critical finding is that the acceptance of information and communication technology (ICT) with highly positive correlation due to Attuquayefio, S., & Addo, (2014) studied on the students of tertiary institutions, and social studies as well as business administration in Ghana.

5. Conclusion and Implication

5.1 Conclusion

During the year 2020 to 2021, the Covid-19 affects every factors around the globe including Cambodia. The Cambodian public and private sectors habituating the outbreak for almost two years. The education sectors both public and private use online teaching and learning, or hybrid teaching and learning. To explore on student's perception towards online acceptance, the research finds that ACLEDA Institute of Business(AIB) uses online classes during the years, the responses of participants from age under 20 years old, the highest response rate of 65.3%, 21% were between age 21 to 25 and over 25 year olds respondent were 13.6%. The distribution of the sample shows that there were 74.4% of total participants studying finance and banking, some are studying accounting for 12.5%, and other major 13.1%. Students actually have experience of online learning more than one year comprise of 55.1% while the rest experience less than one year. Regarding to the learning devices, 41.5% students using laptop, learning with tablet 2.3% and others 56.3%. At the same time, the students use WI-FI at 43.8%, and more frequent using of network cable 56.3%.

The IBM SPSS version 23 analyzed the regression of research constructs, the coefficients correlations of performance expectancy with β = -.038 and p-value= .648. The result was unsupported. This shows the negative correlation. The effort expectancy with β =-.031 and the p-value =.697 indicate the negative, unsupported result. For social influence having β .160 and P-value = .030(P<0.001), it shows supported result; and the facilitating condition has β =.384 and p-value= .000, it has significantly positive result (P<0.001).

5.2 Implications of the study

The researchers paraphrased the study of (Dhawan, 2020), that "the dependency of online learning on technological equipment and the provision of the equipment is a big challenge for institutions, faculty and learners". The authors emphasize that online learning and courses suit the best for tertiary education, higher education institutions and career training development. The trends of industrial revolution and digitalization rapidly grows, so learners should have self-transformation to digital people.

5.3 Recommendations for future research

The next researcher should employ mixed research method, quantitative and qualitative method in order to deepen on the perception of online learning, one of the form of distance education, and on procedures, and techniques to implement online learning for higher education institutions and tertiary education. The both method can properly deal with complexity according to its limited number of constructs and moderating variables which have more applicable and understandable to study the acceptance behavior to any new technology.

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Adopting Theory of Planned Behavior on the Study of Blended Learning at Higher Education Institutions in Cambodia

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ABSTRACT

The study aims to determine the factors that influence students' intention to adopt blended learning in Cambodia. The Theory of Planned Behavior (TPB), developed by Ajzen (1985), has been employed to pave the way for the study. A survey questionnaire with 46 questions, adapted from previous studies, was designed using a 9-point Likert scale to meet statistical requirements. This survey was sent to 400 students at three targeted higher education institutions; however, only 204 students who live in Phnom Penh City filled in the survey questionnaire. First, confirmatory factor analysis (CFA) was used to validate the instrument, and then a structural equation modeling (SEM) was employed to test the specified hypotheses by running path analysis in AMOS software. The study has shown that the students use their mobile phone at 50.50% and laptop at 41.70% to study online via Zoom Meeting at 50% and Microsoft Teams at 46.60%. From the path analysis, the study has found that three hypotheses were supported and one hypothesis was not supported; in other words, attitude and subjective norm have a significant positive effect on the intention to adopt blended learning at (β=0.42) and (β=0.39), respectively; however, perceived behavioral control does not impact on the intention to adopt blended learning. Moreover, behavioral intention impacts positively on the actual adoption of blended learning at (β=0.67). The findings of this study contributed significantly to the improved blended learning activities. More importantly, it benefits academic program designers and the management team of the higher education institutions as they could integrate blended learning activities into a course or a program level.

Keywords: Blended learning, Theory of Planned Behavior (TPB), Confirmatory Factor Analysis (CFA), Structural Equation Modelling (SEM)

1. Introduction

1.1 Background of the study

Over the last two years, the outbreak of COVID-19 kept people in social distancing, and postponed social activities nationwide in Cambodia. In order to protect people from the pandemic, the Ministry of Education, Youth and Sport (MoEYS) announced the postponement of the physical classroom and encouraged online learning (MoEYS, 2020). Online learning was introduced to educational institutions at all levels to ensure that the learning would remain ongoing despite the pandemic.

The term online learning was considered relatively new to be implemented in the educational sector in Cambodia; therefore, development partners have taken quick actions to provide technical support for MoEYS. For instance, under UNESCO's Capacity Development for Education (CapED), UNESCO has worked closely with MoEYS to strengthen digital and distance learning for primary and lower secondary school students. Under this program, 200 video lessons have been produced and broadcasted on MoEYS's official online and digital learning platform and Techo TV channel (UNESCO, 2020). Likewise, UNICEF has produced distance learning materials such as videos and e-lessons for primary, lower, upper secondary education; and these materials were broadcast via social media platforms, TV, and radio (UNICEF, 2020). At the same time, all higher education institutions in Cambodia have been impacted by the COVID 19 as Heng (2020) described that there was no choice for all schools and universities across the country but to switch to online learning during the pandemic. According to (Post Staff, 2020), MOEYS has encouraged blended learning, a combination of in-class and distance learning.

1.2 Statement of the problem

Blended learning, applied by many universities worldwide, consists of both pros and cons. There are several advantages of blended learning, such as pedagogical richness, access to knowledge, social interaction, personal agency, cost-effectiveness, and ease of revision (Osguthorpe & Graham, 2003). Besides the advantages, blended learning has several challenges in terms of technical, organizational, and instructional design (Kaur, 2013). In Cambodia, very few teachers have adopted both online and off-line teaching approaches (Phal et al., n.d.). Moreover, a qualitative study conducted by (Heng & Hang, 2017) on teachers' perception towards blended learning adoption at the Institute of Foreign Languages, Royal University of Phnom Penh showed that the lecturers had a fairly positive opinion toward implementing blended learning at higher education institutions. They have suggested that other stakeholders such as MoEYS, educational institutions, and students need to be considered when implementing blended learning. Besides, at ACLEDA Institute of Business, a Commission of Online Plus has been created in order to make sure that Online Plus (Blended Learning) has been effectively implemented; however, the Commission has not employed a quantitative study on the adoption of blended learning yet. Furthermore, there is a lack of previous studies on students' intention to adopt blended learning in Cambodia.

1.3 Research objective

In order to fulfill the above gap, this study aimed to determine the factors that influence students' intention to adopt blended learning in Cambodia. Furthermore, the Theory of Planned Behavior (TPB) has been employed to pave the way for the study. In this sense, the impact of attitude, subjective norm, and perceived behavior control toward the intention to adopt blended learning have been the central focus in this study.

1.4 Research question

In order to set the light for the research objective, the study raised one main research question: " Which factors of TPB influence students' intention to adopt blended learning in Cambodia?".

1.5 Significance of the study

The findings of this study contributed significantly to the key stakeholders and the existing literature. The university lecturers could select particular activities of blended learning that the students favored applying in their teaching. Moreover, academic program designers could integrate blended learning activities into a course or program level; and the management team of the higher education institutions could take advantage of blended learning by initiating the effective online academic program. Last but not least, the findings would be able to fill the gap of the existing literature of the Theory of Planned Behavior (TPB).

1.6 Scope of the study

This study employed a survey to collect a breadth of information; thus, it is limited in its nature (Schindler, 2019). Since Cambodia is still developing, some students living in the province and rural areas were not included as they could not adopt a new electronic platform yet. Last but not least, this study focused on higher education institutions only; therefore, students at primary, secondary, and high school education were not selected for this study.

2. Literature Review

2.1 Definition of blended learning

The concept of blended learning existed after the term hybrid course, yet the two terms are then used interchangeably (Graham, 2011). Blended learning is one of the top ten trends to emerge in the knowledge-based society (Rooney, 2003). There is a continuous debate on the definition of blended learning (Bonk & Graham, 2004). A group of authors, i.e. Bersin & Associates (2003), Orey (2002) and Singh & Reed (2001) refers to blended learning as "combining instructional modalities"; other authors such as Driscoll (2002) and Rossett (2002) define blended learning as the "combining instructional methods." Reay (2001), Rooney (2003), Sands (2002) and Young (2002) describe blended learning as the "combining online and face-to-face instruction." Even though the continuous debate exists, Graham et al. (2003) finally define the term "blended learning" as combining face-to-face instruction with

technology-mediated instruction. Blended learning, defined by Graham et al. (2003), is consistent with the context of Cambodia as Khoun (2020) describes blended learning as […an integration of digital learning with an offline mode of knowledge delivery through affordable technologies…]. Table 1 shows the categories of blended learning, applied at the higher education institutions in several countries.

Table 1: Blended Learning Categories

System/Institution	Themes	Author(s) & Year
Course Management System, (WebCT) Global Perspectives	- First, technology is used as a supplement to traditional course practices (technology-enhanced courses). - Second, apply computer-mediated activities to replace some of the traditional face-to-face lecture time. - Third, students can choose to take a mix of both traditional face-to-face and completely online courses.	(Ross & Gage, 2006)
University of Waikato in New Zealand	- Supported online - courses are taught in the traditional lecture/tutorial mode, with online support materials - Somewhat online - there is an online component for on campus students - Mostly online - there is a mix of online and some on campus work in the qualification - Fully online - students can complete qualifications without coming onto the campus	(Wright et al., 2006)
University of Glamorgan in Wales	- Basic ICT usage stage (PowerPoint, Word, etc.) - E-enhanced stage (use of LMS for productivity and communication) - E-focused stage (use of discussion boards, interactive materials, online assessments, etc.) - E-intensive stage (predominantly online courses with minimal face-to-face time for inductions, briefings, etc.)	(Jones et al., 2011)
Spanish public universities	- Stage1: an instructional design that integrates face-to-face and non-face-to-face spaces, - Stage2: interactive and accessible educational materials, - Stage3: a continuous support system - Stage4: a continuous assessment system	(Martín-García, A. V., Martínez-Abad, F., & Reyes-González, 2019)

2.2 The importance of blended learning

Blended learning has been applied not only in the educational sector but also in the business sector; for instance, corporations such as IBM and SUN Microsystems have adopted blended learning as a method for providing training for their employees. In higher education, blended learning exists at the institutional, program, course, and activity level (Bonk & Graham, 2004). Table 2 illustrates the application of blended learning at the course level.

Table 2: Blended Learning Activities

System/Institution	Themes	Author(s) & Year
European Maturity Model for Blended Education	-course design process (selection of blended learning activities and their sequence; selection of blended learning tools), -course flexibility, -course interaction, -course experience (student learning, study load, inclusiveness) Adapted from (Van Valkenburg et al., 2020)	(Nikiforova, 2021)
Mzumbe University, Tanzania	-Group work and online collaborative learning -Interactions -Assessments	(Machumu et al., 2018)
Open University Business School	-The first stage (access and motivation) -The second stage (online socialization) -In the third stage (information exchange) -The fourth stage (knowledge construction) -The fifth stage (development) Adapted from (Salmon, 2003)	(Astudillo, 2020)
University of Central Florida	Online activities: -Individual learning activities -Collaborative learning activities -Web based training & webcast -Online tutorial, blog & chat rooms -Discussion board activities -Recorded lecturers & videos -Online assessment & feedbacks Face-to-Face (F2F) Activities: -Class room lecturers -Individua/group discussions -Laboratory activities -Presentation activities -Student-student interaction -Student-lecturer interaction -Student assessment & feedbacks Adapted from (Graham, 2013); (Moskal et al., 2013)	(Anthony et al., 2020)

The corporations and higher education institutions choose to adopt blended learning for several reasons such as pedagogical richness, access to knowledge, social interaction, personal agency, cost-effectiveness, and ease of revision (Osguthorpe & Graham, 2003); and improved pedagogy, increase access/flexibility, and increased cost-effectiveness (Graham et al., 2003).

2.3 The adoption of Theory of Planned Behavior on blended learning

In order to confirm the connection between intention and behavior, Ajzen (1985) extended the Theory of Reasoned Action (TRA) into a Theory of Planned Behavior (TPB), which states that attitude, subject norms, and perceived behavioral control, which altogether shapes an

individual's behavioral intentions and behaviors (Ajzen, 1985). As cited in (Osman, 2020), the Theory of Planned Behavior (TPB) has been used in the study of attitudes and behaviors in the disciplines (Renko et al., 2012), namely in health care campaigns (Javadi et al., 2013), in marketing (Ferdous, 2010), and on online distance learning (Osman, 2020).

2.4 Conceptual framework of Theory of Planned Behavior (TPB) in the study about blended learning

In this study, TPB has been employed to identify the factors influencing students to adopt blended learning in Cambodia.

2.4.1 Attitude and behavioral intention

Fishbein & Ajzen (1975) define attitudes as an individual's evaluation of an object and as the individual's positive or negative feeling about performing the target behavior (Davis et al., 1989). Attitudes are influenced by behavioral beliefs and outcome evaluation, primarily through behavioral intention. Fishbein & Ajzen (1975) define intention as the agent's subjective probability whereby he or she will perform the behavior. Davis et al. (1989) confirm that attitude influences the intention to adopt a specific system. Bagozzi et al. (1992) supported that intention to adopt technology learning and usage is influenced by the attitude. Thus, the study proposed the following hypothesis.

H_1: Attitude has a significant positive effect on the intention to adopt blended learning.

2.4.2 Subjective norm and behavioral intention

In the Theory of Planned Behavior (TPB), Ajzen (1985) defines subjective norm as the perceived social pressure to engage or not to engage in a behavior. In other words, it is the belief that an important person or group of people approve and support a particular behavior (Ham et al., 2015). The group that influences the individual behavior can be family, friends, social networks, or significant others. Subjective norm has been found to have a direct effect on the behavioral intention (Fishbein & Ajzen, 1975; Ajzen, 1985), information technology usage (Taylor & Todd, 1995), and system usage (Venkatesh & Morris, 2000). As a result, the study proposed the following hypothesis.

H_2: Subjective norm has a significant positive effect on the intention to adopt blended learning.

2.4.3 Perceived behavioral control and behavioral intention

Abrahamse (2019) defines perceived behavioral control (PBC) as a person's own perceptions of his or her ability to perform the behavior. Ajzen (1985) defines PBC as the person's belief that his or her performance of a specific behavior is under his or her control, and it is assessed by a degree of ease or difficulty of the behavior. Moreover, behavioral intention is determined by a person's expectancy to control his or her behavior called PBC

(Ajzen, 1985). In other words, PBC can directly affect behavioral intention (Ajzen, 2013), on the intention at Computing Resource Center (Taylor & Todd, 1995), and on the intention to adopt online distance learning (Osman, 2020). Therefore, the study proposed the following hypothesis.

H_3: Perceived behavioral control has a significant positive effect on the intention to adopt blended learning.

2.4.4 Behavioral intention and usage behavior

Usage behavior can be defined as continuous commitment to the product (Black, 1983). Usage behavioral in this study has been operationalized as the actual adoption of blended learning. Usage behavior is found to be influenced directly by behavioral intention on technology acceptance and usage (Davis et al., 1989; Venkatesh & Davis, 2000), on technological learning and usage (Bagozzi et al., 1992), at Computing Resource Center (Taylor & Todd, 1995), and on online distance learning (Osman, 2020). In order to study the relationship between behavioral intention and actual behavior to adopt blended learning, the study proposes the hypothesis as follows:

H_4: Behavioral intention has a significantly positive effect on the actual adoption of blended learning.

2.4.5 Conceptual model and research hypotheses

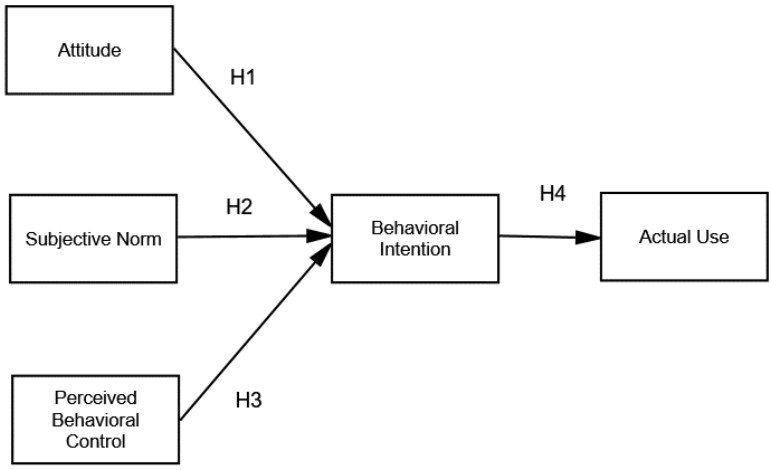

Figure 1: Conceptual model of TPB on blended learning

Therefore, the study employed the Theory of Planned Behavior (TPB) in order to study the factors influencing blended learning adoption at higher education institutions in Cambodia. Furthermore, to set the light of the study, four main hypotheses have been proposed so that the objective can be fulfilled.

H_1: Attitude has a significant positive effect on the intention to adopt blende d learning.

H_2: Subjective norm has a significant positive effect on the intention to adopt blended learning.

H_3: Perceived behavioral control has a significant positive effect on the intention to adopt blended learning.

H_4: Behavioral intention has a significant positive effect on the actual adoption of blended learning.

3. Methods

3.1 Research design

The study employed a correlational design, which provides an opportunity to predict scores and explain the relationship among variables (Cresswell, 2012). Furthermore, previous studies have been analyzed, and construct measurements have been adapted to develop research instruments for collecting data. The study employed a survey questionnaire which was made in Microsoft Form as research tool and collected data was analyzed by demographic analysis, descriptive analysis, confirmatory factor analysis, and path analysis.

3.2 Research area and target population

Since the topic of blended learning is relatively new in the context of Cambodia, the study selected students from three higher education institutions (HEIs) that have applied blended learning during the Covid-19 pandemic from October to December 2020, namely ACLEDA Institute of Business, Beltei International University, and Institute of Foreign Languages. Furthermore, the study focused on the students who live in Phnom Penh City due to Internet accessibility.

3.3 Sample size

For a practical case of regression analysis in the structural equation model (SEM), the study selected 204 students as a sample size. This study follows previous research; for instance, Knofczynski & Mundfrom (2008) recommends a 200 sample size of an excellent prediction level of four predictors variables with a level of squared population multiple correlation of 0.2. Wolf et al. (2013) state that the simple two-factor model (with three indicators per factor) requires a minimum sample of 460, 200, and 120 for factor loadings of 0.50, 0.65, and 0.80, respectively in running the SEM.

3.4 Research tools

A questionnaire comprised of three sections was developed. Section one consists of ten questions focusing on personal data, and five questions focusing on general experiences of blended learning adoption. Moreover, section two consists of six items for attitude, seven items for subjective norm, six items for perceived behavioral control, six items for behavioral intention, and four items for usage behavior. All of the items in each section were adapted from previous studies, as shown in Table 3. Finally, section three consists of one question focusing

on suggestions and comments. Furthermore, 9-point Likert Scale was used as the rating for the five variables to reduce rater errors (Schindler, 2019). Scale number 1 refers to strongly disagree, and 2, 3, 4, 5, 6, 7, 8, and 9 refer to disagree, moderately disagree, mildly disagree, neutral, mildly agree, moderately agree, agree, and strongly agree, respectively.

Table 3: Construct measurement of the five variables

Constructs	Items	References
Attitude	ATT1: Face-to-face and online learning save me time.	(Fishbein and Ajzen 1975) Bagozzi et al. (1992)
	ATT2: Face-to-face and online learning have more advantages, and they are important to me.	
	ATT3: It is a good idea to learn face-to-face and online.	
	ATT4: It is wise to learn face-to-face and online.	
	ATT5: It is pleasant and interesting to learn face-to-face and online.	
	ATT6: Overall, I have a positive opinion toward face-to-face and online learning.	
Subjective Norm	SN1: My classmates usually learn both face-to-face and online.	(Venkatesh & Davis, 2000) (Ajzen, 2013) (Taylor &Todd, 1995)
	SN2: My classmates think that I should learn both face-to-face and online.	
	SN3: Generally speaking, I want to learn both face-to-face and online like my classmates.	
	SN4: My university lecturers expect me to learn both face-to-face and online.	
	SN5: My close friends expect me to learn both face-to-face and online.	
	SN6: My family expects me to learn both face-to-face and online.	
	SN 7: My idol expects me to learn both face-to-face and online.	
Perceived Behavioral Control	PBC1: I would feel comfortable learning both face-to-face and online.	(Ajzen 2013) (Osman, 2020) (Taylor & Todd, 1995)
	PBC2: I have enough knowledge to learn both face-to-face and online.	
	PBC3: Generally speaking, I want to learn both face-to-face and online like my classmates.	
	PBV4: My university lecturers facilitate both face-to-face and online learning.	
	PBC5: I have the ability to learn both face-to-face and online.	
	PBC6: I believe I can control over face-to-face and online -learning.	
	PBC7: I have the resources to learn both face-to-face and online.	
Behavioral Intention	BI1: I plan to do both face-to-face and online learning.	(Fishbein and Ajzen, 1975) (Bagozzi et al., 1992)
	BI2: I intend to do both face-to-face and online learning.	
	BI3: I will strongly recommend both face-to-face and online learning to someone that I know.	
	BI4: Whenever I want to develop my knowledge, I will do both face-to-face and online learning.	
	BI5: I am willing to learn both face-to-face and online.	
	BI6: I would suggest my university/institution conduct learning both face-to-face and online.	

(to be continued)

Table 3: Construct measurement of the five variables(continued)

Constructs	Items	References
Usage Behavior	USE1: I have learned both in class and online during Covid 19 pandemic. USE2: I used to learn both in class and online last year. USE3: I become familiar with both in-class and online learning. USE4: Overall, I usually learn both in class and online learning during Covid 19 pandemic.	(Venkatesh & Davis, 2000) (Ajzen 2013) (Taylor & Todd, 1995)

3.5 Data collection

Due to the Covid-19 pandemic, the study sent a survey link designed in Google Form to the research participants via Telegram, Facebook Messenger, Instagram, and LinkedIn. The survey link was sent to the selected students who had experienced blended learning at the three HEIs from February to May 2021.

4. Results

This chapter analyses the responses and presents the research findings from the data collected from the survey. Since the data analysis was based on a quantitative approach, thus the data collected were presented in ordinal, quantitative, and numerical manners. The outputs were generated using the AMOS program. This survey link was sent to 400 students at three selected higher education institutions, namely ACLEDA Institute of Business, Beltei International University, and Institute of Foreign Languages. However, only 204 students who live in Phnom Penh City filled in the survey questionnaire.

4.1 Demographics analysis

Among the 204 respondents, 129 were female, accounting for about 63%, and 75 were male, comprised of about 37%. The responses indicate that the participants from age 21-22, yielding the highest response rate of 56.9%. Another distribution of the sample shows that there were 86.76% of the total sample studying the bachelor's degrees; some are studying at years 2, 3, and 4, which accounts for 25.4%, 28.9%, and 33.3%, respectively. More than half of all the students are working while studying, and some of them run their own businesses, 8.30%. Regarding blended learning, the participants use their mobile phone the most, then laptop to study online via the three popular online platforms, i.e., Zoom Meeting (50%), Ms. Teams (46.6%), and Google Meet (3.4%). At the same time, the students use Schoology at 50% and Ms. Team at 46.6% as a medium for the asynchronous learning activity, and 96.56% of them use Telegram as a means for communication with their lecturers. Most of their online activities are online surveys, accounting for 68.60%, and 46.10% stated that they learn face-to-face before learning online.

Table 4: Demographic factor of the blended learning

Demographic	Category (n=204)	Frequency	Percentage
Gender	Male	75	36.80%
	Female	129	63.20%
Age	Between 17 to 20 years old	52	25.50%
	Between 21 to 22 years old	116	56.90%
	Between 23 to 25 years old	24	11.80%
	Over 25 years old	12	5.90%
Educational Background	Associate student	14	6.86%
	Bachelor student	177	86.76%
	Master student	13	6.37%
Year of Study	Year 2	52	25.49%
	Year 3	59	28.92%
	Year 4	68	33.33%
	Others	25	12.25%
Occupational status	Company employee	104	51.00%
	Government officer	8	3.90%
	Business owner	17	8.30%
	Self-employed	7	3.40%
	Currently unemployed	68	33.30%
Types of devices used for blended learning	Computer Desktop	12	5.90%
	Laptop	85	41.70%
	Tablet	4	2.00%
	Mobile phone (smartphone)	103	50.50%
Online platform	Zoom Meeting	102	50.00%
	Microsoft Team	95	46.60%
	Google Meet	7	3.40%
Asynchronous activity platform	Schoology	102	50.00%
	Microsoft Team	95	46.60%
	Google Classroom	7	3.40%
Communication platform	Telegram Messenger	197	96.57%
	Facebook Messenger	7	3.43%
	Other	0	0%
Blended learning activities	Online Quiz	35	17.20%
	Online exercises	3	1.50%
	Online searching information	7	3.40%
	Online video	9	4.40%
	Online meeting	9	4.40%
	Online problem-solving	1	0.50%
	Online survey	140	68.60%

(to be continued)

Table 4: Demographic factor of the blended learning (continue)

Demographic	Category (n=204)	Frequency	Percentage
Blended learning mode	I learned face-to-face (F2f) and online at the same time.	31	15.20%
	First, I learned face-to-face. Then I learn online.	94	46.10%
	First, I learned online. Then I learn face-to-face.	39	19.10%
	I learned face-to-face only.	2	1.00%
	I learned online only.	38	18.60%

4.2 Descriptive analysis

❖ Level of agreement

The mean of each variable ranges from the lowest one of 5.936, which is a subjective norm with a standard deviation of 1.903, to the highest of 6.475, which is a usage behavior with a standard deviation of 1.856. Moreover, the following data analysis shows the respondents' level of agreement towards the adoption of blended learning. Below is the nine-point Likert scale and its classification. The table 5 illustrates the respondents' level of agreement on the measurement of each factor that inspires students' attitude and perceived behavioral control towards adopting blended learning. According to (Armstrong, 1987), all the variables are classified as Mildly agree, except the actual use, which is Moderately agreed.

8.20 - 9.00 were classified as Strongly Agree
7.30 - 8.19 were classified as Agree
6.40 - 7.29 were classified as Moderately Agree
5.50 - 6.39 were classified as Mildly Agree
4.60 - 5.49 were classified as Neutral or Neither Agree nor Disagree
3.70 - 4.59 were classified as Mildly Disagree
2.80 - 3.69 were classified as Moderately Disagree
1.90 - 2.79 were classified as Disagree
1.00 - 1.89 were classified as Strongly Disagree

Table 5: Level of Agreement

Variable	Min	Max	Mean*	SD	Level of Agreement
Attitude (ATT)	2	9	6.351	1.582	Mildly Agree
Subjective Norm (SN)	1	9	5.936	1.903	Mildly Agree
Perceived Behavioral Control (PBC)	1	9	6.264	1.938	Mildly Agree
Behavioral Intention (BI)	1	9	6.333	1.84	Mildly Agree
Actual Adoption (USE)	1	9	6.475	1.856	Moderately Agree

4.3 Measurement model analysis

The conceptual model of TPB consists of three exogenous variables (attitude, subjective norm, and perceived behavioral control), one endogenous variable (actual adoption), and one mediating variable (behavioral intention). After running Confirmatory Factor Analysis (CFA), the study dropped three, four, four, three, and two indicators of the factors such as attitude, subjective norm, perceived behavioral control, behavioral intention, and actual adoption, respectively.

4.3.1 Factor loading

Figure 2 shows that the factor loadings of all items are highly adequate. The standardized regression weights range from 0.747 to 0.924, above 0.50 as suggested by Hair et al. (2010). Thus, most of the constructs confirm the convergent validity test, and those factor loadings can be used to estimate construct reliabilities (CR) and average variance extracted (AVE).

