# Evaluating Unified Communication and Collaboration Acceptance: A Case Study of Malaysian Public Sector

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## ABSTRACT

Since the converging of innovations, technological advancement allows for the seamless integration of data, audio, and video communication. Today's speedier communication technology makes real-time communication and collaboration sessions possible. However, in the public sector, utilization is not as intended, which increases the danger of violating laws and causing compliance, data privacy, and security problems. A quantitative approach is used throughout this research to assess the acceptance of unified communication and collaboration (UC&C) solutions among Malaysian government organizations, their existing condition, challenges, and space for their growth. This study utilized the well-established Unified Theory of Acceptance and Use of Technology (UTAUT) model. The questionnaire was distributed online to Malaysian federal and state government ministries, agencies, and lecturers of Universiti Teknologi MARA (UiTM). The partial least squares structural equation modeling (PLS-SEM) approach was used to evaluate the figures, which were gathered from 160 participants, applying the IBM SPSS Amos edition 26 program. The studies found that performance expectancy, effort expectancy, facilitating condition, and trust are important elements influencing UC&C service acceptance by others. The results will serve as a trustworthy guide to enhance the Change Management strategy, which may be disseminated to a government agency responsible for the national implementation of communication and collaboration within the Malaysian government, as well as potentially to various government organizations worldwide.

**Keywords:** Acceptance, public sector, technology, UC&C, UTAUT

## INTRODUCTION

A more effective form of communication is offered by Unified Communication and Collaboration (UC&C), an innovative tool that blends technological advancements and traditional methods of communication. It has become increasingly popular recently, particularly in the business world, since the beginning of the COVID-19 pandemic. UC&C includes various technological advancements such as email, calendar, video conferencing, instant messaging, and online storage. Google and Microsoft are several examples of cloud service providers for UC&C services, which they are offering Google Workspace and Microsoft 365, respectively.

The fast advancement in technology has motivated the government to spend a large budget on providing unified communication and collaboration services; however, the acceptance rate in public sector organizations is still underused than expected [1]. If this trend continues, it will not just waste government time and money, it will

also increase the risk of breaking government regulations, compliance, data privacy and security issues [2], [3]. This study sought to explore the factors affecting the adoption and use of UC&C technologies within public sector organizations in Malaysia.

To the best of our knowledge, the adoption of UC&C technologies in government settings has not been sufficiently examined to fully grasp the individual decision-making factors that drive the acceptance or rejection of such innovations. The outcome will be a reliable reference to improve the change management plan that can be shared with a government agency in charge of the national implementation of communication and collaboration within the government of Malaysia and perhaps with other government agencies around the world. The expected outcome of this study is the change management plan, divided into quick wins and long-term plans.

# LITERATURE REVIEW

### Technology Acceptance

Technology acceptance is an important aspect in influencing the success and broad adoption of new technological advancements. Individuals and organizations' desire and preparedness to adopt and employ new technologies is referred to as technology acceptance [4]. This acceptance is determined by several elements, including the person's mindset toward transition, impressions of technology's ease of use and benefit, method of leadership and assistance self-efficacy, personal preferences, working characteristics, and the atmosphere of the company. According to research, those with a positive view toward transformation tend to embrace and take advantage of new technologies [5], [6].

### Assessment Model

In the field of academia, evaluation is critical in determining the quality and effect of academic research. It aids in determining the study's reliability and validity, ensuring that the outcomes are reliable and can be extrapolated to a broader population. The study of the way individuals embrace and make use of information technology (IT) is one of the oldest and most researched branches in information systems (IS) research. Researchers proposed and tested numerous models to explain and anticipate consumer adoption and usage of IT, notably the Technology Acceptance Model (TAM) as well as models built around the Theory of Planned Behaviour (TPB). Venkatesh, Morris, Davis, and Davis [7] merged these ideas to develop the UTAUT model, which stands for the Unified Theory of Acceptance and Use of Technology [8].

The UTAUT model is a complete skeleton aimed at understanding and forecasting people's intents and behaviors when it comes to technology. UTAUT, by combining many elements and variables, is a significant tool for determining the likelihood of the user's acceptance of brand-new technology [9]. The framework provides for an improved grasp of the aspects that impact acceptability and ultimately utilization of technical innovations. According to the UTAUT model, users' acceptance behavior toward technology is determined by the perceived advantages of utilizing the technology and the variables that motivate their decision to utilize it. These elements include performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC).