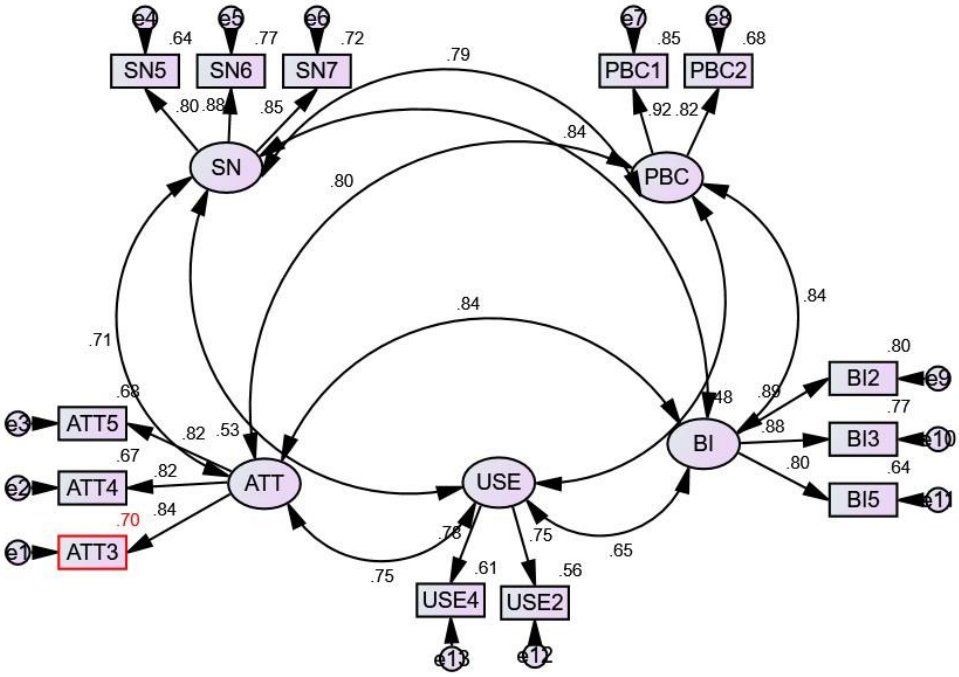

Figure 2: Factor loading analysis

4.3.2 Cronbach alpha and construct reliabilities

Table 6 shows that each construct consists of composite reliability reaching an acceptable value of 0.60 (Haruna, 2014). The behavioral intention has the highest Cronbach's alpha of 0.889, but the actual adoption has the lowest Cronbach's alpha of 0.738; moreover, the subjective norm has the highest construct reliability (CR) of 0.878, while actual adoption has the lowest reliability (CR) of 0.649.

Table 6: Cronbach's Alpha and Construct Reliabilities

Variable Types	Variable Names	Items	Cronbach's alpha	CR
Exo1	Attitude (ATT)	3	0.866	0.8674
Exo2	Subjective Norm (SN)	3	0.875	0.878
Exo3	Perceived behavioral control (PBC)	2	0.863	0.788
Mediating Variable	Behavioral Intention (BI)	3	0.889	0.764
Endo	Actual Adoption (USE)	2	0.738	0.649

4.3.3 Discriminant validity of constructs

Table 7 illustrates the result of variance extracted (VE), which is calculated into average variance extracted (AVE). The VE for attitude, subjective norm, perceived behavioral control, behavioral intention, and actual adoption is 0.685, 0.707, 0.765, 0.735, and 0.586, respectively.

Table 7: Final CFA of the Five Variables

Variable	Code	Factor Loading	SFL	Error	Variance Extracted
	ATT3	0.839	0.703	0.296	
ATT	ATT4	0.821	0.674	0.325	0.685
	ATT5	0.824	0.678	0.321	
	SN5	0.799	0.638	0.361	
SN	SN6	0.877	0.769	0.230	0.707
	SN7	0.846	0.715	0.284	
	PBC1	0.924	0.853	0.146	0.765
PBC	PBC2	0.823	0.677	0.322	
	BI2	0.893	0.797	0.202	
BI	BI3	0.875	0.765	0.234	0.735
	BI5	0.802	0.643	0.356	
USE	USE2	0.747	0.558	0.441	0.586
	USE4	0.784	0.614	0.385	

Table 8 illustrates the average variance extracted (AVE) for two variables. Phang (2016) cited "the AVE should be more than the squared inter-construct correlation (SIC) of the two constructs to support discriminant validity. If AVE is less than CS, the problem of multicollinearity would exist" (Fornell & Larcker, 1981). According to the Table, the highest AVE is between Perceived Behavioral Control and Behavioral Intention, equal to 0.750, and the lowest AVE is between Attitude and Usage Behavior, equal to 0.635.

Table 8: Average Variance Extracted (AVE) Matrix of Variables

Variable Name	ATT	SN	PBC	BI	USE
ATT	1				
SN	0.696	1			
PBC	0.725	0.736	1		
BI	0.710	0.721	0.750	1	
USE	0.635	0.647	0.675	0.660	1

Table 9 reveals that each AVE value is more than the squared inter-construct correlation (SIC) as the comparison between the AVE value in Table 8 and the SIC value in Table 9. The highest difference is between Perceived Behavioral Control and Usage Behavior at 0.450, and the lowest difference is between Attitude and Behavioral Intention at 0.004. Thus, "discriminant validity theory is accepted, or multicollinearity is absent. In other words, each construct could be considered distinctively from one to another." (Phang, 2016).

Table 9: Squared Inter-Construct Correlation Estimates (SIC)

Variable Name	ATT	SN	PBC	BI	USE
ATT	1				
	0.508				
SN	(0.188)	1			
	0.643	0.617			
PBC	(0.082)	(0.118)	1		
	0.705	0.712	0.714		
BI	(0.004)	(0.009)	(0.036)	1	
	0.567	0.284	0.225	0.417	
USE	(0.068)	(0.362)	(0.450)	(0.243)	1

*Note: value in parentheses indicated the comparison between the AVE value in Table 8 and the SIC value in Table (9)

4.3.4 Model fit indices

CFA confirmed that the TPB model is really fit in the study of blended learning adoption as the fit indices are acceptable, namely CMIN/DF=1.974<2 (good fit), RMSEA=0.069 (acceptable fit), NFI=0.946>0.90 (acceptable fit), CFI=0.972>0.97 (good fit), GFI=0.927>0.90 (acceptable fit), and AGFI=0.879> 0.85 (not great but tolerable).

Table 10: Fit indices and their acceptable thresholds

Fit Measures	Good Fit	Acceptable Fit
CMIN/DF(χ2 /df)	$0 \leq \chi 2/df \leq 2$	$2 < \chi 2 \leq 3$
RMSEA	$0 \leq$ RMSEA ≤ 0.05	$0.05 <$ RMSEA ≤ 0.08
NFI	$0.95 \leq$ NFI ≤ 1.00	$0.90 \leq$ NFI < 0.95
CFI	$0.97 \leq$ CFI ≤ 1.00	$0.95 \leq$ CFI < 0.97
GFI	$0.95 \leq$ GFI ≤ 1.00	$0.90 \leq$ GFI < 0.95
AGFI	$0.90 \leq$ AGFI ≤ 1.00	$0.85 \leq$ AGFI < 0.90

Note: CMIN/DF= Chi square divided by degrees of freedom, RMSEA=Root Mean Square Error of Approximation, NFI=Normed Fit Index, CFI=Comparative Fit Index, GFI=Goodness-of-Fit Index, AGFI=Adjusted Good-of-Fit Index

4.4 Path analysis

Figure 3 shows the standardized regression weight of path analysis. Factors such as Attitude (ATT), Subjective Norm (SN), and Perceived Behavioral Control (PBC) are the predictors of Behavioral Intention and the behavioral Intention is the predictor of actual adoption of blended learning.

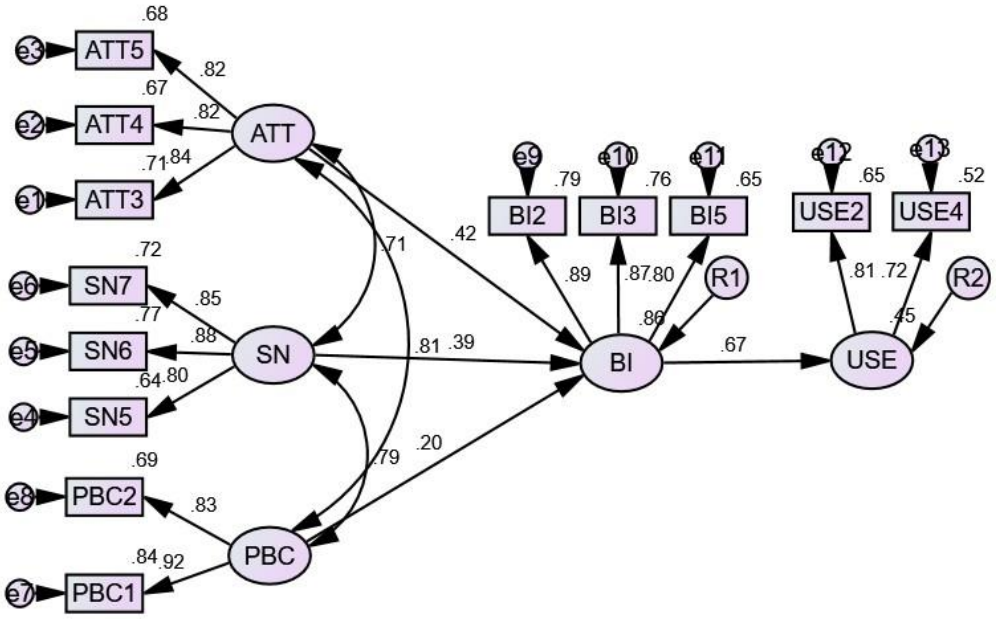

Figure 3: Results Path Analysis

Table 11 shows a regression analysis of path analysis 1 with Behavioral Intention as the dependent variable. The result suggests that the model is statistically significant in explaining that at least one predictor impacts the Behavioral Intention to adopt blended learning. It showed that there is a positive impact of Attitude (β=0.42) at level significance (0.001) and Subjective Norm (β=0.39) at level (0.001) on Behavioral Intention. However, Perceived Behavioral Control was not significant on Behavioral Intention to adopt blended learning.

Table 11: Path Analysis 1 (Behavioral Intention as Dependent Variable)

Exo.	Endo.	Unstandardized Estimates		Standardized Estimates		Sig.
		B	S.E.	Beta	C.R.	(P-value)
ATT	BI	0.48	0.103	0.42	4.648	0.001**
SN	BI	0.43	0.092	0.39	4.701	0.001**
PBC	BI	0.18	0.095	0.20	1.924	0.054

*. Correlation is significant at the 0.05 level (2-tailed)

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

Note: Exo= Exogenous, Endo=Endogenous, B=direct effect, S.E.=standard Error, C.R.=Critical Ratio, Sig.=Significance, ATT=Attitude, SN=Subjective Norm, PBC=Perceived Behavioral Control, BI=Behavioral Intention

The following table is the result of regression analysis in path 2 for the relationship between Behavioral Intention as the independent variable and Actual Adoption as the dependent variable. It shows a significant positive impact of the Behavioral Intention (β=0.67) at 0.001 on the Actual Adoption of blended learning.

Table 12: Path Analysis 2 (Actual Adoption as Dependent Variable)

Exo.	Endo.	Unstandardized Estimates		Standardized Estimates		Sig.
		B	S.E.	Beta	C.R.	(P-value)
BI	USE	0.63	0.075	0.67	8.348	0.001**

*. Correlation is significant at the 0.05 level (2-tailed)

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

Note: Exo.=Exogenous, Endo.=Endogenous, B=direct effect, S.E.=standard Error, C.R.=Critical Ratio, Sig.=Significance, BI=Behavioral Intention, USE=Actual Adoption

4.5 Results of hypothesis testing

The following table shows that H1, H2, and H4 were supported at the significance level of (0.001), but H3 was not supported at the significance level of 0.054.

Table 13: Hypothesis Testing

	Hypotheses	Significance	Statistical
H1:	Attitude has a significantly positive effect on the Behavioral Intention to adopt blended learning.	0.001**	Supported
H2:	Subjective Norm has a significantly positive effect on the Behavioral Intention to adopt blended learning.	0.001**	Supported
H3:	Perceived Behavioral Control has a significantly positive Behavioral effect on the Intention to adopt blended learning.	0.054*	Not Supported
H4:	Behavioral Intention has a significantly positive effect on the Actual Adoption of blended learning.	0.001**	Supported

4.6 Discussions

First of all, the impact of attitude factor on the behavioral intention at (β=0.42) is undeniable since this relationship strongly supports the TPB theory of (Ajzen,1985), adoption intention of a particular system of (Davis et al., 1989), and intention to adopt technology learning and usage (Bagozzi et al., 1992).

Secondly, the effect of subjective norm factor on the behavioral intention at (β=0.39) is inconsistent with the study of (Davis et al., 1989) and (Mathieson, 1991), which do not prove this relationship. However, this study supports previous findings that have a direct effect on behavior intention in TRA and TPB (Fishbein & Ajzen 1975; Ajzen 1985), on information technology

usage (Taylor & Todd 1995), and system usage (Venkatesh & Davis 2000).

Thirdly, perceived behavioral control does not influence behavior intention to adopt blended learning, so this study contradicts the theory of TPB (Ajzen 1985), the study at Computing Resource Center (Taylor & Todd, 1995), and research on the adoption of online distance learning (Osman, 2020). The reason may come from the students' capability to adopt blended learning. In other words, this mode of learning is rather new to them.

Last but not least, a positive impact of the Behavioral Intention on actual adoption of blended learning at (β=0.67) is in line with the study technology acceptance and usage (Davis et al., 1989; Venkatesh & Davis, 2000), on technological learning and usage (Bagozzi et al., 1992), at Computing Resource Center (Taylor & Todd, 1995), and on online distance learning (Osman, 2020).

5. Conclusion and implication of the study

5.1 Conclusion

Due to the outbreak of Covid 19, many higher education institutions (HEIs) in Cambodia have applied different modes of teaching and learning. Thus, to understand the students' behavior, this study attempts to identify the factors influencing students' intention to adopt blended, which is a combination of face-to-face and online learning. By adopting the Theory of Planned Behavior (TPB), this study employs the correlational study of the quantitative approach. The questionnaire, adapted from previous studies, has been designed using a 9-point Likert scale. The survey link has been sent to 400 students from three different HEIs, and 204 of them have filled in the questionnaires. The study has shown that the students use their mobile phone at 50.50%, laptops at 41.70% to study online via Zoom Meeting at 50%, and Microsoft Teams at 46.60%.

The study has found that three hypotheses were supported and one hypothesis was not supported; in other words, attitude and subjective norm have a significantly positive effect on the intention to adopt blended learning at (β=0.42) and (β=0.39), respectively; however, perceived behavioral control does not impact on the intention to adopt blended learning. Moreover, behavioral intention impacts positively on the actual adoption of blended learning at (β=0.67).

5.2 Implication of the study

The analysis of the Theory of Planned Behavior (TPB) on the study of students' behavior towards blended learning adoption is relatively new in the context of HEIs in Cambodia. Furthermore, the study has found that the students are willing to adopt blended learning because they have a favorable opinion on this mode of study, and their behaviors are influenced by their close friends, family, and especially the current situation of COVID-19. Therefore, the study suggests the following:

- **TPB Model**: TPB is worth in adopting in investigating the behavioral intention and the behavior of students, teachers, and staff in the academic setting in order to adopt a

certain technological system.

- **The Management of HEIs**: The management of HEIs should take lead in introducing blended learning to their academic and professional programs. Moreover, they should decide which online platform and communication channel to adopt such as Zoom, Microsoft Team, Schoology, and Telegram Messenger. Moreover, HEIs should develop a robust support mechanism since perceived behavioral control partially influences behavioral intention to adopt blended learning.
- **Program designers and lecturers**: Blended learning can also be integrated at the course level. Program designers at HEIs, namely the provosts, faculty deans or department heads should apply blended learning to particular courses, especially the implementation of synchronous and asynchronous learning. They should conduct a study thoroughly on which courses can be integrated with blended learning, and how to integrate them. Face-to-face learning should be introduced before online learning. Likewise, the lecturers of HEIs should consider including blended learning activities such as online survey, online quiz, online video, and online meeting.

5.3 Limitations and further study

When conducting path analysis in SEM, this study deletes three items of Attitudes. The next study may extract these items and form them into a new external variable, which is so-called perceived usefulness. After that, the next study can rerun the path analysis of the TPB in order predict the behavior to adopt a new technological system.

This study investigates the influence of TPB factors toward blended learning at the higher education levels only. They study suggests that future researchers replicate this model in order to investigate students' behavioral intention and usage behavior at K-12 education. Moreover, experimental design is encouraged in the future study on blended learning. The study suggests applying the activities of blended learning in several classes, and compare the different outcomes of these classes to the other classes in which blended learning is not applied.

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Investigating Factors Influencing Students' Intentions to Learn Mathematics Using the Theory of Planned Behavior: A Case Study at ACLEDA Institute of Business

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ABSTRACT

Mathematics, one element of Science, Technology, Engineering, and Mathematics (STEM) education, has been prioritized by the Royal Government of Cambodia. The mathematics course is offered from K12 to post-secondary education. To make sure that it has been applied successfully and effectively necessitates the study on students' attitudes and intentions towards learning the course. This study, therefore, attempts to investigate factors impacting students' attitude and intention to learn Mathematics by structuring teachers' knowledge and skills in the Theory of Planned Behavior (TPB). The study used correlational design by conducting a survey with 128 year-one students at ACLEDA Institute of Business and employed a structural equation modeling (SEM) to run path analysis. The study found that four hypotheses were supported and one hypothesis was not supported. In other words, teachers' knowledge had a positive significant impact upon students' attitudes towards learning mathematics at (β=0.418), but teachers' skills do not impact attitude towards learning mathematics. Attitude and perceived behavioral control had a positive significant impact upon the intention to learn mathematics at (β=0.429) and (β=0.654), respectively. Behavioral intention had a positive significant impact on the actual learning mathematics at (β=0.683).

Keywords: Mathematics, Teachers' Knowledge, Teacher's Skills, Theory of Planned Behavior (TPB), confirmatory factor analysis (CFA), Structural Equation Modelling (SEM)

1. Introduction

1.1 Background of the study

The Rectangular Strategy—Phase 4 of the sixth legislature focuses four priority areas, but "gives the top priority to people." In order to achieve Rectangle One, emphasizing human resource development, the Royal Government aims at completing four tasks: "improving the quality of education, science and technology; improving vocational training; improving public healthcare and nutrition; and strengthening gender equality and social protection" (The Royal Government of Cambodia [RGC], 2018, p.10). In addition, the Cambodia Industrial Development Policy 2015-2025 aims at developing human resources and skills by "strengthening basic knowledge for children and youth in mathematics, sciences, literature and technology"; and promoting "the study on sciences, technology, engineering, and mathematics (STEM) from primary education to post-secondary education level" (RGC, 2015, pp. 26-27). Moreover, the Cambodia National Qualification Framework (CQF) aims at promoting numerical skills through learning outcome-based curriculum (CQF, 2012); and the guidelines and rubrics for National Standards for Accreditation of Higher Education Institution requires each higher education institution to integrate Mathematics into the Foundation Year Curriculum (Accreditation Committee of Cambodia [ACC], 2019).

To meet ACC's requirement, the Mathematics course has been integrated into the curriculum of Foundation Year at ACLEDA Institute of Business. The course falls into three categories: Mathematics for Finance and Banking in semester one to students majoring in Finance and Banking; Mathematics for Business and Economics in semester one to students majoring in Business IT, Fintech, and International Business; and Mathematics for Computing in semester two to students majoring in Business IT and Fintech.

1.2 Problem statement

To be able to implement the Mathematics course effectively, an understanding of students' attitudes is really needed. For instance, Huda et al., (2021) illustrates a positive students' perception of online mathematics learning using You Tube. Bringula et al. (2021) reveals that learners have mixed notions about their mathematics capabilities and interest in learning mathematics in an online environment. Bong and Skaalvik (2003) identify individuals' ability related to mathematics as compared to others and they seek immediate learning interventions from teachers or their classmates.

As part of the mathematical modeling, the Theory of Planned Behavior (TPB), developed by Ajzen, (1991), "offers a theoretically meaningful framework for examining students' beliefs and attitudes toward mathematics at school" (Niepel et al., 2018). However, In Cambodia, little is known about the adoption of Theory of Planned Behavior (TPB) on the investigation of students' intention to study Mathematics class, especially the students' perception towards their teachers' knowledge and skills.

1.3 Research objective

Therefore, this study attempts to investigate factors influencing students' intention to learn Mathematics by using Theory of Planned Behavior (TPB) with additional variables of teachers' knowledge and skills.

1.4 Research questions

- Which factors influence students' intention to learn Mathematics?
- Does students' intention influence the actual learning of mathematics?

1.5 Hypotheses

- H1: Teachers' knowledge has a positive significant effect on students' attitudes to learn Mathematics.
- H2: Teachers' skills have a positive significant effect on students' attitudes to learn Mathematics.
- H3: Attitude has a positive significant effect on students' Intention to learn Mathematics.
- H4: Perceived Behavioral Control has a positive significant effect on students' Intention to learn Mathematics.
- H5: Students' Intention has a positive significant effect on the actual learning of Mathematics.

1.6 Significance of the study

The findings of this study contributed significantly to the existing Theory of Planned Behavior (TPB) and teachers of mathematics classes. The structuring of teachers' knowledge and skills into TPB has made the conceptual model even more helpful in predicting students attitudes and intention to learning mathematics; and mathematics teachers can improve their techniques and strategies in improving or strengthening the students' learning outcomes of their classes.

2. Literature Review

2.1 Definition of mathematics

According to Harel (2008), mathematics is defined as a union of two categories of knowledge, namely ways of understanding and ways of thinking. Later, the definition has been generalized as the notions of proof and proof scheme, respectively (Harel, 2008). In the Encyclopedia Britannica, mathematics is defines as "the science of structure, order, and relation that has evolved from elemental practices of counting, measuring, and describing the shapes of objects… it deals with logical reasoning and quantitative calculation, and its development has involved an increasing degree of idealization and abstraction of its subject matter" (Folkerts et al., 2020, para. 1).

At ACLEDA Institute of Business, Mathematics for Finance and Banking covers topics such as Simple Interest and Simple Discount, Compound Interest and Compound Discount, Simple Annuities, General Annuities, Amortization, Bonds, and Business Investment Decisions. Mathematics for Business and Economics covers topics such as Linear Equation, Non-Linear

Equation, and Mathematics for Finance, Differential, Partial Differential, and Linear Programming. Mathematics for Computing covers topics such as Introduction to Algorithms, Base and Number Representation, Computer Representation and Arithmetic, Functions, Introduction and Recursion, Introduction to graph theory, and Algorithms and Computational Complexity.

2.2 The adoption of Theory of Planned Behavior on intention to learn mathematics

Influenced from Theory of Reasoned Action (TRA), firstly developed by (Fishbein & Ajzen, 1975), an extended variable of Perceived Behavioral Control (PBC) has been structured in order to connect intention and behavior (Ajzen, 1991). The structuring of PBC into TRA has developed a new theoretical background, namely the Theory of Planned Behavior. Niepel et al. (2018) cited that "a person's intention to carry out a certain behavior is the best predictor of his or her actual performance of that behavior" (p.25). Ajzen (1991) also asserts that the individual's intention is influenced by his or her attitude, subjective norms, and perceived behavioral control.

TPB has been used in predicting entrepreneurial intentions and actions (Kautonen et al., 2015); in predicting attendance of peer-assisted study sessions for statistics (White et al., 2008); in predicting college students' intention to graduate (Sutter & Paulson, 2017); and in analyzing students' beliefs and attitudes toward mathematics across time (Niepel et al., 2018).

2.3 Conceptual framework of Theory of Planned Behavior (TPB) in the study of intention to learn mathematics

Since teachers' knowledge and skills influence students' learning, this study has structured them into TPB in order to determine the factors influencing students to learn Mathematics.

2.3.1 Knowledge and attitudes

According to Bolisani & Bratianu (2018), Knowledge is an abstract concept without any reference to the tangible world. Chong & Cheah (2009) cited, "Teachers must know the subject they will teach and understand how to organize curriculum in light of both students' needs and the schools' learning objective" (p.7); and three interconnected areas between teachers, learners and content are knowledge of learners and their development in social contexts, knowledge of subject matter and curriculum goals, and knowledge of teaching (Hammond & Snowden, 2007). Thus, the study proposed the following hypothesis.

H1: Teachers' knowledge has a positive significant effect on students' attitudes to learn Mathematics.

2.3.2 Skills and attitudes

Irvine (1997) as cited in (Chong & Cheah, 2009, p.5) defines skills as "achievements and/or behavior to be acquired through practice or training to facilitate the student learning and classroom management". As part of the teaching profession, teachers need the teaching skills,

which required as a set of procedures in order that they can apply during their teaching experiences (Grossman, 1990). These skills include pedagogical skills, interpersonal skills, reflective skills, personal skills, and administrative and management skills (Chong & Cheah, 2009). Therefore, the study proposed the following hypothesis.

H2: Teachers' skills have a positive significant effect on students' attitudes to learn Mathematics.

2.3.3 Attitude and behavioral intention

Attitude toward behavior is defined as an individual's belief of a certain behavior or act which makes a positive or negative contribution to that person's life (Alexander, 2015). Actually, individual's attitude answers the question of what individuals think about the behavior as to whether or not it is enjoyable. If one expects to gain from the action, the attitude toward the action is logically positive (EPM, 2020). For instance, if the students enjoy the mathematics formulas, are likely to discover the various solutions, or believe that Mathematics makes them get good grade, or benefit their future work, they intentionally contribute to the class. Attitude is the main predictor of behavioral intention (Ajzen, 1991). It influences the intention to adopt a specific system (Davis et al., 1989) and to adopt technology learning (Bagozzi et al., 1992). Thus, the study proposed the following hypothesis.

H3: Attitude has a positive significant effect on students' intention to learn Mathematics.

2.3.4 Subjective norm (Controlled Variable)

According to Ajzen (1991), subjective norm is defined as the perceived social pressure to engage or not to engage in a behavior. This variable normally answers the individuals' question of what others think about the behavior (EPM, 2020). The group that influences the individuals' behaviors can be family, friends, social networks, or significant others (Ajzen, 1991). However, this variable is controlled in this study since mathematics course is the required by the Foundation Year Department of ACLEDA Institute of Business.

2.3.5 Perceived behavioral control and behavioral intention

Perceived Behavioral Control (PBC) expresses a person's belief on how easy or hard it is to display a certain behavior or act in a certain way (Alexander, 2015). In psychology, control, an important variable within the TPB of which a person feels capable and confident in their ability to execute the desired behavior, plays a central role in their intentions and actual behavior outcomes (Smith, 2013). PBC is also the predictor of behavioral intention (Ajzen, 1991); intention to adopt online distance learning (Osman, 2020); and intention to adopt Computing Resource Center (Taylor & Todd, 1995). Therefore, the study proposed the following hypothesis.

H4: Perceived Behavioral Control has a positive significant effect on students' intention to learn Mathematics.

2.3.6 Behavioral intention and usage behavior

Ajzen (1991) defines behavioral intention as willingness to perform a certain task. The actual system use (usage behavior) is the end-point where people use technology and it is influenced by behavioral intention on technology acceptance and usage (Davis et al., 1989), on technological learning and usage (Bagozzi et al., 1992), at Computer Resource Center (Taylor & Todd, 1995), and online distance learning (Osman, 2020).

H5: Behavioral Intention has a positive significant effect on the actual learning of Mathematics.

2.4 Conceptual model in the adoption of TPB on learning mathematics

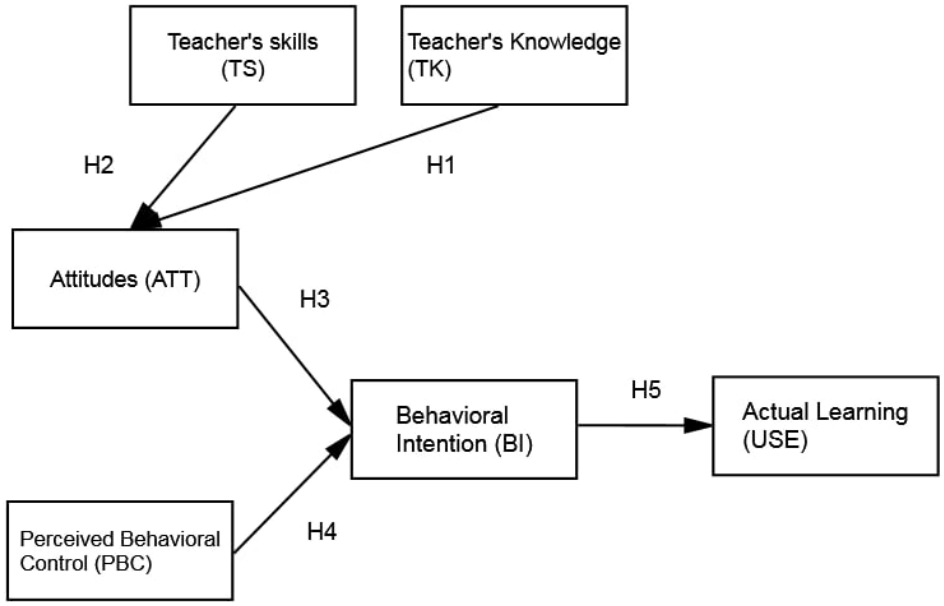

Figure 1: Conceptual model of Structured TPB on Learning Mathematics

3. Methods

3.1 Research design

This study employed quantitative research approach, using a correlational design (Cresswell, 2012). To test the hypotheses, the study developed a logistics plan by aligning the research question. Moreover, the study used a survey questionnaire as a research tool to collect primary data. The questionnaire was designed in Microsoft Form with two main categories: the first category involving personal data of the respondents and the second one measuring six constructs. Then, the survey questionnaire was distributed to students through such media platforms as Microsoft Team and Telegram. The obtained data were later coded for both descriptive and inferential statistical analysis.

3.2 Sampling and sample frame

The study selected students from three different shifts of Mathematics classes at ACLEDA Institute of Business. The students were grouped in terms of gender, age, year of study, and major. Multiple stage random sampling was employed. The study selected 128 students as a sample size. This sample size was appropriate because Green (1991) determined N > 50 + 8 m is appropriate for the best practice of regression analysis; and "m" represents the number of independent variables.

3.3 Research tools & measurements of constructs

The questionnaire was comprised of two main categories: the first involving identifies personal data of the respondents and the second measuring six constructs namely Teachers' Knowledge (TK), Teachers' Skills (TS), Attitude (ATT), Perceived Behavioral Control (PBC), Behavioral Intention (BI), and Actual Learning (USE). Moreover, 7-likert scale was employed in order to minimize the errors.

Table 1: Construct Measurements of all Variables

Variables	Items	Sources
Teachers' Skill (TS)	TS1: My Math lecturer is skillful in delivery instruction. TS2: My Math lecturer is approachable whenever I need his/her assistant. TS3: My Math lecturer is reflective in responding to my questions. TS4: My Math lecturer is well prepared and good at time management. TS5: My Math lecturer is good at assigning tasks and giving feedback.	(Chong & Cheah, 2009)
Teachers' Knowledge (TK)	TK1: My Math lecturer is very knowledgeable about his/her subject teaching. TK2: My Math lecturer understand my learning styles. TK3: My Math lecturer prepare the content of the subject, fulfills my needs and understanding. TK4: My Math lecturer know the speed (not too fast or not too slow) of his teaching. TK5: Overall, the knowledge of my Math lecturer is very good.	(Chong & Cheah, 2009)
Attitudes (ATT)	ATT1: It is a good idea to learn Mathematics online. ATT2: It is wise to learn Mathematics online. ATT3: It is pleasant and interesting to learn Mathematics and online. ATT4: Overall, I have a positive opinion towards learning Mathematics online.	(Ajzen, 2013) (Yang et al., 2021) (Keo et al., 2021) (Em et al., 2021) (York et al., 2021)

(continued)

Table 1: Construct Measurements of all Variables(continued)

Variables	Items	Sources
Perceived Behavioral Control (PBC)	PBC1: I would feel comfortable to learn Mathematics online PBC2: I have enough knowledge to learn Mathematics online. PBC3: I could do self-learning in online class of Mathematics. PBC4: I have the ability to learn Mathematics online. PBC5: I believe I can control over online Mathematics class.	(Taylor & Todd, 1995) (Ajzen, 2013) (York et al., 2021)
Behavioral Intention (BI)	BI1: I plan to do online Mathematics class in the future. BI2: I intend to learn Mathematics online. BI3: I will strongly recommend online Mathematics class to someone that I know. BI4: Whenever I want to develop my knowledge, I will do online Mathematics.	(Ajzen, 2013) (Yang et al., 2021) (Keo et al., 2021) (Em et al., 2021) (York et al., 2021)
Actual Learning (USE)	USE1: I have learned Mathematics online during Covid-19 pandemic. USE2: I have learned Mathematics online every week during Covid-19 pandemic. USE3: I become familiar with learning Mathematics online.	(Venkatesh & Davis, 2000) (Taylor & Todd, 1995) (Ajzen, 2013)

3.4 Data collection

The questionnaires were administered to 300 students who had learned the three courses of mathematics, namely Mathematics for Finance and Banking, Mathematics for Business and Economics, and Mathematics for Computing. The data were collected between from September to October 2021.

3.5 Data analysis

The study transformed data from Microsoft Form to SPSS and then did demographic analysis (analysis in terms of frequency and percentile), descriptive analysis (analysis measurement of constructs in terms of Minimum, Maximum, Mean, Standard deviation and level of agreement), and measurement model analysis (reliability and validity). Moreover, the study analyzed the bivariate of each construct to test their association before running Confirmatory Factor Analysis (CFA). Finally, the study ran path analysis as part of hypothesis testing in AMOS.

3.6 Ethical consideration

To avoid plagiarism, the study offered credit to all works, done by others; especially, the study used in-text citation and end-text citation. Moreover, the study had to keep confidential of the respondents' response. Last but not least, the study had to maintain integrity in interpreting and reporting all the data.

3.7 Reliability test (Cronbach's alpha)

According to the Table 2, the Cronbach's Alpha of all constructs scored above 0.7 in both pilot test (n=30) and the actual result (n=128), which was that the constructed variables and factors are reliable to be implemented in this research (Nunnally, 1994). Therefore, the constructs are good to be used to acquire the students' intention to learn Mathematics.

Table 2: Reliability Test of Cronbach's Alpha on Each Variable

No	Item	n= 30	n=128
1	Attitude	0.807	0.823
2	Perceived Behavioral Control	0.756	0.843
3	Behavioral Intention	0.742	0.816
4	Actual Use	0.754	0.800
5	Teachers' Skill	0.787	0.872
6	Teachers' Knowledge	0.853	0.910
	All Variables	0.893	0.930

4. Results and Discussions

4.1 Results of the study

4.1.1 Demographic factors

Table 3: Demographic Respondents

Item	Categories(N=128)	Frequency	Percentage
Gender	Female	110	85.9%
	Male	18	14.1%
Age	Equal or under 17 years old	3	2.3%
	18-19 years old	84	65.6%
	20-21 years old	31	24.2%
	22-23 years old	4	3.1%
	24-25 years old	2	1.6%
	Over 25 years old	4	3.1%
Education	Bachelor	117	91.4%
	Associate	10	7.8%
	Master	1	0.8%
Major	Finance and Banking	104	81.3%
	Business IT	1	0.78%
	Fintech	11	8.59%
	International Business	12	9.38%
	Logistic and Supply Chain Management	0	0.0%

(continued)

Table 3: Demographic Respondents (continued)

Item	Categories(N=128)	Frequency	Percentage
Occupation	Currently Unemployed	85	66.4%
	Company Employee	25	19.5%
	Government Officer	3	2.3%
	Business Owner	10	7.8%
	Self-employed	5	3.9%

4.1.2 Level of agreement

Based on the research stated of evaluation criteria, (Armstrong, 1987), the variable becomes essential when score is higher. They questionnaires of variables were conducted in 7-likert scale points ranging from following:

- Strongly Disagree ranges from 1.00 to 1.85
- Disagree ranges from 1.86 to 2.71
- Somewhat Disagree ranges from 2.72 to 3.57
- Neutral ranges from 3.58 to 4.42
- Somewhat Agree ranges from 4.43 to 5.28
- Agree ranges from 5.29 to 6.14
- Strongly Agree ranges from 6.15 to 7.00

Table 3: Level of Agreement

Variable	Minimum	Maximum	Mean	Std. Deviation	Level of Agreement
Attitude (ATT)	3.75	7.00	5.7793	0.69064	Agree
Perceived Behavioral Control (PBC)	3.20	7.00	5.5484	0.77936	Agree
Behavioral Intention (BI)	2.75	7.00	5.4121	0.88935	Agree
Actual Learning (USE)	3.00	7.00	5.6849	0.72971	Agree
Teacher's Skill (TS)	3.40	7.00	5.8250	0.65255	Agree
Teacher's Knowledge (TK)	2.40	7.00	5.8016	0.79467	Agree

*Note: Somewhat Agree: 4.43 – 5.28, Agree: 5.29 – 6.14, Strongly Agree: 6.15 – 7.00

4.1.3 Correlation analysis

Correlation Analysis was used to test correlation level and validity between all constructs which in this research brought six constructs into testing. The correlation's values ranging between –1 to +1, meaning that the closer of number in each variable reaching nearly +1, the stronger of correlations (Pearson, 1926).

Table 4 shows that all variables are significantly correlated at the significant level of 0.01 (2-tailed). The results also showed the favorable and positive correlations between variables

with the lowest of 0.589 of teacher skill towards behavioral intention and highest of 0.791 of teacher skill towards teacher knowledge.

Table 4: Pearson Correlation Matrix

	1	2	3	4	5	6
1-Attitude	1					
2-Perceived Behavioral Control	0.715**	1				
3-Behavioral Intention	0.664**	0.760**	1			
4-Actual Use	0.646**	0.618**	0.596**	1		
5-Teacher Skill	0.715**	0.676**	0.589**	0.676**	1	
6-Teacher Knowledge	0.657**	0.658**	0.679**	0.675**	0.791**	1

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

4.1.4 Confirmatory Factor Analysis (CFA)

After running Confirmatory Factor Analysis (CFA), the study dropped three, three, two, three, two, and one indicators of the following factors such as Teachers' Knowledge (TK), Teachers' Skill (TS), Attitude (ATT), Perceived Behavioral Control (PBC), Behavioral Intention (BI), and Actual Learning (USE), respectively.

4.1.5 Factor loadings

Figure 2 shows that the factor loadings of all items were highly adequate. The standardized regression weights ranged from 0.641 to 0.903, above 0.50 as suggested by (Hair et al., 2006). Thus, most of the constructs confirm the convergent validity test, and those factor loadings can be used to estimate construct reliabilities (CR) and average variance extracted (AVE).

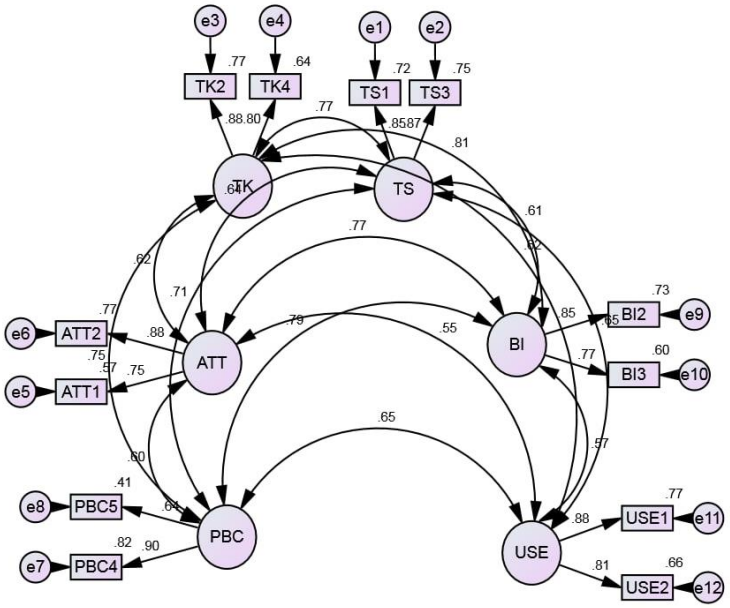

Figure 2: Factor loading analysis

4.1.6 Cronbach alpha and construct reliabilities

Table 5 shows that each construct consists of composite reliability reaching an acceptable value of 0.60 (Karatu et al., 2014). The teacher skill has the highest Cronbach's alpha of 0.843, but perceived behavioral control has the lowest Cronbach's alpha of 0.724; moreover, the teacher skill also has the highest construct reliability (CR) of 0.849, while perceived behavioral control has the lowest reliability (CR) of 0.755.

Table 5: Cronbach's Alpha and Construct Reliabilities

Variable Types	Variable Names	Items Name	Items	Cronbach's alpha	CR
Exo1	Teacher knowledge (TK)	TK2 TK4	2	0.824	0.828
Exo2	Teacher Skill (TS)	TS1 TS3	2	0.843	0.849
Exo3	Perceived behavioral control (PBC)	PBC4 PBC5	2	0.724	0.755
Mediating Variable	Attitude (ATT)	ATT1 ATT2	2	0.795	0.800
Mediating Variable	Behavioral Intention (BI)	BI2 BI3	2	0.789	0.797
Endo	Actual Adoption (USE)	USE1 USE2	2	0.824	0.834

4.1.7 Discriminant validity of constructs

Table 6 illustrates the result of variance extracted (VE), which is calculated into average variance extracted (AVE). The VE for teacher knowledge, teacher skill, attitude, perceived behavioral control, behavioral intention, and actual adoption is 0.706, 0.737, 0.668, 0.613, 0.663, and 0.716, respectively.

Table 6: Final CFA of the Six Variables

Variable	Code	Factor Loading	SFL	Error	Variance Extracted
TK	TK2	0.879	0.773	0.227	0.706
	TK4	0.800	0.640	0.360	
TS	TS1	0.849	0.721	0.279	0.737
	TS3	0.868	0.753	0.247	
ATT	ATT2	0.878	0.771	0.229	0.668
	ATT1	0.752	0.566	0.434	

(continued)

Table 6: Final CFA of the Six Variables(continued)

Variable	Code	Factor Loading	SFL	Error	Variance Extracted
PBC	PBC5	0.641	0.411	0.589	0.613
	PBC4	0.903	0.815	0.185	
BI	BI2	0.855	0.731	0.269	0.663
	BI3	0.771	0.594	0.406	
USE	USE2	0.814	0.663	0.337	0.716
	USE1	0.877	0.769	0.231	

Table 7 illustrates the average variance extracted (AVE) and squared inter-construct correlation (SIC) for two variables. As cited in Phang (2016), the AVE should be more than the squared inter-construct correlation (SIC) of the two constructs to support discriminant validity. If AVE is less than CS, the problem of multicollinearity would exist (Fornell & Larcker, 1981). The table also shows that the highest AVE is between Teacher Skill and Actual Use, equal to 0.726, and the lowest AVE is between Perceived Behavioral Control and Behavioral Intention, equal to 0.638. The highest SIC was between Teachers' Knowledge (TK) and Behavioral Intention (BI), equal to 0.656, and the lowest SIC was between Attitude (ATT) and Actual Learning (USE), equal to 0.298.

Table 7: Average Variance Extracted (AVE) and Squared Inter-Construct Correlation Estimates (SIC)

Variable Name	TK	TS	ATT	PBC	BI	USE
TK	1					
TS	0.722	1				
	(0.594)					
ATT	0.687	0.703	1			
	(0.384)	(0.413)				
PBC	0.660	0.675	0.641	1		
	(0.567)	(0.503)	(0.360)			
BI	0.685	0.700	0.665	0.638	1	
	(0.656)	(0.372)	(0.594)	(0.627)		
USE	0.711	0.726	0.692	0.665	0.689	1
	(0.382)	(0.428)	(0.298)	(0.419)	(0.327)	

**Note: SIC in parenthesis*

Table 7 also reveals that each AVE value was more than the squared inter-construct correlation (SIC). The highest difference was between Attitude (ATT) and Actual Learning (USE) at 0.3939, and the lowest difference was between Perceived Behavioral Control (PBC) and Behavioral Intention (BI) at 0.0107. Thus, discriminant validity theory is accepted, or multicollinearity is absent. In other words, each construct could be considered distinctively from one to another (Phang, 2016).

4.1.8 Model fit indices

CFA confirms that the TPB model is really fit in the study of student intention as the fit indices are:

Table 8: Model Fit

Fit Measures	Value	Results
CMIN/DF(χ2 /df)	1.857<2	good fit
RMSEA	0.082	acceptable fit
NFI	0.922>0.90	acceptable fit
CFI	0.961>0.97	good fit
GFI	0.921>0.90	acceptable fit
AGFI	0.843> 0.85	not great but tolerable

Adopted from (Schermelleh-Engel et al., 2003)

Note: CMIN/DF= Chi square divided by degrees of freedom, RMSEA=Root Mean Square Error of Approximation, NFI=Normed Fit Index, CFI=Comparative Fit Index, GFI=Goodness-of-Fit Index, AGFI=Adjusted Good-of-Fit Index

4.1.9 Path analysis

Figure 3 shows the standardized regression weight of path analysis. For Path 1, factors such as Teachers' Skill (TS) and Teachers' Knowledge (TK) are the predictors of the Attitude. For Path 2, factors such as Attitude (ATT) and Perceived Behavioral Control (PBC) are the predictors of the Behavioral Intention (BI). For Path 3, Behavioral Intention (BI) is the predictor of the Actual Learning (USE).

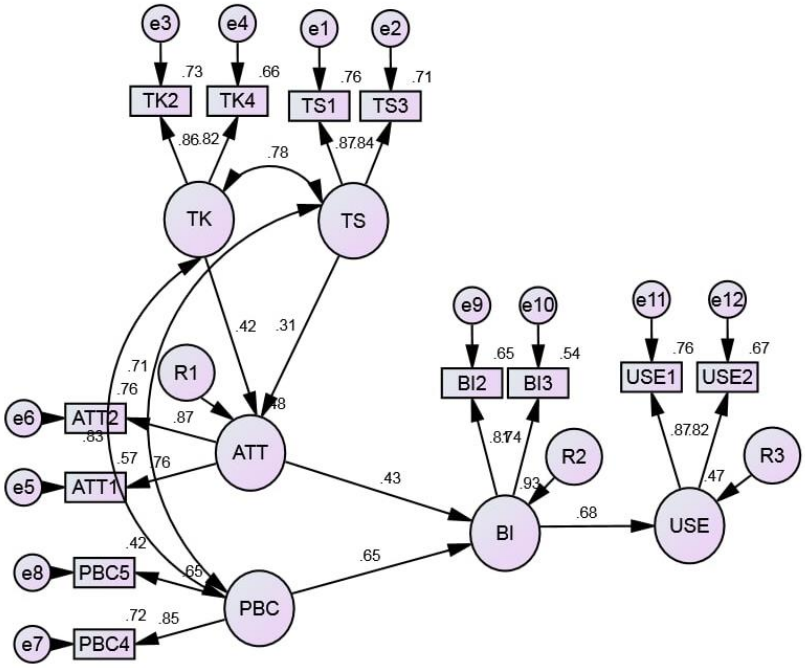

Figure 3: Results Path Analysis

Table 9 shows a regression analysis of path analysis 1 with Attitude as the dependent variable. The result suggests that the model is statistically significant in explaining that at least one predictor impacts the Behavioral Intention to adopt blended learning. It also shows that there is a positive impact of Teacher Knowledge (β=0.418) at a significance level (0.017), but Teachers' Skills do not impact Attitude as the p-value is 0.068 > 0.05.

Table 9: Path Analysis 1 (Attitude as Dependent Variable)

IV	DV	Unstandardized Estimates		Standardized Estimates		Sig.
		B	S.E	Beta	C.R.	(P-value)
TK	ATT	0.324	0.136	0.418	2.389	0.017*
TS	ATT	0.281	0.154	0.314	1.828	0.068

*. Correlation is significant at the 0.05 level (2-tailed)

Note: IV= Independent Variable, DV=Dependent Variable, B=direct effect, S.E.=standard Error, C.R.=Critical Ratio, Sig.=Significance,ATT=Attitude,TK=Teachers' Knowledge, TS= Teachers' Skills

The following table (Table 10) is the result of regression analysis in path 2 for the relationship between Attitude and Perceived Behavioral Control as the independent variable and Behavioral Intention as the dependent variable. It showed a positive impact of the Attitude (β=0.429) at level significance (0.000) and positive impact of Perceived Behavioral Control (β=0.654) at a significance level (0.000) on Behavioral Intention.

Table 10: Path Analysis 2 (Behavioral Intention as Dependent Variable)

IV	DV	Unstandardized Estimates		Standardized Estimates		Sig.
		B	S.E.	Beta	C.R.	(P-value)
ATT	BI	0.458	0.110	0.429	4.165	0.000**
PBC	BI	0.632	0.109	0.654	5.790	0.000**

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

Note: IV= Independent Variable, DV=Dependent Variable, B=direct effect, S.E.=standard Error, C.R.=Critical Ratio, Sig.=Significance, BI=Behavioral Intention, Att= Attitude, PBC= Perceived Behavioral Control

The following table (Table 11) is the result of regression analysis in path 3 for the relationship between Behavioral Intention as the independent variable and Actual Adoption as the dependent variable. It shows a positive impact of the Behavioral Intention (β=0.683) at a significant level (0.000) on the Actual Adoption of student intention to learn Mathematics.

Table 11: Path Analysis 3 (Actual Adoption as Dependent Variable)

IV	DV	Unstandardized Estimates		Standardized Estimates		Sig.
		B	S.E.	Beta	C.R.	(P-value)
BI	USE	0.664	0.097	0.683	6.844	0.000**

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

Note: IV= Independent Variable, DV=Dependent Variable, B=direct effect, S.E.=standard Error, C.R.=Critical Ratio, Sig.=Significance, BI=Behavioral Intention, USE=Actual Adoption

4.1.10 Results of hypothesis testing

The following table shows that H1, H3, H4, and H5 were supported at the significance level of (0.017), (0.000), (0.000), and (0.000), respectively; whereas H2 was not supported at the significance level of (0.068).

Table 12: Hypothesis Testing

Hypotheses		Significance Value	Statistical Significance
H1:	Teachers' knowledge has a positive significant effect on students' attitudes to learn Mathematics	0.017	Supported
H2:	Teachers' skills have a positive significant effect on students' attitudes to learn Mathematics.	0.068	Not Supported
H3:	Attitude has a positive significant effect on students' Intention to learn Mathematics.	0.000	Supported
H4:	Perceived Behavioral Control has a positive significant effect on students' Intention to learn Mathematics.	0.000	Supported
H5:	Students' Intention has a positive significant effect on the actual learning of Mathematics.	0.000	Supported

4.2 Discussion

The structuring of Teachers' Knowledge and Teachers' skills in the current TPB model is statistically significant when controlling Subjective Norm variable. The conceptual model on the study of students' intention to learn mathematics met the Goodness of Fit Indices. This was in line with the adoption of TPB in health care campaigns (Javadi et al., 2013), Decomposed Theory of Planned Behavior (Taylor & Todd, 1995), the adoption of online distance learning (Osman, 2020).

The mean score of Teacher's Knowledge was 5.801, which was in line with (Chong & Cheah, 2009); and Teacher's Knowledge had a positive impact on students' attitude towards learning mathematics. In this sense, the students had a positive opinion on their teachers' knowledge, whereby their learning styles and teaching are understood at an acceptable speed.

The mean score of Teacher's Skills was 5.825, which was consistent with (Chong & Cheah, 2009); however, Teacher's skills do not impact students' attitude toward learning mathematics. In other words, the teachers' skills do not influence the students' behavior to learn mathematics.

The mean score of Attitude was 5.779; and Attitude had a positive significant impact on students' intention to learn mathematics, which means that the students were willing to learning mathematics because they formed a positive opinion about the course itself and teachers' knowledge and skills. Furthermore, the mean score of Perceived Behavioral Control was 5.548; and Perceived behavioral control had a positive significant impact on students' intention to learn mathematics. In other words, the students were willing to learn mathematics because they had the ability to learn the course, especially their ability to control over online mathematics class. This finding was in line with the study of White et al.

(2008) on Predicting attendance at peer-assisted study sessions for statistics; of Lipnevich et al. (2011) on Mathematics attitudes and mathematics outcomes of the United States; and Belarusian middle school students; of Hagger et al. (2015) on Perceived autonomy support and autonomous motivation toward mathematics activities; and of Niepel et al. (2018) on Students' beliefs and attitudes toward mathematics across time.

5. Conclusion

The results show that regarding a demographic factor, most of the students are female, accounted for 85.94%, whose age ranges between 18 to 19 years, equal to 65.63%. Moreover, a large majority of them are currently doing bachelor degree, accounting for 91.41%, majoring in Finance and Banking, equaling to 81.25%; and 66.41% of them are currently unemployed since they are now in their first year.

The study has found that the four hypotheses were supported but one hypothesis was partially supported; in other words, Teachers' Knowledge had a positive significant impact attitude towards learning mathematics at (β=0.418); Attitude and Perceived Behavioral Control had a positive significant impact the intention learning mathematics at (β=0.429) and (β=0.654), respectively; and Behavioral Intention had a positive significant impact the actual learning mathematics at (β=0.683); However, Teachers' Skills do not impact attitude towards learning mathematics at (β=0.314).

The study found that TPB is very useful in the analysis of attitudes and behavior to learn mathematics. The study removes Subjective Norm from the proposed conceptual model because Mathematics course is the compulsory; in other words, students do not have choice in the Foundation Year Programs. More importantly, the structuring of teachers' knowledge and skills is the pure finding in this study, which can be a value added to the adoption of SEM in the quantitative research in the educational setting.

Implications and **further study**

The finding of this study shows that students are willing to learn mathematics because they form a positive opinion towards the course, and they have enough ability and knowledge to learn the course as well. In this sense, the study suggests that the Math lecturers pay close attention to attitudes toward this course since the understanding of students' attitudes and intention can be useful inputs for conducting the Math course effectively. Furthermore, teachers' knowledge plays a significant role in motivating students to learn the Math course; however, teachers' skills are still concern in this study as they do not influence students' attitudes to learn mathematics. Therefore, the study suggests Math lecturers upgrade their teaching skills continuously.

Since the study mainly focuses on Mathematics course at ACLEDA Institute of Business; the results can be generalized to other higher education institutions. In this regard, the study suggests that future researchers adapt this proposed conceptual model in order to analyze students' attitudes and intention in other courses or at other higher education institutions in Cambodia

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The Adoption of SERVQUAL Model on the Study of Customer Satisfaction of ACLEDA Unity Toanchet

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ABSTRACT

This study aims to analyze customer satisfaction with ToanChet, a local mobile banking app of Cambodia, using the service quality model or SERVQUAL. ToanChet is based on service quality, reliability, Assurance, Tangibles, Empathy and Responsiveness. The study employed a quantitative approach with a sample size of more than 120 people to analyze service quality in the app. All dimensions of customer satisfaction are strongly associated statistically while there are rooms for the app to be improved. The study shows that the customers are satisfied with the overall service quality. The study is a useful contribution to the related parties, especially ACLEDA Bank and customers. Further studies should be conducted in some other ways such as different sample size, sampling method, country, comparison, research design approach, companies or banks and models.

Keywords: SERVQUAL, customer satisfaction, mobile banking.

1. Introduction

Service quality is the ability to satisfy customer through the performance of service providers. It is very important in the service sector because it has always been identified as the positive connection that can result in profits and customer satisfaction (Kalidas, 2014). Notably, financial sector companies strategically compete to increase their market share of income. Among these companies, the banks have changed dramatically by shifting from the traditional practice to the modern system of branchless banking to serve their customers even better. Adopting state-of-the-art technology has allowed banks to update themselves to another level and ingeniously adapt to the banking innovation and enlarge their numbers of customer base (Saleem & Rashid, 2011).