PE is the degree to which an individual believes that implementing the system will help to improve their job efficiency. EE, or the degree to whereby the platform is user-friendly, is another aspect. An innovation has a higher chance of being accepted if it can be made simpler to use. The third factor is SI, or the extent to which a particular person feels that others think they should make use of it. Culture and societal expectations have an impact on this component. The establishment of FC is the last element. This speaks to a person's conviction that the system's technological and organizational foundations exist and allow for system use.

The UTAUT model also provides four critical moderators that alter the previously stated fundamental components. Gender is one of these variables, with differences in how men and women perceive technology which could result in different adoption rates. The second moderator, age, emphasizes that younger people may be more likely than the elderly to adopt new technology. As the third moderator, experience with comparable or identical technology influences adoption rates. Finally, the fourth moderator, voluntariness of use, proposes that

when the utilization of information technology is regarded as a choice or forced can considerably influence acceptance levels. Considering it integrates the best aspects of previous theories and models, UTAUT has become one of the most extensively researched and comprehensive ideas in the field of technology acceptance [10]. Fig. 1 exhibits the UTAUT model, which is widely utilized and embraced in the most current studies.
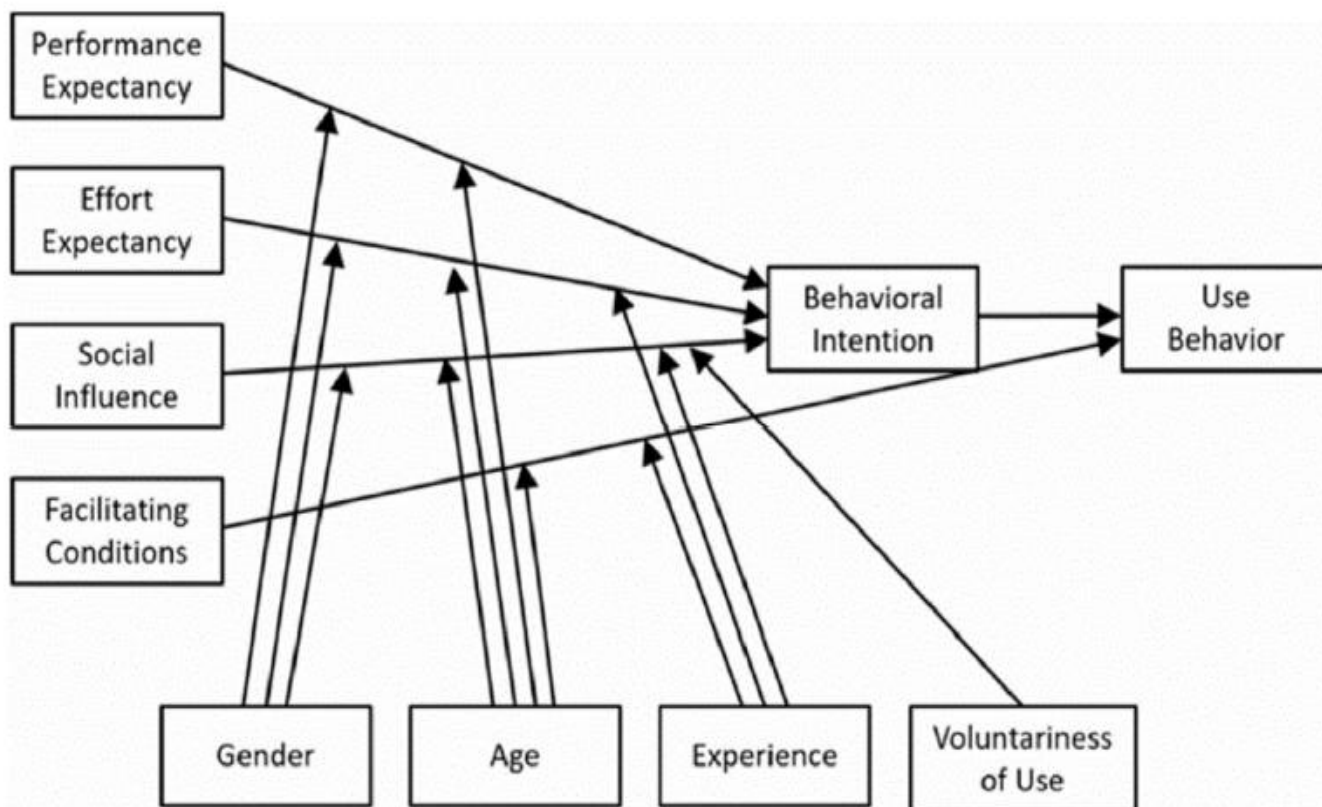