Mobile banking is a new idea and trend that have arisen over the recent years, creating new streaming in the finance and manufacturing fields. Mobile banking has the undertakings as it is directed by mobile phone, a wireless platform for the development of value in banking transactions by clients (AMIRI & Faghani, 2012). Mobile banking system is convenient because of its flexibility for customers to do the transactions anywhere and anytime at ease. Delivering quality service in a new and competitive environment is the secret to a sustainable competitive advantage. Satisfying customers has thus become a major target for professionals, administrators and academics. Satisfaction of customers could bring a positive impact on the organization's productivity (Saleem & Rashid, 2011)

There are not many documents accessible about the study on this issue in Cambodia, and mostly the focus areas are not about mobile banking. For instance, there are research studies about Cambodia's health service quality (Yasuoka, Poudel, Ly, Nguon, Socheat & Jimba, 2012, Hasegawa, Yasuoka, Ly, Nguon & Jimba, 2013, Soeters & Griffiths, 2003), education quality (Chen, Sok & Sok, 2007), bus service quality (Sum, Champahom, Ratanavaraha & Jomnonkwao, 2019; Ok & Hengsadeekul, 2018). There is a study conducted on the service quality of One Window Service Office using SERVQUAL Model. This study mainly focusses on one facility that combines the government services and information in order to save time and effort of citizens to get the service that they need. In addition, the study focused on the perception of citizens' satisfaction. Thus, the researcher suggested and encouraged other researchers to focus on the specific services rather than solely to work on the study of customer satisfaction of the service (Vutha, 2013). Therefore, this current study aims to fill in the gap of the previous studies by examining ACLEDA customers' satisfaction with ACLEDA ToanChet using SERVQUAL Model.

1.1 Research objective and research question

The objective of this research is to analyze customer satisfaction with ACLEDA ToanChet by adopting SERVQUAL Model. In this regard, the study aims to answer one research question, "To what extent are customers satisfied with the service quality of ACLEDA ToanChet?"

1.2 Significance of the study

This study is contributed to banks, microfinance institution and customers by showing the impacts, root problem, solutions and recommendation to improve the service delivery to customers by understanding their needs and wants. The study also gives insight for the companies to adopt the convenient and modern options to reach the customer's preferences that obtain the valued customers and attract new target customers.

2. Literature Review

2.1 Customer satisfaction

According to Zhang, Vonderembse, & Lim (2003), customer satisfaction is the degree in which customers feel about the worthiness of the price they have paid for the product or service and they feel that how much they have paid for are worth it. Some researchers believe that customer's satisfaction is reaction in terms of emotion toward the gap between what they have expected and what they receive. Customer satisfaction can be measured as the satisfaction from the previous attributes, such as the reward and expectation. Alternatively, it is the conceptual response of the customer to the purchase and use of the product or service that come from the comparison to the expectation. Cengiz (2010) asserts that customer satisfaction could not only be defined by the standard or the quality of the products or services, but by the relationship between the customer and the service provider.

2.2 Service quality

There is still a debate for more than two decades about the definition of service quality (Prakash & Mohanty, 2013). Service quality is the customer's impression on the service providers and their services. In the literature term, service quality has been defined as the overall assessment on the performance of the services evaluated by the customers (Sharma & Malviya, 2011). However, some argue that service quality is a global judgement or attitude relating to a particular service (Fogli, 2006).

Customer satisfaction has a significant connection with the service quality of the product or service. Service quality has a positive impact on the customer satisfaction, which means that the better the service, the better customer satisfaction. Cambodia mobile banking app ToanChet needs to scale up its service quality in order to measure the satisfaction that customers have on the app. A model, which measures the service quality, is needed to scale the ToanChet service quality (Desiyanti, Sudja, & Martini, 2018).

2.3 Customer expectation

Customer expectation has been defined as what customers want from products or services. It is developed from what is created in the minds of the customers according to their individual experiences and preferences (Bayraktar, 2020).

2.4 Customer perception

Customer perception is prejudiced by the experiences that customers had already received from the similar services or products (Lekhanya & Dlamini, 2017). Customer perception of the service quality is based on the evaluation of a particular service delivery (Mmutle, 2017). Lekhanya and Dlamini (2017) say that customer perception can be biased by previous experiences.

2.5 Conceptual framework

Model (SERVQUAL) was used to analyze customer satisfaction on ACLEDA ToanChet. It mainly focuses on the Gap 5 of customer expected service to perceived service. This is the adopted framework from the previous study (AMIRI & Faghani, 2012).

SERVQUAL model are Reliability, Assurance, Tangibles, Responsiveness, Empathy, which is also known as RATER model (Buttle, 1996, p.9).

- Reliability: the ability to perform the promised service dependably and accurately.
- Assurance: employee's knowledge and courtesy and their ability to inspire trust and confidence.
- Tangibles: appearance of physical facilities, equipment, personnel.
- Empathy: caring, customer understanding, easy to access, good communication and attention have been provided to customers.
- Responsiveness: the willingness to help customers and provide prompt service (Naik, Gantasala & Prabhakar, 2010).

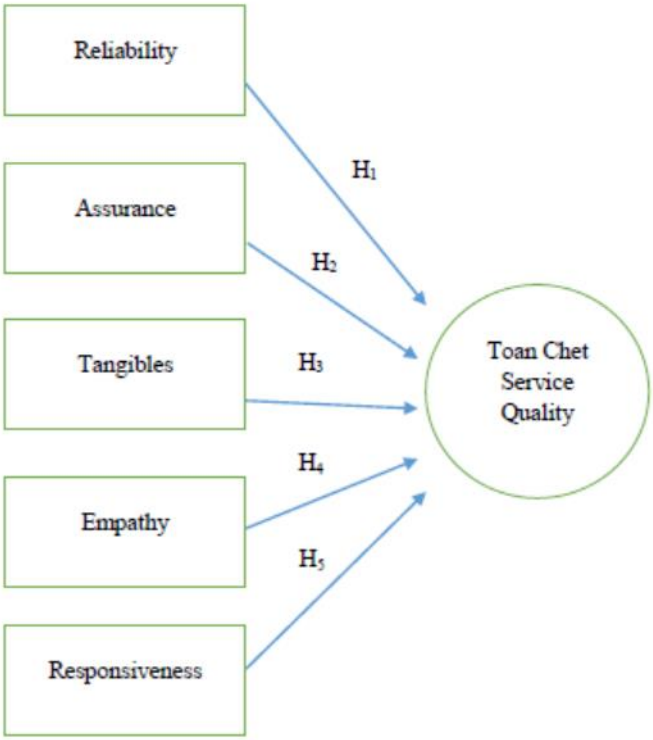

Figure 1: Conceptual Model

2.6 Research hypothesis

ToanChet is a mobile banking app was developed and based in Phnom Penh, Cambodia. The study will test five hypotheses focusing on the service quality of a mobile banking app in the industry of mobile banking in Cambodia or ToanChet's app service quality dimensions on customer satisfaction will be measured.

- H_1: Reliability has a positive impact on service quality of ACLEDA ToanChet.
- H2: Assurance has a positive impact on service quality of ACLEDA ToanChet.
- H3: Tangibles has a positive impact on service quality of ACLEDA ToanChet.
- H_4: Empathy has a positive impact on service quality of ACLEDA ToanChet.
- H_5: Responsiveness has a positive impact on service quality of ACLEDA ToanChet.

3. Methods

3.1 Research design

The study employed quantitative approach to examine customer satisfaction with the service quality of ACLEDA ToanChet. In other words, the quantitative method was used in this research study to answer the research question.

3.2 Sampling and sampling frame

The study applied convenience sampling because it might be impossible to get the list of ToanChet users due to the privacy of the bank data and the respondents to be selected were those who were near the researcher. The respondents were selected at ACLEDA Bank Plc, with the assistance of the bank staff, to identify the ToanChet users and sought the approval to participate in the study. Thus, convenience sampling is more suitable for this study and Cambodia current situation of COVID-19 pandemic. For the sample size, the numbers were calculated by the using the formula of Cochram (1977). There are two steps involved in the calculation such as calculating sample size for infinite population and adjusting sample size to the required population. The percentage of 4300 populations is 50, confidence level 92% and error is 0.08.

Step 1: sample size for Infinite Population calculation

$S = [Z2 \times P (1 – P)] / M2$
$S = (1.75) (1.75) \times 0.5 \times (1-0.5) 0.08 \times 0.08 = 119.62$

Step 2: Adjust the sample size to the Required Population

$Adj. S = S/ [1 + [(S – 1)/ N]]$
$Adj. S = 119.621 + 119.62 - 14300 = 116.40$

S is sample size; Z is the given confidence level of Z value; P is the percentage of population; M is the confidence interval or error; and N is the population.
So, the sample size to be conducted is rounded up to 120.

3.3 Research tool

The questionnaire was selected for this study. The questionnaire is divided into three categories such as demographic profile, ACLEDA ToanChet and customer satisfaction. The respondents answered 32 questions about their expectation and perception toward ToanChet. In the last part of the question, customers could make suggestions to improve service quality. Customers could also suggest what they would like to do to improve the service quality and reached level of customer satisfaction (Gibson, 2009). The questionnaire was sent as the paper-based questionnaire and the main location to collect the data was located at ACLEDA Bank Head office based in Phnom Penh, Cambodia. The questionnaire was designed in both Khmer and English versions and sent out to the respondents who are the ToanChet users (Ndamnsa, 2013).

In preparation of the major study, the researcher chose a number of samples to pilot the questionnaire. In the pilot study, the validity and reliability of the questionnaire were checked as it is considered the main way to look through in the questionnaire (Srinivasan & Lohith, 2017). For the pilot sample size, Iddagoda (2017) suggested that it should be 10 to 20 in size, so before conducting the actual data collection, 20 pilot tests via E-Surveys were used to test the questionnaires. After the Cronbach's Alpha data analysis, the tool was proved reliable at 93.5%.

Reliability refers to the degree to which a test is consistent and stable in measuring what it is intended to measure. Cronbach's alpha is used to test the internal consistency of the research tool and Cronbarch's alpha reliability. Coefficient is considered a measure of scale reliability. The result of the test of Cronbarch's Alpha of each variable greater than 0.7 means that all constructed variables and factors are reliable for the research (Nunnally, 1994)

Validity refers to the degree to which the test actually measures what it claims to measure. Validity tells whether the test scores are measuring the right things for a particular use of the test. It is also the extent to which inferences, conclusions, and decisions made on the basis of test scores are appropriate and meaningful (Livingston, Carlson, Bridgeman, Golub-smith & Stone, 2018).

The validity test is acceptable only if the statements in the research tool are correlated and understandable to the respondents, while reliability test is used to test the research instrument consistency and the result could be considered reliable when the percentages are close to +1. The outcomes of the Pilot Cronbach's Alpha are in acceptable level in both tests. The result for validity test of the research instrument showed that the SERVQUAL dimensions in the questionnaire are significantly correlated with one another, which leads to the conclusion that the items are valid to use for the major study. Per the respondents' comments, the questions in the research tool are understandable.

3.4 Data analysis

The study used quantitative data analysis, which employed both descriptive statistics and inferential statistics (Khan, Khan, Khan, Yar & Khan, 2014). Results came from the perception score of each statement minus the expectation score of every statement in the questionnaire (Almomani, 2017). In order to find each dimension result, the calculation of

the mean score of the statements in each dimension in perception extract expectation. This method was applied to every dimension of SERVQUAL in the survey and the result of the score coming from the means of each dimension.

For the inferential statistics, ANOVA was used. In this analysis process, Statistical Package for Social Sciences (SPSS) was an essential tool to use as a medium in extracting the data, data transformation and analysis (Thomes, 2018). ANOVA table focuses on F test as well as paired sample T test correlation which were essential for this study because it showed the result of the correlation between independent variables and dependent variables ((Monther & Mahadevan, 2019, p.114s). Service quality and customer satisfaction were found associated with one another.

4. Results and Discussions

4.1 Demographic factors

The research shows that the female respondents are in the higher percentages than the males. There are only 39 males in the total of 120 people, while females are 81, accounting for 67.5%. The ages of the respondents range from 18 to over 55. The age of 26-35 is the highest among all ages, which results in 37.5% of the total responses. Those aged 45-55 and over 55 are the least. The result also shows that the occupations of those surveyed are business people, employees, teachers, students and households. 78.3% of respondents are employers/employees and 1\10 of 120 people are business people.

Table 1: Demographic Factor

	Category	Frequency	Percentage
Gender	Male	39	32.5%
	Female	81	67.5%
Age	18-25	36	30.0%
	26-35	45	37.5%
	36-45	37	30.8%
	46-55	1	.8%
	Over 55	1	.8%
Occupation	Businessman/Woman	12	10.0%
	Employer/Employee	94	78.3%
	Teacher	5	4.2%
	Student	6	5.0%
	Household	3	2.5%

Correlation analysis describes the direction of the linear relationship; the values can appear differently as negative (-1) or positive (+1) to determine to statistical relationship, and the values can also occur in zero if there is no significant association within variables (Pallant & Manual, 2001). This table indicates the correlation result of the customer satisfaction, SERVQUAL and the dimensions. Notably, the values are signficantly correlated. SERVQUAL dimension are significantly associated with the customer

satisfaction as can be seen in Table 2. Moreover, SERVQUAL and the customer satisfaction are also correlated among the variables in a positive string.

Table 2: Correlation

		1	2	3	4	5	6	7
1.	Reliability	1						
2.	Assurance	.743**	1					
3.	Tangibles	.653**	.801**	1				
4.	Empathy	.638**	.618**	.688**	1			
5.	Responsiveness	.608**	.618**	.694**	.732**	1		
6.	Overall Satisfaction	.510**	.601**	.577**	.494**	.524**	1	
7.	SERVQUAL	.837**	.870**	.888**	.859**	.856**	.627**	1

4.2 Key findings

SERVQUAL assesses service quality by measuring the actual perception of the service to the expectation of the service. Hence, service quality = consumer's perception (P) – consumer's expectation (E). The gap between the perceived service and expected service shows the customer's satisfactory level, which means that high service quality leads to high satisfaction. For instance, positive score of SERVQUAL formula indicates customer satisfaction while negative score represents customer dissatisfaction (Almomani, 2017).

Table 3: Perceptions, Expectations and GAP Scores

Dimension	Perception	Expectation	GAP Score
Reliability	**4.1027**	**4.0333**	**0.0694**
The use of ToanChet is reliable.	4.35	4.05	0.3
ToanChet provides its service quickly.	4.2916	4.0083	0.2833
ToanChet is error free.	3.6666	4.0416	-0.375
Assurance	**4.2625**	**4.05**	**0.2125**
I feel secure while making transactions through ToanChet.	4.2333	4.0166	0.2166
ToanChet does not share my personal information with others.	4.2916	4.0833	0.2083
Tangibility	**4.1291**	**4.075**	**0.0541**
ToanChet technology is up to date.	4.2583	4.1333	0.125
There are a lot of supporting information and guidelines on how to use the app.	4	4.0166	-0.0166
Empathy	**4.1666**	**4.0791**	**0.0875**
ToanChet is available all the time.	4.175	4.0833	0.0916
ToanChet provides personal attention to customers.	4.1583	4.075	0.0833

(continued)

Table 3: Perceptions, Expectations and GAP Scores(continued)

Dimension	Perception	Expectation	GAP Score
Responsiveness	**4.0361**	**4.0333**	**0.0027**
All ToanChet relevant transaction confirmation details are sent by SMS or email within 24 hours.	4.0916	4.0833	0.0083
I am always informed by the app when the services will be performed.	4.05	3.9666	0.0833
Response of service through mobile app is very quick and prompt.	3.9666	4.05	-0.0833
SERVQUAL score (Perception – Expectation)	**4.1394**	**4.0541**	**0.0852**

i) Reliability

Two of the statements used to measure the service quality of reliability of reliability dimension are positive. The highest gap is "The use of ToanChet is reliable" ranking at +0.3. Overall, the mean score of reliability (0.0694) has a positive point, especially on the quickness and reliability of the app.

ii) Assurance

ToanChet is a mobile banking app that aims to inspire the trust of its users. Customers are satisfied with the assurance dimension and secureness in using the app. The highest score was 0.2166, which is the highest score for the statement mentioned that customer feel secure when using the bank transaction.

iii) Tangibility

ToanChet's service quality meets customer expectations as the gap score is positive (0.0541) Customers are not satisfied with the supporting documents/guidelines as well as on how to use the app (-0.0166) The bank needs to take an extra care on the lack point to improve for the future update.

iv) Empathy

The statement "ToanChet is available all the time." has a positive gap score (0.0916) in the empathy dimension. Customers totally agreed that ToanChet provides personal attention for them and enables them to use the app anywhere anytime rather than directly going to the bank. This means that they feel better than performing banking transactions physically at the bank.

v) Responsiveness

ToanChet's responsiveness is determined by the confirmation via SMS, performance information and speed of the response in the service. Customers are satisfied with all the dimension of the service quality but unsatisfied with the prompt service section.

vi) Customer satisfaction

ToanChet is a mobile banking app that allows users to transfer money between bank accounts. The survey showed that nearly 60% of the respondents choose "Satisfied", 32.5% extremely satisfied in using the app and 8.3% neither satisfied nor dissatisfied.

❖ Cronbach Alpha

Cronbach Alpha is used to scale internally of the questions, and the result could range from zero to one (Pallant & Manual, 2001) As long as the value is 60/100, the data is considered acceptable (Bell, Bryman & Harley, 2018). The analysis indicates the Cronbach Alpha result of each dimension of SERVQUAL and all of the values demonstrate acceptable states in the tools as the result of each dimension exceeds 0.73.

❖ Reliability

The reliability test of 120 samples contributing to ToanChet users are analyzed to explore the degree of consistency of the research tool. The result shows that there is a slight difference between the results of the pilot 20 samples compared to 120 answers; however, the outcomes are still in good terms within the range to what is called reliable percentages close to the perfect term (0.912).

❖ Correlation Test

The results from the correlational analysis indicate that the correlations between the customer satisfaction and the dimensions are remarkably correlated. The correlation is significant because it builds a bridge to correlate between the variables in a positive string. In addition to the correlation, the measurements also build a bridge between the service provider and customer satisfaction. In the correlational analysis, all SERVQUAL dimensions are significantly correlated at the 0.01 level (2-tailed).

❖ Hypotheses Testing

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.600	5	5.120	15.779	.000[b]
	Residual	36.991	114	.324		
	Total	62.592	119			

a. Dependent Variable: Overall Satisfaction

b. Predictors: (Constant), Responsiveness, Reliability, Tangibles, Empathy, Assurance

As can been seen in the ANOVA table 4, there is a strong connection between dependent and independent variables. The correlation shows the significant relationship of both variables at less than 0.01; thereby, the proposed hypotheses cannot be rejected.

Table 5: Hypothesis

Hypotheses	Sig.	Result
H1: Reliability has a positive impact on service quality of ACLEDA ToChet.	0.000**	Support
H2: Assurance has a positive impact on service quality of ACLEDA ToanChet.	0.000**	Support
H3: Tangibles has a positive impact on service quality of ACLEDA ToanChet.	0.000**	Support
H4: Empathy has a positive impact on service quality of ACLEDA ToanChet.	0.000**	Support
H5: Responsiveness has a positive impact on service quality of ACLEDA ToanChet.	0.000**	Support

4.2 Discussion

The study was conducted mainly to measure the service quality of ACLEDA's ToanChet in order to link with customer satisfaction by adopting a model called SERVQUAL. A total number of 120 people participated in the survey. The gap analysis of the perception and expectation score is the major way to calculate the result.

The result of the gap score measurement of the perception score with the expectation score shows that all dimensions such as reliability, assurance, tangibles, empathy and responsiveness are satisfactory to customers. The lowest gap score of the dimensions is responsiveness which is 0.0027 in the variance between perception and expectation. In the five dimensions, there are 12 questions to be asked in both perceptions and expectations.

Despite a few negative statements, ToanChet's overall performance remains at a satisfactory level. The positive feedback statements are a lot more than the negative statements. Customers feel secure while making the transactions due to the confidential customer data. ToanChet maintains a service standard in providing personal attention to customers; customers are also satisfied that all relevant transactions are sent to inform customers within 24 hours and always informed when app is ready to perform.

All the dimensions in SERVQUAL of this research are all in the satisfactory level and are significantly correlated with service quality and customer satisfaction. The result supports Asfour and Haddad (2014) which found there is a positive link between mobile banking service and customer satisfaction.

A study on service quality and customer satisfaction in Umea has found that customers are not satisfied with the service since the expectations are more than what have been provided (Ndamnsa, 2013). This was supported by another research on the assessment of service quality and customer satisfaction. However, Temba's findings were contradicted by this research, which has found customer is in the unsatisfactory level since the expectation scores are higher (Temba, 2013).

Customer satisfaction is accepted as the P-value is lower than the alpha, but responsiveness. There is a slight contradiction on the responsiveness as the hypothesis is rejected by some of the relationships between service quality. Alabboodi (2019) conducted a study on customer satisfaction effecting on service quality and has proven that assurance, tangibles, empathy, and reliability are accepted.

SERVQUAL is a valid measurement to measure the service quality and customer satisfaction of ToanChet. The overall service quality is satisfactory as most of the points are in an advantage level. However, it still needs some updates to seek the desired level of standard of service quality.

5. Conclusion and Recommendation

5.1 Conclusion

In order to meet customer expectations, service quality is the key to obtaining competitive advantage in this service delivered market as excellent services help to sustain customers' trust. Different effective strategies are being developed in order to meet the quality expectation, which leads to the rise in customer satisfaction and especially its relationship with customer to receive loyalty.

The main purpose of this study is to analyze customer satisfaction on ACLEDA ToanChet by adopting SERVQUAL Model. It is significant because there have not been any existing studies which investigate service quality and customer satisfaction in mobile banking in Cambodia so far. This study can serve as the starting point for other researchers who wish to further their studies.

All variables are strongly correlated and they are statistically significant, showing that there are connections among the variables. All proposed hypotheses have been accepted in this study. One of the most significant findings emerging is that all the variables are highly correlated with each other.

5.2 Implications for finance and banking

Bank policy makers can use the findings of this study to analyze the weaknesses and strengths for the future strategic plans and further updates on the app to close the negative gaps for reaching higher level of customer satisfaction. The study also contributes to service firms aiming to improve the quality standards to satisfy their existing and future customers. In other words, this study could be a great contribution for banking sector and its customers.

The SERVQUAL Model is based on the overall performance, which means different sectors can result differently because the numbers of the questions may be reduced. The new model or different dimension should be considered for application as it could lead to a reduction in the number of questions and the amount of time taken to answer them.

The service provider should consider investing in new technology because customers prefer using the app that operates smoothly without any errors or interruptions. The responses of the app need to be quick and prompt and it would be better if the confirmation SMS send to the app users faster than the current time spent because users do not want to wait for the SMS messages about the code or relevant transactions.

5.3 Limitations and future research

This thesis can be considered as the first research study conducting on service quality to customer satisfaction of ACLEDA Unity ToanChet user in Cambodia. The sample size of the research study is still small and scope of the study area is only in Phnom Penh City.

Further research is recommended to conduct with a larger sample size in order to obtain a more generalizable result to the population.

Research can be conducted on the service quality of mobile banking apps of the same bank or different banks to compare them with each other and see whether they are better or worse. The results can also be compared from year to year so that it could show whether the app has been improved by comparing the gap score in different years. Alternatively, the options can be a variety of mobile bank apps compared with one another.

Qualitative approach could be considered in future research to seek further insights into the issue. In other words, the researcher could interview to obtain the opinions of the banking industry expert and the manager's perspectives.

In the future study, SERVQUAL model is a similar tool to the SERVPERF model, but the difference is that it focuses only on the perception measure rather than comparing perception to expectation. It is advisable that another clone model be considered.

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Consumers' Attitudes Towards the Intention to Adopt Mobile Payment System: A Study on Bakong App of National Bank of Cambodia

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ABSTRACT

Mobile payment has become popular among urban Cambodians. However, it is hard to understand the behavioural intention to adopt mobile payment system owing to a lack of studies focusing on the context of Cambodians' behaviour and preferences in adopting innovations. This study aims to identify factors affecting Cambodian users' attitude and intention in using Bakong, an inter-bank mobile payment app developed by the National Bank of Cambodia, by using the Technological Acceptance Model (TAM). The results illustrate a full support for the positive influence on intention to use mobile payment technology from perceived usefulness, perceived ease of use, attitude, perceived compatibility, and self-efficacy. Perceived trust has a slight concern to influence the Intention to adopt the mobile payment technology, and subjective norm has not fully supported from the Bakong's users at all. The findings from this study bring out some recommendations for future researchers as well as mobile payment developers.

Keywords: Bakong, **Consumer** Attitude, Mobile Payment, TAM, Intention

1 Introduction

1.1 Background of study

Fintech is a new financial industry that applies technology to improve activities related to finance (Schueffel et al., 2017). Amer et al. (2015) depicts the development of Fintech as a progressing handle "during which finance and technology have evolved together." It leads to numerous incremental and disruptive innovations, such as internet banking, mobile payments, crowdfunding, peer-to-peer lending, Robo-Advisory, online identification, etc. Chishti & Barberis (2016) displays how the marriage between finance and technology has led to innovation within the financial services sector, through start-up firms (e.g., eToro), at incumbent companies (e.g., Citi), at the government level (e.g., Israel), or through supra-organizations (e.g., Quick). In each of these cases, Fintech has significantly impelled advancement (Schueffel, 2017).

The combination of social and economic factors has brought an energetic and rapidly evolving blockchain ecosystem in Asia (Wang et al., 2019). While four nations have become fast-growing blockchain hubs in Asia, namely China, Japan, Singapore, and South Korea, Cambodia has been running blockchain ventures. In the last few years, Cambodians are sure to have seen the news from at least one of the several blockchain projects under way in the Kingdom such as the National Bank of Cambodia, Entapay, K-Coin, Lockcoin, KH Coin, Serey Coin, etc. According to The World Economic Forum, there are almost 200,000 participants who use Bakong mobile system (Weforum.Org, n.d., 2021).

1.2 Research problem

According to (Seng & Lay 2018), the results from the FinScope Consumer Survey Kingdom of Cambodia conducted in 2015 show that mobile money services are used by 36% (3.6 million) of the population, but little is known about the behavioural intention of the Bakong app. As Cambodia takes the step to adopt blockchain for the first time, Bakong is still new for every Cambodian.

Therefore, we have to study further about the Bakong System, especially the factors that enable users to adopt this platform. There is also a previous study on Bakong that concentrates on Bakong Payment System's influence to fund transfer service in ACLEDA Bank Plc. Using a qualitative approach. To add to existing understanding, our research will focus on consumers' attitude towards the intention to adopt Bakong using a quantitative approach.

1.3 Research objectives

This research aims to determine users' attitude and intention towards using Bakong mobile payment among Cambodian users. It is also aimed at identifying influential factors that enable the adoption of mobile payment.

1.4 Research question

This study aims to answer the following research question: What factors influence consumers' attitude and intention to adopt the Bakong app?

1.5 Significance of the study

This study benefits various stakeholders in the financial industry, including mobile payment developers, financial institutions, banks and public policy makers. Thus, mobile payment developers could use the insights to improve their mobile payment platform to serve the customers better and as well as gain more users. Therefore, this study will provide some recommendations to these stakeholders to improve their mobile banking app or mobile payment app.

2 Literature Review

2.1 Overview of Bakong system

Bakong is designed as a new platform that uses Distributed Ledger Technology (DLT) to enhance the efficiency (cost, speed, and security) of payment system (Bakong et al., 2020). The implementation of Bakong would connect all financial institutions and payment service providers under a single payment platform. It will allow for fund transfers to proceed on a real-time basis without the need for a centralized clearinghouse. Institutions that are current participants of the Fast and Secure Transfers (FAST) payment system would be able to interface directly with Bakong without making changes to their existing infrastructure.

The National Bank of Cambodia (NBC) firstly began exploring and developing Bakong in June 2018 and launched it in October 2020. Bakong is a new mobile payment service that enables easy fund transfer by combining e-wallets, mobile payments, online banking, and financial applications within one easy-to-use interface for any preferred bank account. Bakong provides fund transfers for 25 partners in Cambodia. They include commercial banks, specialized banks, microfinance institutions, and digital wallets. To be on board with the system, the participating banks and institutions need to register with NBC to obtain permission to join the network. After successful registration, they will access the Payment Gateway, so their customers can create accounts under their domain. The Payment Gateway also helps financial institutions to monitor their users' transactions and manage the users (accounts) within their institutions. There is no limit to the number of funds transferred per day when using Bakong System.

2.2 Theoretical framework of TAM

Davis (1989) developed the Technology Acceptance Model (TAM) on the basis of the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) by Ajzenand and Fishbein (1980) and Ajzen (1991), respectively. TAM suggests perceived usefulness (PU) and perceived ease of use (PEOU) are the main motoring sources by an individual to establish the attitude towards the adoption of specific innovations as well as display the intention of new technology adoption (Davis, 1989).

For technology acceptance fields, the intention has been well studied, including in mobile services (Wang & Li et al., 2012), mobile credit card (Leong et al., 2013; Liébana-Cabanillas et al., 2017), mobile tickets (Suki et al., 2017), mobile banking and wireless of mobile (Kim &, 2009). TAM usually needs to either expand or extend its scope through addition of new

related variables to capture the characteristics of the new technology in question (Venkatesh & Davis, 2000). TAM is a popularly used and empirically proven framework that examines technology acceptance in the field of information technology.

In spite of the fact that TAM has been through several revisions (Lee et al., 2003), it stands as a solid, impactful, and meticulous model for investigating the acceptance behaviour (Davis, 1989; Wu et al., 2011). Keramati (2012), for example, uses TAM to demonstrate service adoption in relation to mobile payment using technological and behavioural factors of mobile payment service. Some variables that were studied, including perceived ease of use (PEOU), perceived usefulness (PU), trust, compatibility, payment habit, norm, cost, convenience, and mobile payment knowledge, are fit to the criteria and research type of mobile payment adoption according to the previous studies (de Luna et al., 2019). Even though PU and relative advantages of the technological perceptions have an effect on mobile payment, trust also has a strong influence on user behaviour of mobile payment (Gao & Waechter et al., 2017). To discover the adoption of mobile payment in Singapore to be an amazing anticipator of behavioural intention (Chandra et al., 2010) extended trust with TAM. Shin (2010) also extended TAM discovering the mobile payment adoption in the US using perceived usefulness, perceived ease of use, trust, and perceived risk affect users' adoption of payment technology. Yan & Yang (2015) presented the positive impact on the user's intention to adopt the technology using trust with TAM in China.

Singh et al. (2020) studied consumer acceptance of three main mobile payment systems including SMS, NFC and QR code. The study identified subjective norms as the most essential variable influencing intention. Many previous studies also demonstrated that subjective norm is statistically correlated with individuals' behavioural intention to use m-payment (Jaradat & Faqih et al., 2014; Schierz et al., 2010; Faqih & Jaradat et al., 2015), and the perceptions of ease of use are determined by self-efficacy and perceptions of external control as well as the perceptions of usefulness by image and output quality. According to (Kim, 2015), self-efficacy has an impact on intention to use payment-type Fintech services.

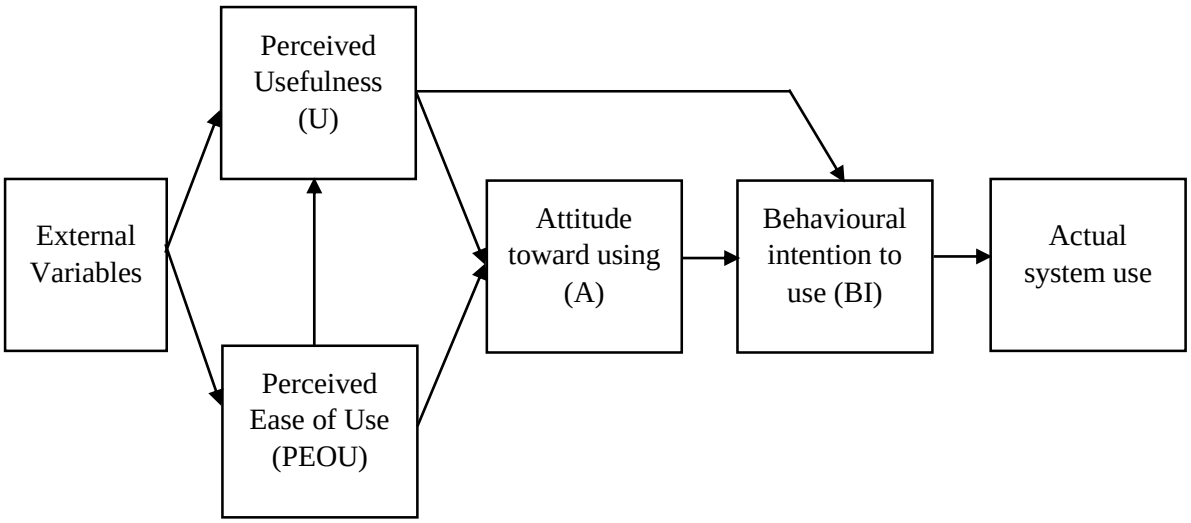

Figure 1: Technology Acceptance Model (Davis, 1989).

2.3 Conceptual framework

Davis (1989) defines perceived usefulness (PU) as the degree to which a person believes that using a particular system would enhance his or her performance. It is one of the two main elements in the Technology Acceptance Model (TAM). Within the context of the mobile payments, PU is conducted as the scope to which other people anticipate that a mobile payment system can extensively enlarge the capacity of performance in transactions (Su, Wang, & Yan., 2018). Customers indicate new payment solutions as a benefit if these systems make their lives easier and this construct incorporates the performance (Davis, 1989; Moore & Benbasat et al., 1991). Shin and Shin (2011) illustrated a positive relationship between PU and user attitude in the context of social network games. The extensive research has provided evidence on the significant effect of PU on attitude towards usage (Muñoz, Hernández-Méndez, & Sánchez-Fernández et al., 2012).

The perceived ease of use (PEOU) is another construct of TAM that refers to the individual's perception that using a particular system is effortless or easy to do (Davis et al., 1989). If a system is perceived as easy to use, it also provides more usefulness to its users (Davis et al., 1992). Ease of use impacted users' attitude towards that system and their use intention (Gefen, Karahanna, & Straub, 2003; Teo, Lim, & Lai, 1999). PEOU is also constructed and approved by various researchers in the mobile services context (Liébana-Cabanillas et al., 2014; Phonthanikit Thaworn et al., 2015; Wang, Wang, Lin, & Tang, 2003; and Nysveen et al., 2005).

Trust plays a major role in inclining the usability of mobile payment. Mayer (1995) described "trust" as the belief of the trustor that the trustee will fulfill the trustor's expectations without taking advantage of the trustor's vulnerabilities. Jarvenpaa & Leidner (1999) have shown the positive effect of trust on consumer purchase intentions. Gefen (2000) highlighted the importance of trust in the user acceptance of Internet related technologies. According to Yan and Pan (2014), has implied that trust in online payment stands as a key initial trust towards mobile payment and when the user's experience with mobile payment is doubtful, they will depend on online payment. Mu & Lee (2017) stated that the user's intention is driven by their trust on their third-party mobile payment that they have studied on Alipay and WeChat apps environment. Perceived trust is expected to have a direct effect on behavioural intentions. Hence, we expected trust to be another variable in online payments for influencing beliefs in mobile payment adoption.

According to Roger (1962), perceived compatibility is defined as an extent to which innovation suits consumer's experiences or activities. Compatibility is defined as the degree to which mobile payment is reconcilable with existing values, behavioural patterns, and experience (Gerhardt et al., 2010). Tornatzky & Klein (1982) found that the perceived compatibility of an individual is a crucial feature leading to the acceptance of a new or particular technological innovation. There is an indication to believe that perceived compatibility has a direct influence towards intention to adopt an innovation (Mallat et al., 2006; Cooper & Zmuetd, 1990).

Subjective norm is defined as an individual's perception that most people who are important to him or her think he or she should or should not perform the behaviour in

question (Ajzen & Fishbein, 1975). In the context of mobile payment, the subjective norm is the degree to which a social environment perceives mobile payment as desirable (Schierz et al., 2010). The importance of the subjective norm in regard to the attitude towards usage has previously been established in the context of mobile internet applications (Nysveen et al., 2005). Some studies conducted in different social settings have reported that subjective norm has some empirical positive influence on behavioural intention (Eze et al., 2011; Sadi & Noordin, 2011; Linck et al., 2006; Shin, 2007; Lu et al., 2008; Gu et al., 2009). Moreover, plenty of authors have identified a direct and positive link between subjective norms and the intention to use (Jin et al., 2012; Li & Zhang, 2012; Yang et al., 2012; Yongmeng, 2013; Li et al., 2014; Jaradat & Faqih, 2014).

Self-efficacy alludes to the degree to which an individual believes that he or she has the capacity to perform a particular task/job using mobile (Venkatesh & Bala, 2008). Khraim (2011) inspected mobile banking services in Jordan concluded that self-efficacy was an important variable in their adoption. The perspective of self-efficacy with respect to consumers' mobile and online purchasing behaviour has emerged as a major determinant in biometric technology adoption and acceptance. The moderating role of self-efficacy on the adoption processes of distinctive IT domains has been inadequately addressed and few insights are accessible on how consumer's perceived self-efficacy moderates key connections of adoption theories of behaviour (Jaradat & Faqih et al., 2014). This clearly showed that perceived self-efficacy among the people played a very critical role in setting perception about ease ofuse of the technology and service that is being offered.

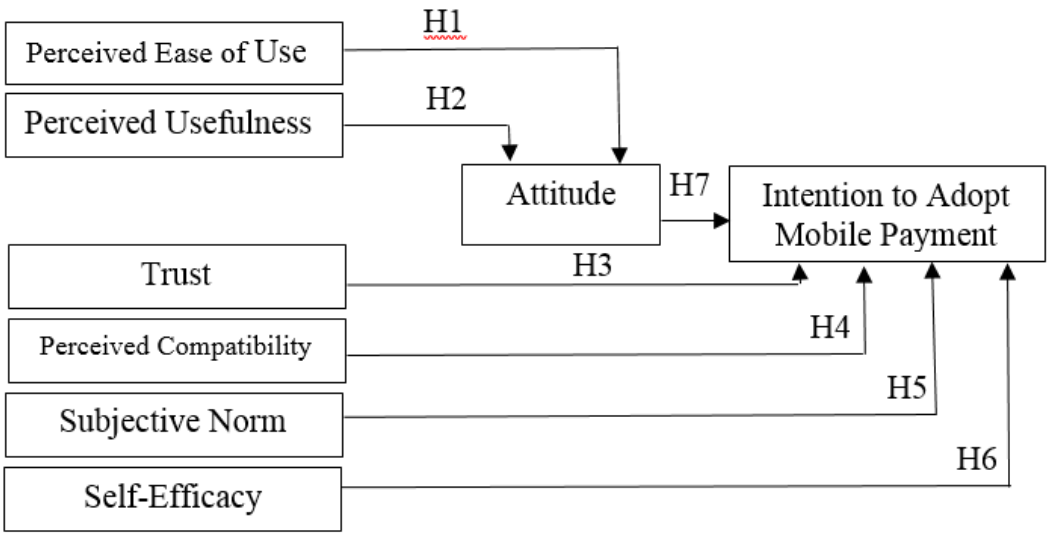

Figure 2: Conceptual Framework

All in all, this model was established to figure out the factors affecting consumers' attitude and intention to adopt and utilize existing mobile applications for online payment by combining TAM model (perceived usefulness and perceived ease of use) and external variables (perceived compatibility, trust, subjective norms and self-efficacy) that have a positive influence on the intention to adapt with mobile payment technology.

2.4. Operational variables

Consumer attitude refers to the initial act of purchasing a certain product or service (Ajzen, 2015). Mobile payment is defined as a special form of electronic handling of payments. Regarding the function of mobile payments, all definitions refer to the transfer of monetary value (Gerhardt et al., 2010).

Intention refers to plans act to in a particular way and represent the motivation toward the behaviour (Keat, 2009). The technology acceptance model (TAM) is an information systems theory that models how users come to accept and use a technology (Encyclopedia. (n.d).)

2.5 Summary of research hypotheses

This study has set up following hypotheses to investigate influential factors that enable the adoption of consumers in using mobile payment.

- H1: Perceived usefulness has a positive and significant impact on his/her attitude towards an intention to adopt Bakong Mobile Application.
- H2: Perceived ease of use has a positive and significant impact on his/her attitude toward an intention to adopt Bakong Mobile Application.
- H3: Consumer's rust has a positive and significant impact on his/her intention to adopt a mobile payment system.
- H4: Perceived compatibility has a positive and significant impact on his/her intention to adopt a mobile payment system.
- H5: Subjective norm has a positive and significant impact on the intention towards using mobile payment services.
- H6: Self-efficacy has a positive and significant impact on the intention towards using mobile payment services.
- H7: Attitude has a positive and significant impact on his/her intention to use a mobile payment system.

3. Research Methodology

3.1 Research design

This research employed a quantitative approach (Cooper & Schindler et al., 2007) to determine the factors influencing consumer attitude towards Bakong app. After reviewing existing studies, there are not many scientific papers focusing on mobile payment adoption using an extended TAM model. This paper focused on consumer's adoption of the mobile payment system by testing the hypotheses using an extended TAM model. The study focused on a group of individuals who have mobile devices, internet connections, and mobile payment users in the age of 18 to 40 years old, which does not necessarily suggest that the participants have adopted the services.

3.2 Sampling site and frame

The intended population for this study is working professionals, employees, business owners, students, and anybody who is familiar with mobile payments apps, between the age of 18 and 40. We intended to gather solid information initially from the point of view of all Cambodians living or working in Phnom Penh only.

3.2.1 Research area

This study was conducted in Phnom Penh, focusing on customers' attitudes towards the intention to use the Bakong mobile system. The study selected the users who utilize the existing Bakong mobile system.

3.2.2 Determine the sample size

The sample size was determined by to the formula n = (z^2 p(1-p))/e^2, specifically established by Cochran (1963) for infinite population size. Z is desired confidential level with Z (95%) = 1.96; P is estimate proportion with 50% = 0.5; e is desired level of precision with e = 5% = 0.05; and n is desired population. Assuming that the "e" margin error is set at 5%, we have 385. As a result, the numer of target respondents chosen for the study is 385.

3.2.3 Sampling procedure

The researcher employed only probability sampling design that is the random sampling technique. The method would increase a sample's statistical efficiency, adequate data for analysis and enable different research methods and procedures.

3.3 Research tools and instruments

The researchers collected the data from respondents through an online survey using Google Form. Google form can generate and clarify the data which displayed clear results from desired samples.

Table 1: Summary of construct measurements

Construct	Item	References
Perceived Usefulness (PU)	PU1: Using Bakong App would improve my fund transfer performance across participating banks in one platform. PU2: Using Bakong App would enhance my effectiveness in fund transfer performance across participating banks in one platform PU3: Using Bakong App would allow me to transfer money across participating banks in one platform more quickly. PU4: Overall, Bakong App provides a useful mode of transferring money.	Bhattacherjee, 2001, Daştan and Gürler, 2016 Davis, 1989 Schierz, Schilke and Wirtz, 2010
Perceived Ease of Use (PEOU)	PEOU1: I think learning to use Bakong App is easy. PEOU2: Interaction with the tools in Bakong App is flexible. PEOU3: Interaction with the tools in Bakong App is clear and understandable. PEOU4: Overall, it is easy to interact with Bakong App.	Daştan & Gürler 2016 Davis, 1989, Schierz, Schilke and Wirtz, 2010

(continued)

Table 1: Summary of construct measurements(continued)

Construct	Item	References
Perceived Compatibility (PC)	PC1: Using mobile transfers and/or payment services of Bakong App fits well with my lifestyle. PC2: Using mobile transfers and/or payment services of Bakong App fits well with my habit. PC3: Using mobile transfers and/or payment services of Bakong App fits well with the way I like to work.	Moore and Benbasat (1991) Plouffe et al. (2001)
Subjective Norm (SN)	SN1: People who are important to me recommend using the Bakong mobile payment system. SN2: People who are important to me view the Bakong mobile payment system as beneficial. SN3: People who are important to me think it is a good idea to use Bakong mobile payment systems.	Taylor and Todd (1995),Venkatesh and Davis (2000), Schierz et al. (2010)
Self-Efficacy (SE)	SE1: I think that I can use Bakong App system even if there was no one around to tell me what to do as I go. SE2: I could use Bakong App application if I had just the built-in help facility for assistance. SE3: I could use Bakong App application if someone showed me how to do it first.	Venkatesh and Bala (2008)
Attitude (ATT)	ATT1: Using mobile transfers and/or payment services of Bakong App is a good idea. ATT2: Using mobile transfers and/or payment services of Bakong App is beneficial. ATT3: Using mobile transfers and/or payment services of Bakong App is wise. ATT4: Using mobile transfers and/or payment services of Bakong App is interesting.	Venkatesh and Bala (2008)
Intention (IT)	IT1: I intend to use Bakong App in making fund transfers. IT2: I intend to use Bakong App in paying for service whenever I use. IT3: I will increase the frequency of using Bakong App. IT4: I will strongly recommend others to use Bakong App.	Davis (1989) Chen, C. C., & Tsai, J. L. (2019) Venkatesh and Davis (2000)

3.4 Data collection

As the study used quantitative data analysis, the researchers collected the responses from the targeted samples, including the people who are currently using the Bakong app. However, due to the covid-19 pandemic and the need to practice social distancing, our data collection is conducted through an online survey (Google Form). The survey was shared with people in researchers' networks, such as employees in the institution, students, and lecturers, as well as through the social media channels and opened for the public in which anyone can access the link. In addition, we also requested ACLEDA Bank, with assistance from the school to help sharing the online survey to their employees at ACLEDA Bank Plc

Headquarters to voluntarily participate in the survey. As of the closing date for the survey, there were 196 respondents participated in the survey.

3.5 Data analysis

In the data analysis, we used descriptive statistics and focused on finding the frequencies and means. After all essential information was collected, it was subjected to analysis based on respondents' answers. Firstly, the information collected from the survey to gather the responses upon desired sample sizes will be put into the category or table of Excel sheets. The data in each category will be calculated using formulas of frequency, mean, and percentile. For a better interpretation of data in each category, the analysis was conducted as pie charts displaying the numbers and the percentage of each collected element.

3.6 Result of the instrument test for reliability

Cronbarch's Alpha measures internal consistency between items in scale (Blagoeva & Mijoska et al., 2017) and the extent that research with multiple-construct measurements is considerately a routine (Schmitt et al., 1996). Nunnally (1994) asserts that the Cronbach's Alpha, which values more than 0.7 indicates a high reliability.

Table 2: Reliability Test of Cronbach's Alpha on Each Variable

No	Item	Pilot Cronbach Alpha (n=20)	Pilot Cronbach Alpha (n=196)
1	PU	0.949	0.945
2	PEOU	0.930	0.920
3	PT	0.936	0.923
4	PC	0.923	0.933
5	SN	0.706	0.873
6	SE	0.846	0.770
7	ATT	0.905	0.945
8	IT	0.845	0.895

According to the Table 2, the Cronbach alpha of all constructs scored more than 0.7 for both pilot test (n=20) and the actual results (n=196). Therefore, the constructs are good to be used and reliable. The combination of all variables statistically exceeds 0.9 which is considered a high reliability.

4. Results of Discussion

4.1 Demographic factor

58.67% of the sample was female, 49.21% male, and 0.51% others. In addition, the age gaps presented that the respondents' age between 16 to 26 years old has got the highest response at 49.49%, followed by the 32.65% of the age between 27 to 37 years old, 16.84% on the age between 38 to 48 years old and 1.02% on more than 48 years old respectively. For educational background, the result showcased that approximately 2.55% was high school students, 33.16% of respondents were undergraduate level, followed by 51.53% of graduate degree, while the 10.71% are with MBA degree, and the rest 1.92% is PhD graduate, respectively. Last but not least, the employment status has illustrated that the majority of

respondents were employees accumulated to 65.82%, while 9.69% of them were government officers. Whereas, the business owners were 5.61% and 14.80% were currently unemployed, and 4.08% respectively.

Table 3: Survey Demographics

Item	Categories (N = 196)	Frequency	Percentage
Sex	Female	115	58.67%
	Male	80	40.82%
	Other	1	0.51%
Ages	16 to 26 years old	97	49.49%
	27 to 37 years old	64	32.65%
	38 to 48 years old	33	16.84%
	More than 48 years old	2	1.02%
Education	High school student	5	2.55%
	Undergraduate	65	33.16%
	Graduate	101	51.53%
	MBA	21	10.71%
	PhD	2	1.02%
	Others	2	1.02%
Employment	Employee	129	65.82%
	Government officer	19	9.69%
	Business owner	11	5.61%
	Currently unemployed	29	14.80%
	Others	8	4.08%

4.2 Presentation of key findings

4.2.1 Analysis of level of agreement

The research used the 7-point rating scale, the mean of each variable explained the effective level of each factor from the respondents. The result showed that all of the variables were stated in "Agree" level based on the reference to the ranges of 7-point scale (Armstrong, 1987).

Table 4: Level of Agreement

No	Variables	Min	Max	Mean	SD	Level of Agreement
1	PU	1.00	7.00	5.84	1.131	Agree
2	PEOU	1.00	7.00	5.43	1.139	Agree
3	PT	1.00	7.00	5.52	1.119	Agree
4	PC	1.00	7.00	5.38	1.170	Agree
5	SN	1.00	7.00	5.31	1.198	Agree
6	SE	2.25	7.00	5.41	1.022	Agree
7	ATT	1.00	7.00	5.71	1.104	Agree
8	IT	1.00	7.00	5.43	1.142	Agree

*Note: Neutral: 3.58-4.42, Somewhat Agree: 4.43-5.28, Agree: 5.29-6.14, Strongly Agree: 6.15-7.00

Source: Author's calculation

4.2.2 Correlation analysis, validity & reliability test

The correlation level and validity between all constructs of this research were tested. The researchers brought 8 constructs into testing. According to (Pearson, 1926), the correlation's values range from –1 to +1 and were calculated to explore the strength between variables. That means the closer the number in each variable reaches nearly +1, the stronger correlations are, which means the more positive the relationship between two variables is (Pearson, 1926).

Table 5: Result of Pearson Correlation Matrix

	PU	PEOU	PT	PC	SN	SE	ATT	IT
PU	1							
PEOU	0.770**	1						
PT	0.706**	0.769**	1					
PC	0.727**	0.737**	0.805**	1				
SN	0.648**	0.689**	0.668**	0.748**	1			
SE	0.662**	0.628**	0.592**	0.632**	0.701**	1		
ATT	0.811**	0.729**	0.672**	0.759**	0.684**	0.728**	1	
IT	0.722**	0.692**	0.623**	0.722**	0.674**	0.707**	0.812**	1

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

Source: Author's calculation

Table 5 illustrates that all the variables are significantly correlated at the significant level of 0.01 (2-tailed). The results also showed the favourable and positive correlations between variables with the lowest of 0.592 of perceived trust towards subjective norms and highest of 0.812 of attitude with intention.

4.2.3 Significance test of model fitness

Table 6: Result of ANOVA of Model Fitness

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	181.506	7	25.929	67.115	.000
	Residual	72.632	188	.386		
	Total	254.138	195			

Source: Author's calculation

Concurring to the table above, the TAM model proposed in this study was statistically effective in examining intention to adopt mobile payment. It was apparent with a significance value of 0.000, which is smaller than 0.05.

4.2.3.1 First block of regression analysis

In table 7, perceived usefulness and perceived ease of use were run as independent variables while the attitude was the dependent variable. Consequently, hypothesis 1 (H1) outlined the significance level of perceived usefulness at 1%, the Beta of it accumulated to 0.612 (β = 0.612), which implies that when perceived usefulness goes by 1 standard deviation, it will appear the direct impact around 0.60 towards attitude which is considered to be moderate. Moreover, hypothesis 2 (H2): perceived ease of use (PEOU) is significant at 1%, and has β = 0.258, which demonstrated that when perceived ease of use remains at 1

standard deviation, it will slowly increase on the attitude at approximately 0.3. Thus, H2 was not supported.

Table 7: Regression of PU and PEOU towards Attitude

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std.Error	Beta	t	Sig.
1	(Constant)	.871	.241		3.612	.000
	PU	.597	.062	.612	9.654	.000
	PEOU	.250	.061	.258	4.063	.000

Dependent Variable: Attitude, PU: Perceived Usefulness, PEOU: Perceived Ease of Use,Source: Author's calculation

4.2.3.2 Second block of regression analysis

As for Table 8, perceived trust, perceived compatibility, subjective norm, self-efficacy, and attitude stood as independent variables to run for intention to use as a dependent variable. The result showcased the significance level of perceived compatibility, self-efficacy, and attitude as they were. For perceived trust, it demonstrated the β = -.026, which implies that trust does not affect the intention to use the technology. The table measurably showed the positive impact of perceived compatibility towards intention to use Bakong App with the significance level of .021** and was a potential factor within the variables with the standard β = .189. The result suggests that subjective norm is not the main reason for Bakong's users' intention to use. Moreover, self-efficacy has a positive impact on intention to use the Bakong app with the significance level of .003** and was another potential factor within the variable with the standard β = .187. From the results, perceived compatibility, self-efficacy, and attitude were completely significant, but perceived trust and subjective norm are not fully supported.

Table 8: Regression of PT, PC, SN, SE, and ATT towards Intention to use Bakong app

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.129	.265		.486	.627
	PT	-.027	.069	-.026	-.388	.699
	PC	.184	.079	.189	2.333	.021
	SN	.077	.063	.081	1.222	.223
	SE	.209	.070	.187	2.977	.003
	ATT	.512	.072	.495	7.125	.000

Dependent Variable: Intention to use, Source: Author's calculation

4.2.4. Discussions

Table 9 exhibits the summary results from the tested hypotheses with the regression analysis.

Table 9: Hypotheses Result

Hypotheses	Sig	Result
H1: Perceived Usefulness has positive and significant impact on his/her attitudes towards an intention to adopt Bakong Mobile Application.	.000	Supported
H2: Perceived Ease of Use has positive and significant impact on his/her attitudes toward an intention to adopt Bakong Mobile Application.	.000	Supported
H3: Consumer's Trust has positive and significant impact on his/her intention to adopt a mobile payment system.	.699	Unsupported
H4: Perceived Compatibility has positive and significant impact on his/her intention to adopt a mobile payment system.	.021	Supported
H5: Subjective norm has positive and significant impact on the intention towards using mobile payment services.	.223	Unsupported
H6: Self-efficacy has positive and significant impact on the intention towards using mobile payment services.	.003	Supported
H7: Attitude has positive and significant impact on his/her intention to use a mobile payment system.	.000	Supported

The study found that both perceived usefulness and perceived ease of use had a positive impact on attitude towards the intention to use Bakong app. Simultaneously, the study aligns with the existing research on online shopping payment (Ramayah & Ignatius, 2005); electronic banking (Jahangir & Begum, 2008); and mobile payment services (Schierz et al., 2010). The result infers that Bakong app users perceived the system as practically useful in terms of making payments. The outcome also implies that the app was convenient for the customers to use with the simplicity and understand ability of the app performance. Nevertheless, when integrating trust (H3) into the model, the result on this hypothesis showed that trust did not support the intention to adopt the technology ($t = -.388$, $Sig. \leq .699$) due to existing doubts about using the app based on the majority of the sample. However, the result was in contrast with previous findings by Wong and Mo (2019) that perceived trust has a positive impact on consumer consumers. Likewise, the result also aligns with many existing studies on mobile payment of (Mu & Lee, 2017); (Y. Lu et al., 2011); and mobile banking (Gu et al., 2009), which showed a genuinely positive influence of trust on users' intentions to adopt a particular mobile payment system. On the other hand, perceived compatibility (H4) is proven to be a significant factor that influences the consumers' intention to use the Bakong system. This finding is also supported by past studies such as the studied of mobile service in Vietnam (Liu & Tai, 2016), mobile payment services (Schierz et al., 2010), and mobile service in Thailand (Phonthanukitithaworn et al., 2016). This result implies the use of Bakong app is compatible with users' daily lifestyle, working, and preferences in monitoring their fund transfers. However, when subjective norm is integrated into the model (H5), it is discovered to have a less influence to the users' intention to use the technology. The finding interprets that there is still doubt from most of sample respondents with subjective norm in supporting the intention to use the Bakong app.

Nevertheless, the result is contrary to existing studies such as the studies of factors influencing teachers' intention to use technology (Teo, 2011), the citizen's intention to use e-government services (Gultom, 2020), the behavioural intention to use services of banking system (Alqasa et al., 2014), and acceptance of mobile payment in restaurant industry (Cobanoglu et al., 2015). Their research findings suggest that users are influenced by their peers in their decision regarding the intention to adopt a technology. Furthermore, the result showcased that self-efficacy (H6) had a significant impact on the consumers' intention to use the technology system. In other words, the users are more likely to adopt the mobile payment system if they believe and are confident in their skills, knowledge, and ability to perform the platform independently. The result is consistent with the results from previous studies that focus on self-efficacy in the context of mobile payment adoption, such as (Kim et al., 2016), (Jaradat & Faqih, 2014). Last but not least, the essential finding that defined mobile payment adoption was attitude towards intention to use the technology. There is a crucial support for the significance of consumers' attitude on the intention to adopt the mobile payment, resulting in ($t = 7.125$, Sig. $\leq .000$) and supporting H7 pointing out that consumer's attitude has a positive influence on intention to use a mobile payment system. Furthermore, it positively influenced the intention to use mobile payment, which was consistent with Schierz et al. (2010). This outcome reveals that after Cambodian users experienced a mobile payment system, they found it was personally desirable, beneficial, interesting, and modern.

5. Conclusion and Recommendations

This research study adopted the Technology Acceptance Model (TAM) with an extension of four variables, including perceived compatibility, trust, subjective norms, and self-efficacy. The result of the research presented that the TAM model was highly significant when adding two more variables including perceived compatibility and self-efficacy. This finding suggests that perceived compatibility and self-efficacy should be added to TAM in a similar study field. However, the outcome finding showed that trust and subjective norm were insignificant when added into TAM. Therefore, trust and subjective norms should not be integrated into the TAM, since it was unsupported when these two variables were integrated into the model.

The study also provides some essential recommendations for practice. Firstly, according to the outcome, most respondents use the Bakong app only once per month, and most are young adults from strong educational background. Thus, it indicates that the Bakong system has less frequent usage, and there are not many people utilizing it yet. Therefore, we highly suggest the builder or developer of the Bakong system consider running more advertising and marketing campaigns to attract more users. Secondly, the research finding stated that perceived usefulness, perceived ease of use, perceived compatibility, and self-efficacy have a positive and significant influence on attitude and intention to adopt mobile payment. This result might assist the marketers in promoting mobile payment adoption and developers to make a proper decision on establishing data by concentrating on increasing the usability and improving the functionality to respond to the

needs of loyal users or new users. Likewise, as it is highly challenging for developers to design systems that offer a mobile environment with highly usable features since mobile technology has limitations in features, designs, usage, and implementation, the developers should investigate how to deliver an appropriate and effective interface design for a mobile device. It means that financial institutions and banks need to ensure the mobile payment services offered to customers meet their current values, needs, and lifestyle. Lastly, the result of the level agreement showed that trust and subjective norms were agreed to impact the intention to adopt the Bakong system by users in Cambodia. Since Cambodians are more likely to adopt the Bakong app when they consider the system reliable and trustworthy, NBC should advertise more about the high security of performing fund transfer transactions on the Bakong app. Moreover, the agreement of subjective norm in behavioural intention suggests that individual social connections and the social status of group affiliation, such as family members, friends, and colleagues, lead to adopting the Bakong app in Cambodia. Consequently, the service providers, including Bakong developers, financial institutions, and banks, potentially need to consider people's social connections and status to increase the degree of adoption of mobile payment services. Therefore, promoting mobile payment services through the social and community network may be useful for increasing the level of adoption in Cambodia.

The study has some limitations. The main scope of this paper focuses on determining the attitude and intention of Bakong users in Cambodia; however, the model was adopted from various prior studies that mostly took place in abroad context. Thus, it does not ensure the accuracy of the model application in the country. In the meantime, the study only includes Bakong platform that currently have limited users, and as a result, only a limited number of respondents contributed in the survey form. The survey questionnaire itself is also shared with a small group of people who mostly reside near researchers' area. Therefore, the sample study can only represent people who live in Phnom Penh rather than more diverse population like provinces across the country. Moreover, given the limited time of research and the global pandemic situation, the researchers also find it challenging to have more access to a bigger sample size that can genuinely represent the whole population.

Hence, with mentioned limitations, further research should consider the following:

- Next researchers should target a larger sample size in order to make the data more comprehensive.
- The items to measure the constructs were entirely adapted from the previous studies. Therefore, further research should implement factor analysis on the questions.
- Future researchers should extent the study on factors that influence people not to use the Bakong app too. It will help researchers receive a wider context and different types of respondents.
- Future research may deploy qualitative techniques or mixed methods to acquire a more in-depth understanding and perspectives of users regarding mobile payment adoption.

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Impact of Promotion Strategies on Adoption of Mobile Banking: A Case Study of ACLEDA Mobile

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ABSTRACT

This article aims to study factors that encourage users to adopt mobile banking application. Drawing on the Technological Acceptance Model (TAM), the study surveyed over 300 subscribers of ACLEDA Mobile App to determine if promotion strategy had an impact on adoption in addition to perceived usefulness and perceived ease of use. The results show perceived usefulness and perceived ease of use had influence on the adoption of mobile banking, alongside other variables including advertising, social media, sales promotions, direct marketing, and public relations efforts that had been used to promote the benefit of mobile banking.

Keyword: **Technology** Acceptance Model (TAM), Promotion Strategies, Mobile Banking

1. Introduction

1.1 Background of the study

Digitization has changed the rules in banking. Most of the marketplace was focused on the impact of the internet on innovation. The internet was the newest competition for the marketplace. And all the economy was changed to a new strategy rule for a challenge with the competitor. Traditional modernization tactics were used to develop new opportunities as the competitive dynamics in a certain industry were modified by digitization.

Digitalization in the banking business also transformed the type of service provided; it created lines between rival banks that would continue to grow indefinitely, allowing for more strategies to be developed, causing the banking industry to swiftly expand. On the other side, there are several opportunities. Digitization gave banks several options to improve their service and quality in order to attract clients, such as improving interactions between consumers and internal and external stakeholders, improving management decision-making quality, and enabling new business and/or operational models. Banks need digital banking to adopt customers and compete with competitors by bringing benefits of digital banking to customers (Patriotism et al., 2013). The Digital banking service covered included electronic banking services via digital devices (e.g., t-banking, e-banking, m-banking, Contactless Card (e.g., tap and go), ATM, and point-of-sale), Telephone banking allowed customers' transactions through telephones. (A.; Alalwan et al., 2018) while with internet banking, customers could have carried out banking services via the internet from their homes (Tam & Oliveira, 2017).

After 1993 general elections, the Government of Cambodia began formulating a comprehensive macroeconomic and structural reform. The banking system transformed and the result was really significant success in stabilizing the economy. In the 1990 s, the economy in Cambodia was growing up rapidly. By separating central bank functions from commercial banking activity, Cambodia's banking system was altered from a mono banking system to a two-tier banking system. By producing healthy profits, the financial sector, particularly in the banking industry, was able to accomplish excellent results and expansion.

The National Bank of Cambodia's top objective today was to maintain the balance between increasing financial inclusion and ensuring financial stability. Building Cambodia's digital banking sector will also boost the country's economy by allowing it to move away from the traditional banking system and toward digitization of financial transactions and better corporate organization models. (Chhun,2005)

1.2 Problem statement

Mobile banking is moving the banking industry from traditional banking that gives more benefit to customers. Financial institutions are continuing to grow in terms of turnover and profitability as a result of the financial sector's digital transformation. ACLEDA Bank also offers digital banking to its customers by improving the ACLEDA Mobile application in order to improve financial services and meet the challenges of the

digital revolution. The ACLEDA Mobile application, according to (ACLEDA Bank Plc., 2021), has several benefits to consumers, including being convenient, fast, and highly secure in performing banking transactions via ACLEDA Mobile, lowering costs, and saving time by without directly go to bank. However, the customer was unfamiliar with the new product. A promotion campaign is the most effective strategy to encourage people to utilize mobile banking services. One of the most efficient ways to inform clients about the security of the ACLEDA Mobile Banking service is to use an advertising plan. According to the results of the Fin Scope Consumer Survey Kingdom of Cambodia, according to Seng & Lay (n.d.), in terms of mobile banking services.

1.3 Research objective

The research proposes to explore the variable of promotion strategies impact on promote mobile banking user for influence customer intention using mobile banking app among Cambodians, specifically ACLEDA Mobile App users. As well as, to identify influential factors of promotion strategies to promote the ACLEDA Mobile application.

1.4 Research question

The identified research objective leads to arisen to our research question which is:

"What is the element of promotion strategies impact on ACLEDA Mobile application users?"

1.5 Significance of the study

This research thesis's potential outcome will contribute to various stakeholders in the financial industry, including mobile banking developers, financial institutions, and banks. The study will provide insights regarding the key factors that motivate the customer intention of adopting the ACLEDA Mobile app. Thus, ACLEDA Mobile app developers could use the insights to improve their platform that serves the customers better, and as well as gains more users. Therefore, this study will provide some recommendations to these stakeholders to improve their mobile banking app. Mainly, as this survey focuses explicitly on the mobile banking system of ACLEDA Bank PLC, it will benefit the ACLEDA Mobile app developers in the area to improve their platform. Finally, this article would significantly provide a useful resource for future research with relevant or similar topics.

1.6 Scope of the study

This study makes major contributions to financial institutions in terms of expanding and improving their financial services. However, obtaining information on consumer acceptance of mobile banking for the purpose of analysing the variables that motivate their decision to utilize mobile apps in their daily lives has certain limits. First and foremost, this research will focus on ACLEDA Bank's apps, which are widely used and exploited across the country. This mobile application was chosen since it is widely utilized for quick banking transactions and is one of Cambodia's most well-known commercial banks.

Second, the sample size will be calculated using 337 people randomly selected of about 1,945,646 users who use mobile phones and use mobile banking services across the country, according to ACLEDA BANK's first quarterly report for 2021.

Third, this study will not include all the important factors that influence customer acceptability of mobile banking. Risk, ubiquity, network externalities, and consumer security are all variables to consider.

Finally, in addition to the commercial bank's mobile application, more research should be done on a different variable type of mobile banking using the same TAM model with different variables or with different conceptual frameworks and models to shed light on the perspective of a larger sample size in different groups, models, and variables. This will almost certainly assure that the outcomes will be varied in terms of the model utilized for future research.

2. Literature Review

2.1 Definition of mobile banking

The mobile banking is defined as a financial transaction application app that can be downloaded on a mobile phone and allows clients to bank anywhere, anytime using wireless device (Chitungo & Munongo, 2013). Mobile banking is the integration of electronic money into mobile communication services through multi-platform cooperation and cross-industry collaboration between mobile telecom providers and banking institutions (Kelly and Palaniappan, 2019). It makes use of a piece of software known as an app, which may be downloaded onto a mobile device. The concept of mobile banking: Using electronic communication technology can be improved the banking system without changing its objectives and functions. It made speed, quality, accuracy, and satisfaction of banking services that offered to customers will improve to a great. Mobile banking not only offers ideal banking services to the whole society but also follows the ideal banking system characteristics to better suit the needs of the people. A mobile banking system should have characteristics that can be predicted and classified (Aithal, 2016). Mobile banking is a service provided by financial sector to customers for financial transactions using a mobile device such as a smartphone or tablet. The ability to use mobile banking is contingent on the availability of an Internet or data connection on the mobile device (2003; Barnes & Corbitt, 2003).

2.2 Theoretical framework

Fred Davis developed the technology acceptance model as part of his doctoral thesis in 1986. This theory has been proved to describe the concept of technology acceptance as well as the attitudes and behaviours that people adopt toward accepting and using technology through the use of information technology (websites, software/applications, device use) individually or in groups (Davis, 1989). Davis built the TAM model based on behavioural concepts including Theory of Reasoned Action (Ajzen & Fishbein, 1975), self-efficacy theory (Seneviratne, n.d.), cost-benefit decision making procedure (Beach and Mitchell, 1978), Theory of Diffusion of Innovation (Tornatzky & Klein, 1982), and the Channel

Disposition Model (Swan-son, 1987). Furthermore, Davis is of the view that user acceptance of technology has two main factors: perceived ease of use and perceived usefulness. The intention to use TAM construction, which includes perceived ease of use and utility, is the next variable. It is also important to analyse consumer behaviour and determine the intensity of the company's performance by observing client reactions to the company's new technology. In addition, throughout the digital era, this variable must be linked to the banking industry's digitalization agenda. Figure 2 is show about the process of element of technology acceptance model on customer's attitude (Lusala Aliata et al., 2012).

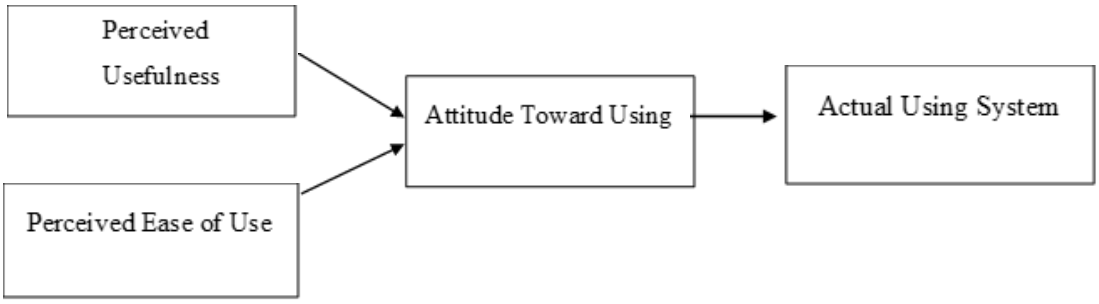

Figure 1: Technology Acceptance Model

2.3 Conceptual model

The marketing approach by which a firm communicates with clients about products and services is known as business promotion. One of the 4Ps of the marketing mix is a promotion strategy. A promotion strategy is a practical method for getting people to learn about a company's core products or services, create more leads, and increase customer engagement. The marketing also aids you in attracting your target's attention, analysing new products and services, determining demand, and encouraging them to buy from you. The goal of the promotion plan was to demonstrate how to use your marketing tactic (Lixin et al., 2018). Promotion is a direct technique for a corporation to reach out to the general population. Advertising, sales promotion, personal selling, public relations, and direct marketing are the five parts of this strategy that have an impact on the marketplace (Czinkota & Ronkainen, 2004).

People's perceptions of the benefits of using technology are referred to as "perceived usefulness of technology acceptance" (Venkatesh & Bala, 2008). On the other hand, perceived usefulness plays a role in an activity involving information technology systems (Bastari et al., 2020). Furthermore, based on the results of financial institution digitization, perceived usefulness is a more efficient means of attracting people since it saves time and energy in employing applications and other technologies to meet demand.

The way humans understandably build utilization inside a novel technical system is defined as perceived ease of use (Venkatesh & Davis, 2000). Furthermore, the varied ease allows individuals to have more operating opportunities to be interested in a new technology-related product (Dönmez-Turan & Kir, 2019). Furthermore, for consumers who use mobile banking, perceived ease is the most important feature (Dickinger & Kleijnen, 2008). It was shown that perceived ease of use was an effective strategy for customers to adopt mobile

banking software. Similarly, bank consumers are more inclined to use online banking because it is simple to use and integrates with the modernized banking system (Guriting & Oly Ndubisi, 2006).

Intention to use is referred to as a fundamental reaction to the actual actions of a person when they know and use new technologies (Bastari et al., 2020). Besides, the intention to use is also shown as an interest in continually participating or taking part in a particular system (Islam and Meantymeaki, 2011; Venkatesh and Bala, 2008). Intention to use as a behavioural construct could be accepted as people's understanding, behaviour, and decision to use new technology. This could occur because the intention to use is a reflection of an understanding of technology adoption that ends up in a personality's behaviour. This is supported by an announcement regarding the technology acceptance model, which states that intention to use will determine use behaviour (Purwanto & Loisa, 2020). Referring to the technology acceptance model (TAM) (Bastari et al., 2020), the intention to use is a keyway of determining whether motivated people have the intention to use technology systems in the future.

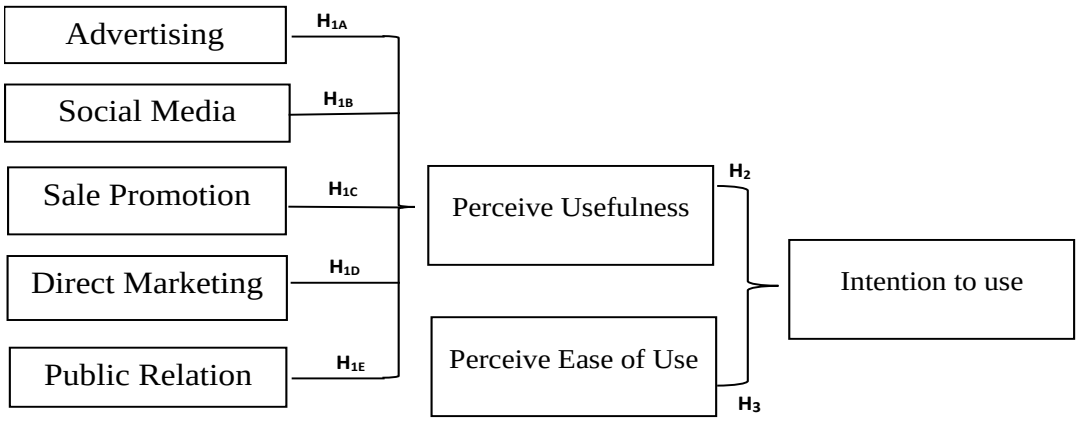

Figure 2: Research conceptual framework

Overall, by combining the TAM Model (Perceived Usefulness and Perceived Ease of Use) and the promotion strategies model (advertising, public relations, sales promotion, social media, and direct marketing) that have a positive influence on the customer's intention to adapt to the ACLEDA Mobile Application, this model is established to figure out the factors of promotion strategy that motivate customer intention to use the ACLEDA Mobile Application.

2.4 Summary of research hypotheses

In accordance with the developed conceptual model, the hypotheses were specifically formulated for this research as following:

- H1A: Advertising is an influence technique to promote perceived usefulness for adopting mobile banking.
- H1B: Social media is an effective technique to promote perceived usefulness for adopting mobile banking.

- H1C: Direct Marketing is an influence technique to promote perceived usefulness for adopting mobile banking.
- H1D: Sale Promotion is an influence technique to promote perceived usefulness for adopting mobile banking.
- H1E: Public Relation is an influence technique to promote perceived usefulness for adopting mobile banking.
- H2: Perceive Usefulness has a positive influence on his/her attitudes toward an intention to adopt ACLEDA Mobile Application.
- H3: Perceive Ease of Use has a positive influence on his/her attitudes toward an intention to adopt ACLEDA Mobile Application.

3. Research Methodology

3.1 Research design

The goal of the research was to fund out how to best promote the use of the ACLEDA app among users. This study utilized various methods and techniques, including sampling and analysis, to create a comprehensive and objective study. This study aims to investigate an issue that is not well identified in the Cambodian banking context, which is the adoption of the Android Mobile App. Through a survey, the primary data was collected in order to gather more detailed information on the various aspects of mobile banking in the country.

3.2 Research area

This study focuses on the impact of promotion strategy on mobile banking and is geared at users of mobile banking applications. Respondents who work in the banking industry and have used the ACLEDA Mobile Application.

3.3 Sampling and sample size

Sample size was decided by the customers who are using ACLEDA mobile app which is accounted for 1,945,646 ACLEDA Mobile App subscribers. Consequently, the sample size was determined by Cochran (1963) formula. The sample size was calculated with a desired sample size, population size of 1,945,646. The study size is 337, and it includes staff members, households, and students who use the ACLEDA mobile app to perform their online banking. This study will also focus on those who have a high school diploma or a graduate degree. We will also use stratified random sampling.

Table 1: Summary of the Measurement constructs

Construct	Item	Reference
Advertising	I heard about ACLEDA Mobile through Advertising Advertising strategy of ACLEDA Mobile is attractive. Advertising strategy of ACLEDA Mobile is professional.	Mortimer (2001)
Social Media	I heard about ACLEDA Mobile through social media Advertising of ACLEDA Mobile through social media is attractiveness. Advertising of ACLEDA Mobile through social media is entertainment.	Wakolbinger, Denk,&Obereck er, 2009

(continued)

Table 1: Summary of the Measurement constructs(continued)

Construct	Item	Reference
Direct Marketing	I heard about ACLEDA Mobile through Direct marketing I feel the entertaining of sale person when promoting ACLEDA Mobile. I feel professionalism of the salesperson when promoting ACLEDA Mobile.	Brassington & Pettitt (2000), Lee (2002)
Sale Promotion	I heard about ACLEDA Mobile through Sale promotion I feel the entertaining of Sale promotion when promoting ACLEDA Mobile. I feel professionalism of the Sale promotion when promoting ACLEDA Mobile.	(Lusala Aliata et al., 2012)
Public relation	I heard about ACLEDA Mobile through public relation. I feel attractiveness of the public relation when promoting ACLEDA Mobile. I feel professionalism of the public relation when promoting ACLEDA Mobile.	(Lusala Aliata et al., 2012) Brassington& Pettitt (2000)
Perceives Usefulness	Using ACLEDA Mobile app is beneficial in financial transaction. Using ACLEDA Mobile app saves time and cost. Using ACLEDA Mobile app is useful.	Davis, 1989
Perceived Ease of Use	ACLEDA mobile app is easy to use. ACLEDA mobile app can be accessed everywhere. ACLEDA mobile app can be flexible to use.	(Guriting & Oly Ndubisi, 2006) Davis, 1989
Intention to use	I plan to use of mobile banking technology for my business. I prefer to use mobile banking application for payment. I strongly recommend my family to use ACLEDA Mobile app. I am willing to use ACLEDA Mobile app.	Fogarty and Rose, (2006) Purwanto and Loisa, 2020)

3.4 Data collection

The data was collected using a survey questionnaire, which will be stored in the Google Forms. The form was mainly distributed through social media platform (Facebook, Messenger, Instagram, and Telegram). The objective of the survey is to gather information about people's subjective states and attitudes. The all categories were to determine their personal interests.

3.5 Data analysis techniques

After all the relevant statistics has been gathered, it will likely be analysed relying at the responses of the respondents. The information changed into additionally analysed the use of SPSS, or Statistical package deal for social science. The information from the Google form become exported as an Excel desk, which become then loaded into SPSS tables. to explain the degree of agreement on every annoying statement, the researchers employed ANOVA, Linear Regression, Pearson Correlation, and descriptive information, consisting of frequency, percentage, suggest, and widespread deviation.

3.6 Result to the instrument test

Before having to do the actual test on the real respondent, the pilots test must be done on reliability & dependability of the listed questionnaire. The pilot test of 20 sample was

conducted through online platforms on Cambodian. 9 constructs were put as a trail test and illustrated in the table below that the Cronbach's Alpha of each constructed was scored more than 0.7(shown in Table 2) which was classified that constructed variable and factors are reliable to be implemented in this research (Nunnally, 1994).

Table 2: Reliability of Pilot Test

No.	Item	Pilots Cronbach Alpha (n=20)
1	Advertising	0.721
2	Social media	0.733
3	Direct Marketing	0.740
4	Sale promotion	0.767
5	Public Relation	0.800
6	Perceived Usefulness	0.800
7	Perceived Ease of Use	0.747
8	Intention to Use	0.733
9	Advertising Strategy	0.783

Based on the start of evolution criteria (Armstrong, 1987), the variable becomes essential when score is higher. They questionnaire of variables were conducted in Seven scale points ranging from following.

4. Results and Discussions

The data was gathered using a quantitative method and presented in ordinal, quantitative, and numerical formats. SPSS software is used to create the results or the data sample, there were 361 replies. The respondents were given a total of 400 questionnaires. ACLEDA Bank Plc's internal clients are employees who use its products and services. Clients that are not affiliated with the bank are referred to as "external customers".

4.1 Finding on respondents 'demographic

Table 3: Demographic of Respondent

Character	Item	Frequency	Percentage
Gender	Female	165	48.96
	Male	172	51.03
Age	Under 20 years old	021	6.23
	Between 21 to 30	194	57.56
	Between 31 to 40	115	34.12
	Over 40 years old	001	0.29
Education	High School	013	3.85
	Undergraduate Degree	149	44.21
	Graduate Degree	172	51.03
	Other	003	0.89
Employment Stratus	Company Employee	144	42.72
	Government Officer	041	12.16
	Business Owner	083	24.62
	Currently Unemployed	065	19.28
	Other	004	1.18

(to be continued)

Table 3: Demographic of Respondent (continued)

Character	Item	Frequency	Percentage
Frequency	At least once a week	192	56.97
	At least once a month	100	29.67
	At least once in six months	028	8.30
	At least once a year	009	2.67
	Other	008	2.37

According to the data. There were 172 males and 165 females among the 337 valid respondents. The replies reveal that the majority of the participants in this survey were between the ages of 21 and 30, with a response rate of 57.56 percent. Another sample distribution shows that 51.03% of total participants have a graduate degree. 42.72% of the mobile banking users were company employees, Regarding the frequency of use, most of the respondents would use the mobile banking ACLEDA Mobile App at least once a week, with a 56.97% response rate, a huge difference from other respondents who preferred using the mobile banking app once a month with a 29.67% response rate.

4.2 Presentation of key finding

4.2.1 Analysis of agreement level

Table 4: Level of Agreement

Variable	Minimum	Maximum	Mean	Std. Deviation	Level of Agreement
Advertising	2.33	7.00	5.5312	0.88441	Agree
Social Media	2.33	7.00	5.5430	0.89469	Agree
Direct Market	2.00	7.00	5.5351	0.86841	Agree
Sale Promotion	2.33	7.00	5.6597	0.85000	Agree
Public Relation	2.00	7.00	5.8625	1.00719	Agree
Perceived Usefulness	2.00	7.00	5.6706	0.84240	Agree
Perceived Ease of Use	1.67	7.00	5.7260	0.84541	Agree
Intention Use	2.75	7.00	5.7315	0.78290	Agree

The data indicated in the table 4 illustrated the level of agreement of each variable in this research. Since this research used the 7-point rating scale, the mean explained the effective level of each factor from the respondents. As far as the result has shown, 7 variables were stated as "Agree".

4.2.2 Reliability test

The highest is 0.893 for Perceive Usefulness, and SP which indicated that Sale promotion of each variable statistically reliable. The combination of all variables, as shown in Table 5, Statically exceeds 0.886 which is considered excellent.

Table 5: Reliability Test of Cronbach's Alpha on all variables

N°	Item	Cronbach Alpha (n=337)
1.	All Variables	0.886

4.2.3 Linear regression analysis

For Hypothesis Testing in Linear Regression Analysis, the specific research model, independent variables, and dependent variables are used.

4.2.3.1 Significant test of regression model

Table 6 showcased the ANOVA results of the impact of promotion strategies on the adoption of mobile banking.

Table 6: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	159.067	7	22.724	159.476	0.000[b]
Residual	46.879	329	0.142		
Total	205.947	336			

a. Dependent Variable: IU

b. Predictors: (Constant), PEU, DM, PR, AD, SP, PE, SM

Advertising, social media and other variables show a statistically significant relationship with intention to use (dependent variable) - but the p-value associated with this F value is very small (0.000). So, the group of independent variables included advertising, direct marketing, sale promotion, public relation, perceived usefulness, and perceived ease of use are not statistically significant.

4.2.3.2 First block of regression analysis

Table 7: Model Summary of DM, PR, AD, SP, SM,

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.835[a]	0.696	0.690	0.46906

Results show that the model explains R=0.835 while R square= 0.696, adjusted to be 0.690 and the standard error of the estimate equals to 0.46906. Table 7 shows the coefficients of determination (R2 values) and adjusted R2 of the endogen constructs in the structural model.

Table 8: Regression Analysis on PS toward PE

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.004	.296		6.759	.000
	AD	.303	.048	.321	6.303	.000
	SM	.202	.072	.225	2.812	.005
	DM	-.226	.073	-.248	-3.106	.002
	SP	.114	.064	.120	1.797	.073
	PR	.251	.043	.303	5.884	.000

Dependent Variable: PE

Advertising, direct marketing and public relations have significant impact on customers' attitudes toward mobile banking. Customers like mobile banking and the convenience of using a new technology application, according to this data. Users see and accept mobile banking as a more convenient and faster means to conduct financial transactions.

4.2.3.3 Second block of regression analysis

The following table is the result of regression analysis for the relationship between PE and PEU toward intention of using mobile banking.

Table 9: Model Summary of PU and PEU toward Intention to use

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874[a]	.764	.763	.38128

a. Predictors: (Constant), PEU, PE

Table 9 shows the coefficients of determination (R2 values= 0.764) and adjusted R Square equals to 0.763 of the endogen constructs in the structural model. R Values appears to be 0.874 and standard error of the estimate equals to be 0.38128. Thus, facilitating conditions has 38.128% of consumers' perceived behavioural control toward mobile banking adoption.

Table 10: Regression Analysis of PU and PEU toward Intention

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.838	.151		5.568	.000
	PE	.333	.039	.358	8.517	.000
	PEU	.525	.039	.567	13.490	.000

a. Dependent Variable: IU

This result has a significant value of (PE= 0.000) and T = 8.517, indicating a positive point of facilitating conditions (=0.358). The ease condition is also given a large value of PEU (0.000) and a T of 13.490. It demonstrates that the disease has a considerable impact on behavioural control perception. The regression study also revealed that facilitating conditions had a positive impact on consumer perceived behavioural control toward mobile banking (=0.567) at a level significant (0.000). As a result, the researcher opts for the alternative hypothesis while dismissing the null hypothesis. Customers are satisfied with mobile banking since it makes their lifestyle more convenient and allows them to better manage their finances.

4.2.4 Hypotheses testing

The table 11 showcase the summary result from the tested hypotheses in the regression analysis that indicated the supported results of all hypotheses as significant levels.

Table 11: Hypotheses Result

Hypotheses	Sig.	Results
H_{1A}: Advertising is an effective technique to promote perceived usefulness for adopting mobile banking.	0.00	Supported
H_{1B}: Social media is an effective technique to promote perceived usefulness for adopting mobile banking.	0.00	Supported
H_{1C}: Sale Promotion is an effective technique to promote perceived usefulness for adopting mobile banking.	0.07	Unsupported

(continued)

Table 11: Hypotheses Result(continued)

Hypotheses	Sig.	Results
H_{1D}: Direct marketing is an effective technique to promote perceived usefulness for adopting mobile banking.	0.00	Supported
H_{1E}: Public relation is an effective technique to promote perceived usefulness for adopting mobile banking.	0.00	Supported
H_2: Perceive Usefulness has a positive influence his/her attitude toward an intention to use ACLEDA Mobile application.	0.00	Supported
H_3: Perceive Ease of Use has a positive influence his/her attitude toward an intention to use ACLEDA Mobile application.	0.00	Supported

4.3 Discussion of results

The study has created a permission model which demonstrate the applicability of advertising, social media, sale promotion, public relation, direct marketing (promotion strategy's tactic) and Technology Acceptant Model on factor motivated adoption ACLEDA Mobile app. The outcome of the study is significant the model in insuring customer intention to use ACLEDA Mobile app.

The finding highlighted the three-significance faceted which influence customer's attitude toward an intention to use ACLEDA Mobile app. This result is satisfactory answered the research question and explained to the research objective.

4.3.1 Factors inspiring customer 's intention to use ACLEDA Mobile

The perceived utility and simplicity of utilizing the ACLEDA Mobile application influenced customers' intents. The promotion strategy's techniques (advertising, social media, sales promotion, public relations, and direct marketing) led customers to use mobile banking, according to a study.

4.3.2 Perceive usefulness

The researcher found out that a positive effect on intention of customer of using ACLEDA Mobile app. There is not much difference compared to a previous study. Perceive Usefulness has recognized as the most significant factor that influence customer's attitude about using the app.

4.3.3 Perceive ease of use

The perceived ease of use of the ACLEDA Mobile app was discovered as a significant factor influencing the customer's attitude toward using it. As a result of the app's versatility and understand ability, consumers thought it was user-friendly. (Raza et al., 2017).

4.3.4 Promotion strategy 's tactics (advertising, social media, sale promotion, public relation, direct marketing) on perceives usefulness

Advertising, social media, public relations, sale promotion, and direct market had an effective tactic on customer intention when using the ACLEDA Mobile application. The study also discovered that a good promotion technique is to successfully promote the benefits of using the mobile app for mobile banking.

5. Conclusion and Recommendation

5.1 Conclusion

The goal of this research project is to identify and evaluate the elements that influence the impact of promotion methods on mobile banking adoption. The purpose of this research is to see if conducting and analysing a case study using the ACLEDA Mobile app is feasible. The existing literature and models from worldwide researchers are restricted in this subject, resulting in this study using two variables of the TAM model with five types of external variables to spur additional research and discussion among Cambodian academics. This specific research implemented a Technology Acceptance Model (TAM) using perceived usefulness and perceived ease of use, which directly pointed to the intention of using the technology with the addition of five types of external factors (promotion strategy).

5.2 Research service providers and limitations

The findings of the study raised some doubts about our method. Regardless of whether the mobile platform is appropriate for the user's lifestyle, the platform should be used. Their fear persisted as a result of previous experiences, characteristics, and news.

5.3 Theoretical implications

By incorporating theories from the associated literature, the study adds to and enhances our knowledge of the most essential variables encouraging customers to utilize ACLEDA Mobile app services.

5.4 Research recommendations

The TAM model has been used to accept e-commerce acceptance by Cambodian researchers, which was considered limited in resources and literature, this research also focused on the specific group of the samples without including the elderly, so the results did not cover all aspects of the samples. In addition to not including the elderly in the survey, this research only focused on a few extended variables besides the technology acceptance model, such as advertising, social media, public relations, sales promotion, and direct marketing. Firstly, researchers should be done on promotion strategies for mobile banking, with PE and PEU having a direct impact on Intention to Use. Also, need to be conducted to test other aspects of variables that range with other existing literature that will be helpful in seeking an answer to the intention of adopting a particular technology. Moreover, COVID-19 pandemic also reduced the collecting data period. The researcher was unable to go to several locations to collect data. The information was acquired mostly through social media networks, utilizing random samples and basic techniques.

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Factors Hindering University Students to Adopt ACLEDA Mobile

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ABSTRACT

The recent mobile revolution, combined with technological advancements, has allowed the world population to experience innovations of mobile phones to access financial information, banking services, and employing financial transactions, so-called mobile banking. In Cambodia, mobile banking usage has increased for years through the innovation of mobile applications from banks to MFIs. However, the behavioral intention to adopt a mobile banking system among Cambodian users remains little understood. Hence, the study aims to identify and explore the factors hindering the users' intentions to use mobile banking among university students in Cambodia. To describe the hindering factors, the study uses the Theory of Innovation Resistance, which focuses on 5 main barriers such as usage, value, risk, tradition, and image. A survey is used with 129 participants who had experienced using mobile banking in Phnom Penh. The results show that 5 barriers of TIR are not the main reasons that hinder consumers to adopt mobile banking. Through a qualitative insight, the study also indicated the three main reasons that university students do not use ACLEDA Mobile, namely a lack of retail shop partners, subjective norm (family or friend), and brand loyalty (stick to the existing brand of mobile banking).

Keywords: Theory Innovation Resistance(TIR), Mobile Banking, ACLEDA Mobile

1. Introduction

1.1 Background of the study

The improvements in technology and particularly mobile phones have revolutionized financial services provision and introduced new models in the banking sector. One of the newest breakthroughs of mobile phones is that the possibility for users to process access to financial information, banking services and implement money transactions through the mobile device, known as mobile financial services (Seng & Lay, 2018). Mobile financial services have seen in the most of the poor and low-income earners expand their financial services which are quite cheap, secure, reliable, and accessible (Gautier et al., 2020). The adoption of mobile banking presents a catalyst through which banking institutions could invest in systems aimed toward facilitating the method. Many authors acknowledge that mobile banking has been launched quickly in some developing countries with a high penetration rate of mobile phones within the market (Donner, 2007). As cited in Yang et al., (2021) high growth in mobile device usage and penetration has brought a positive impact on the publicity of mobile commerce utilization (Chen & Adams, 2005). The development of mobile service in Cambodia pushes banks and MFIs to build up their mobile financial app, which provides customers with a variety of accessibility to financial services such as check account balance, transfer, payment, top-up, and statement report.

1.2 Statement of the problem

To develop the application patterns for new technology, it is important to study how willing people are to try that new mobile service and then develop it to meet that willing. A preliminary survey with 30 students from various universities found that the use of ACLEDA Mobile is at a limited level among adults at higher education institution. This result contradicts with the work of (Em, Norng & Thab, 2021), which found that most consumers use ACLEDA Mobile.

1.3 Research objective

The study aims to explore the factors hindering the users towards the intentions to adopt ACLEDA Mobile among university students in Phnom Penh.

1.4 Research question

What factors hindering university students to adopt ACLEDA Mobile?

1.5 Significance of the study

This hardworking study would significantly benefit ACLEDA Mobile app developers as same as banks and MFIs. From key factors and comments of respondents, mobile app developers could use those perceptions to develop their platform to be higher quality, more convenient, and secure to meet consumer aspiration and lead to more use of ACLEDA Mobile. Last but not least, this article would become a useful source for future research.

2. Literature Review

2.1 Overview of the key concept on mobile banking

Mobile banking was accomplished primarily through text or SMS before the introduction and enable of mobile web services in 1999 which is known as SMS banking. At the time, SMS banking was the most popular banking product till 2010 it was developed with the advancement of smartphones with IOS and Android operating systems then become mobile banking. European banks were on the borderline of mobile banking service offering, by using the mobile web via WAP support, clients were able to download the banking apps onto their smartphones with more sophisticated interfaces and improved transactional abilities (*Mobile Banking - Overview, History, Types, Importance*, n.d.). As popularity and blowout of a mobile banking application, it was defined by different papers or researchers. Laukkanen & Kiviniemi (2010) define mobile banking as "an interaction through which a customer is connected to a bank via a mobile device" (p.373). In addition, mobile banking is a services and perform financial transactions (Anderson, 2010). Mobile banking is defined as "the financial services delivered via mobile networks and performed on a mobile phone" (Alampay & Moshi, 2018, p.4). This service provides much convenience and promptness to the banks' customers along with cost and time saving. Moreover, it enables the customer to access various transactions such as requesting their account balance (which is the latest transactions in their accounts), transferring funds between accounts, buying and selling orders for the stock exchange, receiving portfolio, and price information (Laukkanen & Lauronen, 2005).

2.2 Barriers to adopt mobile banking

Although mobile banking adoption has been strong growth over the earlier couple of years, it is still in its infancy. With all the laudable benefits of mobile banking, it is yet to realize larger-scale adoption, especially within the emerging economies. Several studies have analyzed the factors that encourage the use of these technologies by raising the opportunity that some of them may act as barriers. Investigation of those barriers has usually originated from what is known as consumer resistance to innovation (Ram & Sheth, 1989). The theory of innovation resistance (TIR) aims to clarify why customers resist innovations based on 5 main barriers such as usage, value, risk, tradition, and image. Barati & Mohammadi (2009) explain mobile services are innovation and each innovation comes with the resistance of customers; furthermore, factors that caused the present innovation must be considered before the acceptance model was built and if resistance to mobile banking is enhanced, intention to use this service is declined.

2.3 Conceptual model and operational definition

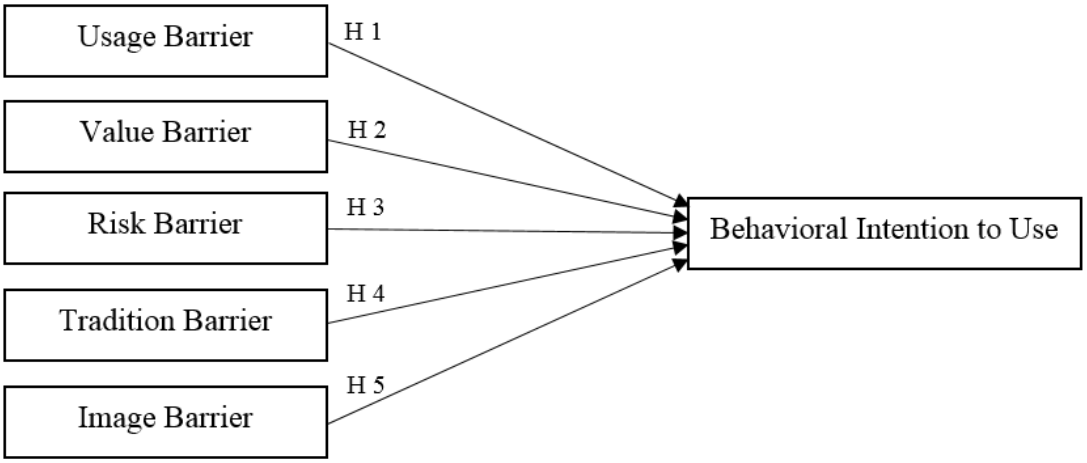

Figure 1: Conceptual Model of TIR Adoption on the study of intention to use ACLEDA Mobile

This study proposed the Theory of Innovation Resistance (TIR) as conceptual framework to understand customers' intention to adopt mobile banking. Five main barriers, such as usage, value, risk, tradition, and image have directly impacts on behavioral intention. And operational definition of each factor was listed below:

- Usage Barrier: this factor assumes that "the person acts in a very certain automatic way that creates him/her hold to already established behaviours. Therefore, it can be linkened to a routine, a habit, or a pattern of use"(Laukkanen et al., 2008)
- Value Barrier: the value barrier appears "after we consider the performance of innovation in relevance its price and to existing alternatives. If the performance is not high enough, people will have no incentive to adopt it"(Borraz-Mora et al., 2017)
- Risk Barrier: refers to "the uncertainty and side effects associated with the adoption of any innovation. About online activities, such risks are usually more related to financial aspects"(Laukkanen, 2016)
- Tradition Barrier: refers to "the obstacles posed by any innovation if that innovation brings changes in a user's existing routine, culture, and behaviour"(El Badrawy et al., 2012)
- Image Barrier: "deals with a negative impression of the innovation emerging from the perceived level of complexity associated with its usage or its origin" (Lian & Yen, 2013)
- Behavioural Intention: refers to "the motivational factors that influence a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed"(Ajzen, 1991)

Overall, this model was established to figure out the factors that hinder customers' intentions to adopt mobile banking by appointed 5 barriers as independent variable and behavioral intention to use as dependent variable.

2.4 Summary of research hypotheses

According to proposed conceptual model, the study had formulated the following hypotheses:

- H1: Usage barrier has a negative effect on behavioral intention to use ACLEDA Mobile.
- H2: Value barrier has a negative effect on behavioral intention to use ACLEDA Mobile.
- H3: Risk barrier has a negative effect on behavioral intention to use ACLEDA Mobile.
- H4: Tradition barrier has a negative effect on behavioral intention to use ACLEDA Mobile.
- H5: Image barrier has a negative effect on behavioral intention to use ACLEDA Mobile.

3. Research Methodology

3.1 Research design

This research study was conducted in survey method with a qualitative insight on the reasons for not adoption ACLEDA Mobile since it focused on a group of individuals who had mobile devices (smartphone) and internet connections to penetrate the mobile banking. Firstly, a statistical study was employed by analyzing TIR. After that, previous studies of related literature were reviewed to identify the issues and get an in-depth understanding on the areas of mobile banking. Later, a logistics plan had been developed with the alignment of the research, followed by data collection design, sampling design, and measurement questions.

3.2 Research site

This study was conducted in Phnom Penh City by focusing on students who experienced in using mobile banking and the site was selected because of the better internet accessibility.

3.3 Target population and sample size

The researcher targeted university students whose occupational status was company employee, business owner, government officer, self-employed, currently unemployed, and who had experience in adopting mobile banking. Furthermore, this study selected 129 as sample size. Green (1991) "determined that $N \geq 50 + 8m$ is appropriate" which N stands for sample size and " m " refer to independent variables. Thus, this sample selection is appropriate and best practice of regression.

3.4 Research instruments

The data were collected through the survey questionnaire, designed with three sections. The first section focused on the personal data of the adopters, and the second section focused on measurement of the six variables with seven likert scale. The last section focused on a qualitative insights of the reasons why ACLEDA Mobile was not adopted.

Table 1: Summary of Measurement Constructs

Construct	Item	References
Usage Barrier	UB1: Using ACLEDA Mobile is inconsistent with the current routine. UB2: Using ACLEDA Mobile is inconvenient in some situations. UB3: It is complex to interact with ACLEDA Mobile.	Laukkanen (2016)
Value Barrier	VB1: Using ACLEDA Mobile is costly. VB2: I cannot control my financial matters by myself when using app.	Laukkanen (2016)
Risk Barrier	RB1: I would not feel safe providing personal privacy information over the ACLEDA Mobile. RB2: I'm worried to use ACLEDA Mobile because other people may be able to access my account. RB3: When transferring money using ACLEDA Mobile, I am afraid that I will lose my money.	Lee (2009)
Tradition Barrier	TB1: I prefer using my existing mobile app rather than changing to ACLEDA Mobile. TB2: I think it is difficult to get my problem solved by the ACLEDA Mobile service provider.	Laukkanen (2016)
Image Barrier	IB1: I am facing difficulties in using ACLEDA Mobile. IB2: ACLEDA Mobile is not popular among adults.	Laukkanen (2016)
Behavioral Intention	BI1: I intend to use ACLEDA Mobile for my banking needs. BI2: I intend to use ACLEDA Mobile whenever I purchase the product online and offline. BI3: I will strongly recommend others to use ACLEDA Mobile. BI4: I intend to use ACLEDA Mobile than any other app.	Lee (2009), Venkatesh and Davis (2000)

3.5 Data collection

This study used mainly the primary data, which obtained from the response of the students through the survey questionnaire. Due to the pandemic of COVID-19, the questionnaire was primarily distributed through social media (Facebook, Telegram, Instagram...). The respondents were considered trusted sources who could give reliable and credible responses which would be useful for data analysis.

3.6 Data analysis

Practically, the data set stored in the Google Form was exported as an excel file (*.xlsx) and imported into the SPSS for running the analysis. Adopting descriptive and inferential analysis, the study analyzed the mean, frequency, percentage, and standard deviation to examine levels of agreement, and then the study analyzed Cronbach alpha to check the internet consistency, the association of each variable, and Linear Regression analysis.

3.7 Reliability test

Table 2 illustrated the Cronbach's Alpha of 4 constructs scored more than 0.7 in both pilot test (n=30) and the actual result (n=129), which means that the constructed variables are reliable to be implemented in this research (Nunnally, 1994). Therefore, the constructs are good to be used to study on customers' intention to adopt ACLEDA Mobile.

Table 2: Reliability Test of Cronbach's Alpha on Each Variable

No	Item	n= 30	n=129
1	Usage Barrier	0.894	0.805
2	Value Barrier	0.886	0.818
3	Risk Barrier	0.924	0.891
4	Tradition Barrier	0.564	0.627
5	Image Barrier	0.662	0.616
6	Behavioral Intention	0.877	0.848

4. Data findings and discussion

4.1 Data findings

4.1.1 Demographic factors

The results of demographic factors illustrated as below table.

Table 3: Demographic Respondents

Item	Categories(N=129)	Frequency	Percentage
Gender	Female	84	65.11%
	Male	45	34.89%
Age	16-25 years old	124	96.12%
	26-35 years old	5	3.88%
	36-45 years old	0	0.00%
	Over 45 years old	0	0.00%
University	AIB	51	39.53%
	RUPP	12	9.30%
	Norton University	16	12.40%
	RULE	7	5.43%
	Cam Ed	8	6.02%
	Other	35	27.13%
Occupation	Company Employee	58	44.96%
	Government Officer	1	0.78%
	Business Owner	3	2.33%
	Currently Unemployed	31	24.03%
	Self-employed(freelance)	11	8.53%
	Other	25	19.38%

(continued)

Table 3: Demographic Respondents (continued)

Item	Categories(N=129)	Frequency	Percentage
Frequency	Everyday	48	37.21%
	3 to 4 days a week	35	27.13%
	Once a week	19	14.73%
	Once a month	17	13.18%
	Once in every six months	10	7.75%

4.1.2 Analysis of agreement level

Armstrong, (1987) stated of evaluation criteria that "the variable becomes essential when the score is higher". Thus, the questionnaires of variables were conducted on a seven-point scale as follows:

- Strongly Disagree ranges from 1.00 to 1.85
- Disagree ranges from 1.86 to 2.71
- Somewhat Disagree ranges from 2.72 to 3.57
- Neutral ranges from 3.58 to 4.42
- Somewhat Agree ranges from 4.43 to 5.28
- Agree ranges from 5.29 to 6.14
- Strongly Agree ranges from 6.15 to 7.00

The result has shown in table 4, three variables were stated as " Neutral " for UB, TB, and IMB, as " Somewhat disagree " for VB and RB, and as " Agree " for BI.

Table 4: Level of Agreement of Hindering Factors

	Variable	Min	Max	Mean	SD	Level of Agreement
1.	Usage Barrier (UB)	1.33	7.00	3.9841	1.38970	Neutral
2.	Value Barrier (VB)	1.00	7.00	3.5620	1.71278	Somewhat Disagree
3.	Risk Barrier (RB)	1.00	7.00	3.2403	1.68993	Somewhat Disagree
4.	Tradition Barrier (TB)	1.00	7.00	4.1434	1.47399	Neutral
5.	Image Barrier (IMB)	1.00	7.00	3.8333	1.54911	Neutral
6.	Behavioral Intention (BI)	2.25	7.00	5.8295	0.88608	Agree

**Note: Somewhat Disagree: 2.72-3.57, Neutral: 3.58 – 4.42, Somewhat Agree: 4.43-5.28, Agree: 5.29 – 6.14, Strongly Agree: 6.15 – 7.00*

4.1.3 Correlation analysis

This research brought 6 constructs into correlation analysis which was used to test correlation level and validity between all constructs. The closer of number in each variable reaches nearly +1, the stronger the correlations between variables (Pearson, 1926). Table 5 showcased that five variables are significantly correlated at the significant level of 0.01 (2-tailed), except BI which result illustrated the insignificant correlations.

Table 5: Pearson Correlation Matrix

	UB	VB	RB	TB	IMB	BI
UB	1.00					
VB	0.658**	1.00				
RB	0.471**	0.763**	1.00			
TB	0.649**	0.670**	0.560**	1.00		
IMB	0.592**	0.633**	0.600**	0.595**	1.00	
BI	0.137	0.118	0.095	0.072	0.025	1.00

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

4.1.4 Linear regression analysis

Linear regression analysis is used to test hypotheses related to the research model between both independent variables and dependent variable (Khanchel, 2019). Additionally, the ANOVA (Analysis of variance) was used to test the adjust R square to check the fitness of the multiple regression models. The F test was employed to determine the significant of the Model; and t test was used to analyze the significant effect independent variable on dependent variable (Ken Black, 2010; Em et al., 2021).

To determine the impact of innovation resistance on behavioural intention, all of the variables were assigned as independent variables and Behavioural Intention (BI) was run as dependent variable. The result shows that R=0.176, R squared=0.031, and significant the p-value of the F distribution is 0.560 which is beyond 0.05. This means that the model did not statistically fit in the study. Furthermore, Table 6 shows that all independent variables, namely Usage Barrier (UB), Value Barrier (VB), Risk Barrier (RB), Traditional Barrier (TB), and Image Barrier (IMB) did not have a positive significant on Behavioural Intention (BI). Therefore, the study rejected all five hypotheses.

Table 6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.561	0.266		20.899	0.000
	UB	0.105	0.084	0.164	1.246	0.215
	VB	0.037	0.086	0.071	0.425	0.671
	RB	0.034	0.075	0.066	0.457	0.648
	TB	(0.024)	0.079	(0.040)	(0.301)	0.764
	IMB	(0.076)	0.073	(0.133)	(1.051)	0.295

a. Dependent Variable: BI

4.2 Discussion

The study investigated consumers' innovation resistance towards the use of ACLEDA Mobile among university students in Phnom Penh, Cambodia. The study proposes the conceptual model based on the Theory of Innovation Resistance (TIR) on the behavioral intention to adopt ACLEDA Mobile. However, the study rejects all hypotheses; in other words, the university students are not willing to use ACLEDA Mobile, not because of the innovative resistance, namely usage, value, risk, tradition, and imag barrier. The result of H1, H2, and

H3 contradicts to the study of Moorthy et al., (2017) and Oktavianus et al., (2017), which prove the impact of UB, VB, and RB on BI. Nonetheless, the result of H4 and H5 are in line with (Gupta and Arora, 2017; Laukkanen, 2016; Moorthy et al., 2017), which do not support the influence of TB and IMB on BI.

To further understand the reasons why university students do not adopt ACLEDA Mobile, an open question has been employed, and the result of Table 7 shows that among 129 respondents who do not use ACLEDA Mobile, 36.43% of them stress that some shops or suppliers do not use ACLEDA Mobile as payment method. Another 34.88% of them state that their family or friends do not use ACLEDA Mobile. Additionally, 24.81% of them prefer using the existing mobile banking app. Finally, 3.105% of the university students do not use ACLEDA Mobile because it is costly. They may refer to the annual charge fee, and only one respondent, among the 129 students, states *"I don't trust on ACLEDA Mobile"*.

Therefore, the university students are not resistant to the adoption of the new innovation. Most users found it difficult to make any payments through ACLEDA Mobile due to the lack of retail partners such as shop vendors or suppliers. Peer influence is another reason that cause them not to adopt ACLEDA Mobile. The result indicates that their family or friends do not use this app so there is no reason for them to use it as well. The final main reason is that they do not want to change their existing app because they are already familiar with it. Cost and trust are not the main reasons that cause the university students not to adopt ACLEDA Mobile.

Table 7: Most Influent Reason That Hinder Users Adopt ACLEDA Mobile

Reason	Frequency	Percentage
Some shops or suppliers do not use ACLEDA Mobile as the payment method	47	36.43%
My family or friends do not use ACLEDA Mobile	45	34.88%
I prefer to use an existing mobile banking app	32	24.81%
Using ACLEDA Mobile is costly	4	3.10%
I do not trust on ACLEDA Mobile	1	0.78%

5. Conclusion and implication of the study

5.1 Conclusion

This study attempts to identify the factors hindering the users' intention to adopt ACLEDA Mobile by employing the Theory of Innovation Resistance (TIR) and a qualitative insight. The study uses survey questionnaire in order to collect primary data from 129 university students who are experiencing using mobile banking. After analyzing the data quantitatively, the study found Usage Barrier (UB), Value Barrier (VB), Risk Barrier (RB), Traditional Barrier (TB), or Image Barrier (IMB) do not have a negative significant effect on the behavioral intention to adopt ACLEDA Mobile. Through a qualitative insight, the study also indicated the three main reasons that university students do not use ACLEDA Mobile, namely a lack of retail shop partners, subjective norm (family or friend), and brand loyalty (stick to the existing brand of mobile banking).

5.2 Implication of the study

Theoretical implication

The study brings several insights into the Theory of Innovation Resistance (TIR) toward the use of mobile banking, namely ACLEDA Mobile. The five barriers such as UB, VB, RB, TB, and IMB do not predict the behavioral intention of the university students to adopt ACLEDA Mobile. This mean that they, whose age between 16 to 35, are not resistant to the adoption of technological innovation. Cambodian young adults are the early adopters (13.5%) and early majority (34%), stated in the Diffusion of Innovation Theory of Everett Rogers. The study suggests not to employ TIR in the analysis of the behavior of the young adults in adopting mobile banking (ACLEDA Mobile) in Cambodia. TIR can be applied in order to study the behavior of adults and elderly in adopting mobile banking.

Practical implication

Even though TIR are not the predictors of the behavioral intention of the university students to adopt ACLEDA Mobile, there are three main reasons indicated earlier should be taken into account. Decision makers in marketing field should integrate these reasons into their marketing strategies. They should make partnership with distribution channels such retail shops, shop vendors, express marts, shopping malls, and traditional markets (Psar). They should also touch the individual users such as households. The sale agents should encourage individual household to use ACLEDA Mobile in Phnom Penh city, towns and urbans in each province due to subjective norm. Last but not least, there should be a change agent that attracts the adopters of existing mobile banking to turn using ACLEDA Mobile. This change agent can be the network of idols or celebrities.

5.3 Limitations and further research

This study employs only TIR on the analysis of the behavior intention of university students to adopt ACLEDA Mobile in Phnom Penh. There are certain limitations such other target respondents, other mobile banking brands, and location; therefore, this study suggest the next researchers to fill in the above gap.

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Factors Influencing Students' Major Choice Intention: A Case Study of Finance and Banking Major at AIB

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ABSTRACT

In the last few decades, the number of undergraduates who choose the major of Finance and Banking has remarkably increased at ACLEDA Institute of Business (AIB). To find out why there is a high enrolment rate in this major, it is important to investigate students' major choice intention. Hence, the study aims to identify the factors influencing students' choice of finance and banking major at AIB. The study has adapted a model from Theory of Reason Action with additional variables such as perception of major, perception of personal fit, constraints, apprenticeship, and student support service. Then, a quantitative approach has been employed using questionnaires for the data collection. The questionnaires are distributed to 300 AIB students as the participants and 200 of them have returned the questionnaires, accounting for about 67 percent. The results show that only three hypotheses have been supported. The findings from this research provide some implications for future researchers and literature.

Keywords: Theory of Reason Action (TRA), Major choice Intention, Finance and Banking, Multiple Regression

1. Introduction

1.1 Background of the study

Major selection requires a careful and significant consideration to make sure that our dream career can be realized. The selection has posed a concern not only to policymakers but also educators, firms, especially students and their parents since it could affect the country's economy and their career lives respectively. During this decision-making process, a number of factors, namely the student's environment, personality, perception, and expectation, may determine how students choose their majors at universities.

There are many fields available in the undergraduate programs at universities. Among them, Finance and Banking has become a popular one, which fits well with job market demands in Cambodia because of the banking sector and the rapid growth of financial system. Based on its successful long-standing experiences in banking operation, ACLEDA Bank Plc, one of the leading commercial banks in Cambodia, has started a high education institution, nowadays known as ACLEDA Institute of Business (AIB). AIB was recognized by the Royal Government of Cambodia through a sub-decree No 13. dated Jan 25, 2016, as a private higher education institution, transformed from ACLEDA Training Center (ATC), one of the ACLEDA Bank Plc's subsidiary companies. It offers higher education degree programs such as associate's, bachelor's, and master's), internal and external training programs to students, ACLEDA's staff, and local and international external trainees. Many fields are available at AIB such as (1) Finance and Banking, (2) Accounting, (3) International Business, (4) Risk Management and Insurance, (5) Supply Chain Management and Logistics, (6) English for Translation and interpreting, (7) English for Business Communication, (8) Teaching English as Foreign Language, (9) FINTECH, (10) Business Information Technology and (11) Computer Science and Engineering.

1.2 Research problem

Among all the majors available at AIB, Finance and Banking have appeared the most popular major among the students due to its highest enrolment rate over the last few years. It has remained questionable as to what influences the students' decisions to choose this major at AIB. Meanwhile, although many studies have been conducted to examine this issue in detail, there have remained limited studies in the Cambodian context and there is even none at AIB, which necessitates the investigation of this phenomenon at AIB to seek insights into this issue.

1.3 Research objectives

This study aims to investigate the factors influencing students' major choice intention at AIB with the focus on Finance and Banking Major.

1.4 Research questions

To reach the above research objectives, the researchers employ research question of:

"What factors influence *students' major choice of Finance and Banking at AIB?"*

1.5 Significance of the study

The findings of the current study may provide some insights into the factors influencing students' major choice intention and it would benefit AIB directly, especially management team, and marketing manager. They can use this study to set up and improve their promotional strategies and specially design their courses to meet the students' satisfaction. Others HEIs can also use the findings for their marketing improvement. Meanwhile, this study would become a useful source for further study.

2. Literature Review

2.1 Overview of Finance and Banking major

Finance is a field involved with the investment of assets and liabilities (known as elements of the balance statement) over space and time, often under conditions of risks or uncertainties. Moreover, it can also be defined as the science of money management through pricing the assets based on risk levels, fundamental values, and their expected rates of return. Furthermore, it can be broken into three sub-categories: public finance, corporate finance, and personal finance (Nair et al., 2013). Additionally, banking is the business processes or activities of a bank which is a commercial or government institution that offers financial services that include accepting savings, lending money, leasing properties to needy people, paying for cheques, providing mortgage facilities, acting on to the standing orders, statement of instructions, providing safety locker facilities for valuable things, providing overdraft facilities to current account holders, acting as institutional investors in financial markets, issuing letters of credit in the business of import and export, acting as a money changer, issuing travellers' cheques, etc. are some of the activities carried out by modern banks in the banking industry. Nowadays, banking can be done via the internet, which is called online/ electronic/digital banking. So, these 2 terms seem work relatedly and be an interesting major.

The financial sector plays an important role in promoting economic growth and inclusiveness through facilitating savings and investments and fostering the efficient use of financial resources (Estrada et al., 2010). Over the periods of implementation of the last update of law, regulation, and Prakas compilation applied to the banks and financial institutions since 2011, the financial system has the notable progress. The banking and microfinance sector have been growing significantly in the terms of scope and scale. The advancement of financial infrastructure including continued modernization of payment systems, improved legal and regulatory framework, governance, transparency, and security network in the sector also contributed substantially to the efficient and secured functioning of the financial system. Meanwhile, the development of the financial sector also challenges that require resolution and additional strategies to align with the rapid evolution of financial markets, the evolution of international financial architecture, and momentum of local, regional, and global integration with digital banking, as well as the based past experiences and new lessons from implementation. However, this trend has been gradually changing but the aligned and professional human resources for serving this sector have still lacked and are highly demanded in our society.

As the reference to above mentions, the Bachelor's Degree in Finance and Banking is designed to the global, regional, and local latest trends of 21st-century business by reviewing and benchmarking many programs of business schools in the USA, EU, ASIA, and ASEAN accredited by AACSB, SACSCOC, ACEND, ACOTE, AAFS, ACCE, AQIP, CSWE, GCIE, IACBE, ACBSP, PAB, HLC, etc. and basing on the context of Cambodian Qualification Framework (CQF) and many stakeholders—alumni, employers, employees, students, guardians, experts, literature reviews, and researches—related to the fields to solve human resource requirement problems in the local, regional, and global marketplaces in the present and future. Furthermore, it will be updated continuously and regularly, once every cycle of the program, or based on the competent authority's requirement to meet the increasing demands for high-quality labor of our society. Moreover, the majority of decision-making to select a business major appears to be required a student to weigh up all possible outcomes, taking into consideration his or her personal preferences and the potential reactions of others to the decision.

2.2 Major choice selection

Influencing factors on student's major choice intention have been researched. Remarkably, recently research have been conducted on factors influencing students to choose business majors based on the Theory of Reasoned Action (TRA) with different approaches, for example studies of Zakaria et al., (2012); and Jackling & Keneley, (2009), used multiple regression, while Kuechler et al. (2009) use partial least square (PLS) regression. Interestingly, Sau (2014) uses confirmatory factor analysis (CFA) and structural equation modeling (SEM). As the result of those studies, student's decision making to select a particular major was influenced highly by interest, job availability and security, and compensation factors, whereas social factor was considered to be of low significant influence (Sau, 2014). However, Kuechler et al., (2009) have found that job availability, job security, job salary, curriculum difficulty, workload, personal image, are not influential factors, but social image, advisor, and family. The authors have concluded that students seem aware that employment opportunities exist. When the economic situation is healthy, there are a lot of jobs with better salary and job security in the market. The job availability, job security, and job salary were found to be of no influence. Sau (2014) has found that selecting a business major mostly requires students to weigh up all possible outcomes, taking into consideration his or her own personal preferences and the potential reactions of others to the decision. To conclude, the Theory of Reasoned Action (TRA) is appropriate to be used as a framework to investigate factors influencing student's major choice intention.

2.3 The Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA), derived from the social psychology setting, was proposed by Ajzen and Fishbein in 1980 (Otieno et al., 2016). TRA suggests that a person's behavioural intention depend on the person's attitude about the behaviour and subjective norms. If a person intends to act, it is then likely that the person will do it. TRA has been significantly applied in numerous studies that have addressed the study of human actions; for example, Lu et al. (2007) used TRA to predict the intention of shippers to use

Internet services in line shipping; Muse & Stamper, (2007) used TRA to investigate factors affecting job performance; Kuechler et al., (2009); Downey et al. (2011) used TRA to determine factors influencing the business major choice.

2.4 Conceptual framework of Theory of Reasoned Action (TRA) in study of students' major choice intention

2.4.1 Social norms and intention

Social Norm is defined as "the perceived social pressure to involve or not to involve in a behaviour" (Sau, 2014). According to the TRA, normative beliefs determine social norms, which in turn determine intention (Ajzen, 1991). Intentions are indications of how hard people are willing to try, and of how much effort they are planning to exert, to perform the behaviour (Ajzen, 1991). In recent times, parent, teacher/professor, advisor, and friend have been found as influential variables as normative belief. Zhang (2007) has found that professor and family are significantly affected on the social norm, whereas Kuechler et al. (2009) have found that advisors and family significantly influence major choice intention. However, Downey et al. (2011) have found that friend and professor were significantly influential on intention. Remarkably, most studies showed that parent, teacher/ professor, advisor and friends were found influential on major choice at different levels (Myburgh, 2005; Sugahara & Boland, 2009; Crampton et al., 2006; Strasser et al., 2002).

2.4.2 Constraints and intention

Constraints have been defined as “the factors that are assumed by researchers and perceived by individuals to inhibit or prohibit participation and enjoyment in leisure” (Jackson, 1993). Crawford and Godbey (1987) categorized constraints into intrapersonal, interpersonal, and structural constraints. Intrapersonal constraints are internal to an individual; they are mainly related to psychological states and attributes, such as lack of skills, perceived health problems, and perceptions about the availability of opportunities to participate (possibly personal intelligence). Interpersonal constraints are related to an individual's inability to find partners to participate with, whereas structural constraints are external to an individual and include factors related to lack of resources, facility, and financial problems (possibly tuition fee and duration of the study). In general, students prefer a short duration of study and low fee because it saves their time and money.

2.4.3 Perception of personal fit and intention

Perception is defined as "a process of recognition and interpretation of the stimuli from the environment through the human senses: vision, hearing, taste, smell, and touch” (Statt, 1997). Kotler and Armstrong (2010) have asserted that each individual receives and interprets the environmental stimulus in different ways due to the high subjectivity that is inherent to each one's perception. Influenced by their perceptions, students will choose a major which it fits with their interests, personality/ ability, value, and future works satisfaction.

2.4.4 Perception of major and intention

Every decision comes with outcomes. Some students chose to study this or that based on what they expected such as availability of employment, future earnings, job security, social status of the profession, personal growth and development, career flexibility and option, and self-employment opportunity. Sau (2014) shows that "students seem aware that employment opportunities exist." Students intended to study what will serve them with a high profit in the future.

2.4.5 Apprenticeship and intention

The apprenticeship program is a short-term training or on-the-job training, which sets out the knowledge, skills, and behaviours needed to take learners to the next stage of the education, training, or employment that will be developed. At AIB, students, who study in year 4 semester 1, are required to take an apprenticeship program with the skill of operation, credit, and marketing. Thus, this program provides practical experiences, enhances their knowledge and skill, and especially allows them to be well-prepared for their future workplace.

2.4.6 Student support service and intention

The student support service refers to the division, department, or unit which provides services to support students such as class preparation, job opportunities with banks or companies solving any issues or complaints of students. At AIB, the student support service is the unit of the Academic Student Office (ASO), which plays an essential role in finding and announcing job opportunities, and applying for jobs for students.

2.5 Conceptual model in the adoption of TRA on students' intention

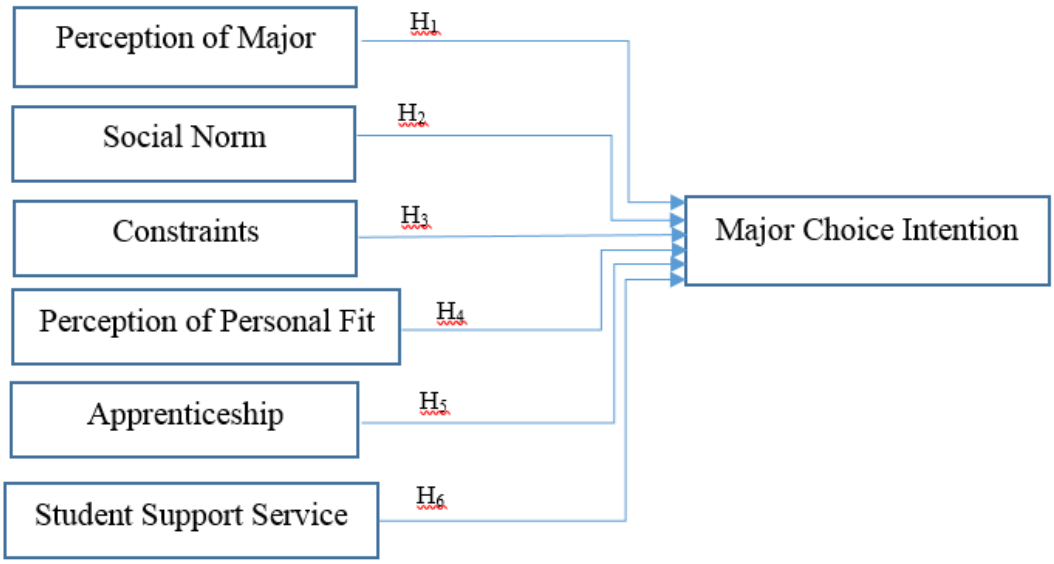

Figure 1: Conceptual Model of Structured TRA on Students' Major Choice Intention to in AIB

2.6 Hypotheses

- H1: Perception of major has a positive significant effect on students' major choice intention.
- H2: Social norm has a positive significant effect on students' major choice intention.
- H3: Constraints have a negative effect on students' major choice intention.
- H4: Perception of personal fit has a positive significant effect on students' major choice intention.
- H5: Apprenticeship has a positive significant effect on students' major choice intention.
- H6: Student support service has a positive significant effect on the students' major choice intention.

3. Research Methodology

3.1 Research design

The quantitative method was used to conduct this correlational study since it focused on a group of individuals who intended to choose a Finance and Banking major in AIB. Primarily, the researchers reviewed the related literature to gain an in-depth understanding regarding the relevant topic, contextualizing it into the regional concept. Later, a logistics plan was then developed with the alignment of the research, followed by data collection design, sampling design, and measurement questions.

3.2 Sampling and sample frame

The dataset used in this study was collected via a survey questionnaire completed by students studying at AIB, Cambodia. This study selected 200 students as a sample size. Green (1991) determined that N > 50 + 8 m is appropriate for the best practice of regression analysis, and "m" represents the number of independent variables. Thus, this sample size selection was appropriate for the study.

3.3 Research tools & measurements of constructs

The researchers collected the data through survey questionnaires which were mainly made by Microsoft Form which could categorize the data which showcase clear results from desired samples. Moreover, the 7-Likert scale was employed to minimize the errors.

Table 1: Construct Measurements of All Variables

Construct	Item	References
Perception of Major (PM)	PM1: Availability of employment PM2: Future earnings PM3: Job security PM4: Social status of the profession PM5: Personal growth and development PM6: Career flexibility and option PM7: Self-employment opportunity	Sau, (2014)

(continued)

Table 1: Construct Measurements of All Variables(continued)

Construct	Item	References
Social Norm (SN)	SN1: Parents or relatives pressure SN2: Professor's advice SN3: Guidance or career counselors SN4: Friends or peers SN5: Institute's promotion campaign SN6: University's prestige SN7: Previous experience	Sau, (2014)
Constraints(C)	C1: Tuition Fee C2: Duration of study C3: Difficult courses or qualification C4: Personal intelligence	Sau, (2014)
Perception of Personal Fit (PPF)	PPF1: This major fits my interest PPF2: Major fits my personality/ability PPF3: Major fits my values PPF4: Major fits my future work satisfaction	Sau, (2014)
Major Choice Intention (MCI)	MCI1: I intend to choose a major MCI2: I always try to understand the major choice MCI3: I make a plan for a major choice MCI4: I am willing to tell others about my major choice	Sau, (2014)
Apprenticeship (A)	A1: Provide practical experience A2: Enhance knowledge of my major A3: Improve my skill/major	
Student Support Service (SSS)	SSS1: Benefit to my study SSS2: Help find works SSS3: Solve any problems	

3.4 Data collection

The primary data focused on responses from the selected respondents. Since this research was quantitative, 300 respondents were requested to fill out the survey questionnaires through Telegram.

3.5 Data analysis

Practically, the data set stored in the Microsoft Form was exported as an excel file (*.xlsx) and imported into the SPSS for the analysis. Adopting descriptive and inferential analysis, the researcher analysed mean, frequency, percentage, and standard deviation to examine levels of agreement (descriptive), followed by Cronbach's coefficient of reliability, correlation of each variable, and Linear Regression analysis (inferential).

3.6 Reliability test (Cronbach's alpha)

As shown in table 2, Cronbach's Alpha value of all constructs scored more than 0.7 in both the pilot test (n=30) and the actual result (n=200), which indicate that the constructed

variables and factors are reliable to be implemented in this research (Nunnally, 1994). Therefore, the constructs are good to be used to acquire the students' major choice intention.

Table 2: Reliability Test of Cronbach's Alpha on Each Variable

No	Item	n= 30	n=200
1	Perception of Major (PM)	0.923	0.894
2	Social Norm (SN)	0.863	0.891
3	Constraints (C)	0.827	0.851
4	Perception of Personal Fit (PPF)	0.925	0.917
5	Major Choice Intention (MCI)	0.895	0.858
6	Apprenticeship (A)	0.939	0.869
7	Student Support Service (SSS)	0.891	0.844
	All Variables	0.953	0.908

4. Results and Discussions

4.1 Results

4.1.1 Demographic factors

For respondent hometown, 59.50% of them were from the province while 40.50% were from Phnom Penh.

Table 3: Demographic respondents

Item	Categories(N=128)	Frequency	Percentage
Gender	Female	168	84%
	Male	32	16%
Age	Equal or under 17 years old	3	1.5%
	18-19 years old	86	43%
	20-21 years old	80	40%
	22-23 years old	22	11%
	24-25 years old	6	3%
	Over 25 years old	3	1.5%
Education	Bachelor	192	96%
	Associate	6	3%
	Master	2	1%
Year of study	1	100	50%
	2	4	2%
	3	32	16%
	4	64	32%

(continued)

Table 3: Demographic respondents (continued)

Item	Categories(N=128)	Frequency	Percentage
Occupation	Currently Unemployed	138	69%
	Company Employee	42	21%
	Government Officer	2	1%
	Business Owner	9	4.5%
	Self-employed	9	4.5%
Hometown	Phnom Penh	119	59.5%
	Province	81	40.5%

4.1.2 Level of agreement

Armstrong (1987) asserts that the variable becomes essential when the score is higher as far as the evaluation criteria are concerned. The questionnaires of variables were conducted in Seven Scale points ranging from the following:

- Strongly Disagree ranges from 1.00 to 1.85
- Disagree ranges from 1.86 to 2.71
- Somewhat Disagree ranges from 2.72 to 3.57
- Neutral ranges from 3.58 to 4.42
- Somewhat Agree ranges from 4.43 to 5.28
- Agree ranges from 5.29 to 6.14
- Strongly Agree ranges from 6.15 to 7.00

As shown in Table 3, 5 variables such as Perception of Major, Perception of Personal Fit, Major Choice Intention, Apprenticeship, and Student Support Service were stated as "Agree" and the other 2 variables such as Social Norm and Constraints were stated as "Somewhat Agree".

Table 4: Level of Agreement

Variable	Minimum	Maximum	Mean	Std. Deviation	Level of Agreement
Perception of Major	1.00	7.00	5.9271	0.93464	Agree
Social Norm	1.29	7.00	4.9971	1.30774	Somewhat Agree
Constraints	1.50	7.00	5.0275	1.34332	Somewhat Agree
Perception of Personal Fit	1.50	7.00	5.4838	1.21601	Agree
Major Choice Intention	1.75	7.00	5.4937	1.03835	Agree
Apprenticeship	2.00	7.00	5.7767	0.95230	Agree
Student Support Service	1.33	7.00	5.7983	1.02285	Agree

*Note: Somewhat Agree: 4.43 – 5.28, Agree: 5.29 – 6.14, Strongly Agree: 6.15 – 7.00

4.1.3 Correlation analysis

Correlation analysis was used to test correlation level and validity between all constructs which in this research brought 7 constructs into testing. According to Pearson (1926), the correlation's values range between –1 to +1, meaning that the closer the number in each variable reaches nearly +1, the stronger the correlations are.

Table 5: Pearson Correlation Matrix

	1	2	3	4	5	6	7
1-Perception of Major	1						
2-Social Norm	0.420**	1					
3-Constraints	0.283**	0.759**	1				
4-Perception of Personal Fit	0.349**	0.662**	0.616**	1			
5-Major Choice Intention	0.448**	0.559**	0.533**	0.779**	1		
6-Apprenticeship	0.422**	0.608**	0.540**	0.754**	0.791**	1	
7-Student Support Service	0.421**	0.587**	0.592**	0.781**	0.758**	0.844**	1

Table 4 illustrates that all the variables are significantly correlated at 0.01 (2-tailed). The results also showed positive correlations between variables with the lowest of 0.283 of Constraints towards Perception of Majors and highest of 0.844 of Student Support Service towards Apprenticeship.

4.1.4 Linear regression analysis

Linear regression analysis was used to test hypotheses related to the research model between both independent variables and dependent variables (Khanchel, 2019). Additionally, the ANOVA (Analysis of Variance) was used to test the Adjust R Square to check the fitness of the multiple regression models. The F test will apply to determine the significance of the Model; and the t-test will be used to analyse the significant effect of each independent variable on a dependent variable (Em et al., 2021).

❖ Significant test of regression model

To find the overall significance of variables, F-test was deployed and let the p-value showcase the result as to whether or not it is significant. If the p-value is less than 0.05, the null hypothesis is rejected and the proposed hypothesis will be accepted. In another way, if the p-value is greater than 0.05, the null hypothesis is accepted and the proposed hypothesis will be rejected.

To discover the impact between variables, all of the variables except Major Choice Intention were assigned as independent variables and MCI was run as a dependent variable as shown in Table 5. The significance of the model can be accessed by the F statistic,

meaning that at least one of the independent variables impacts the dependent variable (MacKinnon et al., 2000).

Table 6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	154.381	6	25.730	82.527	.000[b]
	Residual	60.174	193	0.312		
	Total	214.555	199			

a. Dependent Variable: MCI

b. Predictors: (Constant), PM, SN, A, C, PPF, SSS

The result of Table 5 shows the degree of freedom between and within (6 and 193) and F value (82.527) and p-value of F(Sig.) was less than 0.05, showing that model as fully significant. Hence, the model was acceptable to study students' major choice intention in AIB. Moreover, there are at least one of the independent variables influencing Major Choice Intention (which is the dependent variable).

Table 6 illustrated the model summary including R, R Square, Adjusted R Square, and Std Error of the Estimate. This statistic indicated that the overall correlation was determined by R = 0.848. R Square equal to 0.720 is higher than Adjusted R Square of 0.711, while the standard error of the estimate appeared to be 0.55837. Thus, this result suggested that the combination of these variables made 71.1% of students' intention.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.848	.720	.711	.55837

a. Predictors: (Constant), PM, SN, A, C, PPF, SSS

❖ Regression of all variables toward MCI

As shown in Table 7, all hypotheses, PM, SN, C, PPF, A, and SSS were run as independent variables of the regression analysis, whereas the MCI was addressed as a dependent variable at a significance level. As the result, each hypothesis was described below.

Table 8: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	(0.028)	0.299		(0.095)	0.925
	PM	0.142	0.049	0.127	2.909	0.004
	SN	(0.053)	0.052	(0.067)	(1.011)	0.313
	C	0.038	0.048	0.049	0.786	0.433
	PPF	0.333	0.058	0.390	5.767	0.000
	A	0.423	0.083	0.388	5.097	0.000
	SSS	0.084	0.081	0.083	1.037	0.301

a. Dependent Variable: MCI

4.1.5 Results of hypothesis testing

The following table exhibits the summary result from the tested hypotheses within the regression analysis.

Table 9: Hypothesis Testing

Hypotheses		Significance Value	Statistical Significance
H1:	Perception of major has a positive significant effect on students' major choice intention.	0.004	Supported
H2:	Social norm has a positive significant effect on students' major choice intention.	0.313	Unsupported
H3:	Constraints have a negative effect on students' major choice intention.	0.433	Unsupported
H4:	Perception of personal fit has a positive significant effect on students' major choice intention.	0.000	Supported
H5:	Apprenticeship has a positive significant effect on students' major choice intention.	0.000	Supported
H6:	Student support service has a positive significant effect on the students' major choice intention.	0.301	Unsupported

Table 8 illustrated the results of hypotheses testing including significant value and statistical significance. As shown in table 8, 3 hypotheses were supported with significant value of 0.004, 0.000, and 0.000 representing the influences of perception of major, perception of personal fit, and apprenticeship on students' major choice intention. On the other hand, 3 hypotheses were unsupported, containing values of 0.313, 0.433, and 0.301 represented the influences of social norm, constraints, and student support service on students' major choice intention.

4.2 Discussion

The study found out that 3 hypotheses were supported and others were unsupported which were both aligned and contrasted with the study of (Sau, 2014). The result of H1 infers that students intended to study in AIB because they considered the benefits of major such as availability of employment, future earnings, job security, social status of the profession, personal growth and development, career flexibility and option, and self-employment opportunity. Otherwise, the result on hypothesis 2 showcased that social norm didn't support the students' major choice intention ($t = 1.011$, Sig. $\leqslant 0.313$) due to socials (parents, relatives, professors, guidance or career counsellors, etc.) had no influences on student' decision. Likewise, hypothesis 3 was also unsupported ($t = 0.786$, Sig. $\leqslant 0.433$), which indicating that constraints (tuition fee, duration of study, and difficulties of course) had no negative effects on students' intention. It seems that tuition fee and duration are reasonable for them. On the other hand, perception of personal fit (H4) was proven to be a significant factor that influences the students' major choice intention ($t = 5.767$, Sig. $\leqslant 0.000$). This

result implies Finance and Banking majors are fit with their interests, personality, value, and future work satisfaction. Furthermore, the result showcased that apprenticeship (H5) had a significant impact on the students' major choice intention (t =5.097, Sign. ≤ .000). In other words, the students are interested in apprenticeship, which could provide them with the practical experience at the time of study as enhancing their knowledge and skill of their major. Lastly, hypothesis 6 was unsupported with a significant value of 0.301, pointing out that student support service had no impact on students' major choice intention.

5 Conclusion and Recommendation

5.1 Conclusion

The study aims to investigate factors influencing students' major choice intention. This study was crucial for conducting and analysing the case study on academic degree students of AIB, majoring in Finance and Banking. TRA model was used to analyse the students' intention with a quantitative approach. The findings showed that three hypotheses were supported (perception of major, perception of personal fit, apprenticeship have a positive significant effect on students' major choice intention) and the other three hypotheses were unsupported (social norm, constraints, and student support service have no impact on students' major choice intention).

5.2 Implication

The study offers several managerial implications. The results show that socials do not have an effect on students' major choice intention, and students' perception turns to be the important factor. In other word, students are responsible for their own choice. They have enough freedom to decide what they want to be. In this sense, their perception is the main indicator of whether or not to choose a major. Decision maker in management team or marketing field should focus on what deserve the needs of students in order to pursue their study at AIB; at the same time, AIB should continue developing curriculum and revising courses to make sure that the programs can produce human resources with high capacity. Lastly, although the results shown insignificant on student support service, this factor plays such an important role for students. However, employability would be in students' perception as they need to have a good job with high salary after graduation.

5.3 Limitations and further research

Each study always contains its limitations. First, the data used for this study was collected from AIB students only, which cannot be generalized to the target population. Second, the study focused on students' intention to choose major of Finance and Banking; however, these results cannot be used to predict students' intention to choose other majors. Lastly, the study employed only multiple regression. Thus, researchers suggest that future studies focus on other targeted respondents, using other approaches such as SEM and AMOS for data analysis.

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