Fig. 1 The UTAUT Model

**Unified Communication and Collaboration (UC&C)**

UC&C is a flexible technological communication structure that streamlines and blends all sorts of human and device interactions in its proper context, using a uniform graphical user interface. UC&C is widely acknowledged as a key enabler for organizational productivity. The communication and collaboration capabilities of innovation enable the use of work-from-home opportunities. Greater freedom, seamless integration, efficient operation, and output benefit organizations. UC&C is a versatile communication framework that simplifies and combines all types of people and gadget interactions in their appropriate settings, employing a consistent and intuitive user interface.

Its purpose is to enhance human communications and optimize business processes by decreasing latency, managing flows, and eliminating reliance on media and devices [11]. The benefit of UC&C is seen in the integration of formerly distinct communication channels into just a single, unified platform [12]. Governments worldwide are becoming increasingly aware of the endless possibilities of UC&C technology to increase collaboration among agencies interaction, accelerate communication within the organization, and provide people with simpler and quicker services.

**UTAUT & UC&C**

Individual and organizational readiness to adopt new technology is critical for successful innovation. It is influenced by attitude, usability, leadership, self-efficacy, and culture. A positive mindset toward change is associated with better rates of technological adoption. Academic research evaluation is critical for determining

the quality of scholarly research. The concept of UTAUT is a detailed foundation for information technology. It forecasts tech adoption by considering aspects such as PE, EE, SI, and FCs. These characteristics are controlled by gender, age, experience, and voluntariness of use. UTAUT combines multiple previous ideas to create a strong technological acceptance paradigm. UC&C technological innovations increase employer productivity by allowing workers to work remotely with flexibility, efficiency, and interoperability. UC&C integrates numerous means of communication, improving human interaction and simplifying organizational procedures, leading in a unified, integrated ecosystem.

## Change Management

Organizations must employ change management processes to efficiently adapt to the ever-changing organization market. This process entails developing, implementing, and assessing efforts to satisfy the broader environment's expectations. Change management activities that are successfully implemented can result in greater employee engagement, low productivity variations throughout the implementation period, and a shorter total implementation timetable. Furthermore, change management entails regularly monitoring industry changes as well as the organization's internal circumstances.

Effective communication is another crucial aspect of change management. Effective communication is essential in change management because it enables information distribution, clarification of goals and objectives, and the resolution of any problems or concerns that employees might have. Employee participation, in addition to leadership and communication, is a crucial aspect of change management. Employee participation is critical in change management because it provides employees with an overwhelming sense of belonging and dedication to the change process.

The establishment of a supportive and positive company culture is critical in change management because it lays the groundwork for effective implementation. The values, attitudes, and standards that affect individual behavior inside an organization are referred to as organizational culture. In addition to these components, the identification and usage of change agents is a key aspect of change management. Individuals or groups inside an organization that oversee driving and implementing change initiatives are referred to as change agents. They are often people with excellent leadership abilities, prominence, and knowledge in change management.

Overall, effective change management in the work environment demands an integration of factors and techniques. Individual change preparedness, organizational culture, and identity, the assistance of upper-level executives or change agents, a good and encouraging workplace environment, top management engagement, defined goals and objectives, and constant monitoring and assessment are just a few examples [13].

# METHOD

The research project used a quantitative method and targeted Malaysian federal and state government ministries, agencies, and various higher education institutions, including Universiti Teknologi MARA (UiTM). The components that will be investigated in the study model are PE, EE, SI, FC, and Trust. The sample design will be a Nonprobability: Convenience sample, using the sampling technique based on Sakaran's (2003) Sample Size for a Given Population Size table.

Nonprobability: Convenience Sampling was considered a practical choice as the research focus was to examine subgroups within a larger population, and sampling was thought to be a realistic option. This strategy was deemed to be useful when it was difficult to reach the whole target population since it was time and cost-effective. The instrument used for the survey is based on a questionnaire that was prepared by Silic & Back [11].

A pilot experiment was done with The Malaysian Administrative Modernization and Management Planning Unit (MAMPU), currently known as Jabatan Digital Negara (JDN) to assess the questionnaire instrument's validity and reliability. Following that, researchers were able to collect data from 160 respondents using an online questionnaire generated with Google Forms. The data was analyzed using IBM SPSS Amos version 26 software together with the partial least squares structural equation modeling (PLS-SEM) methodology.
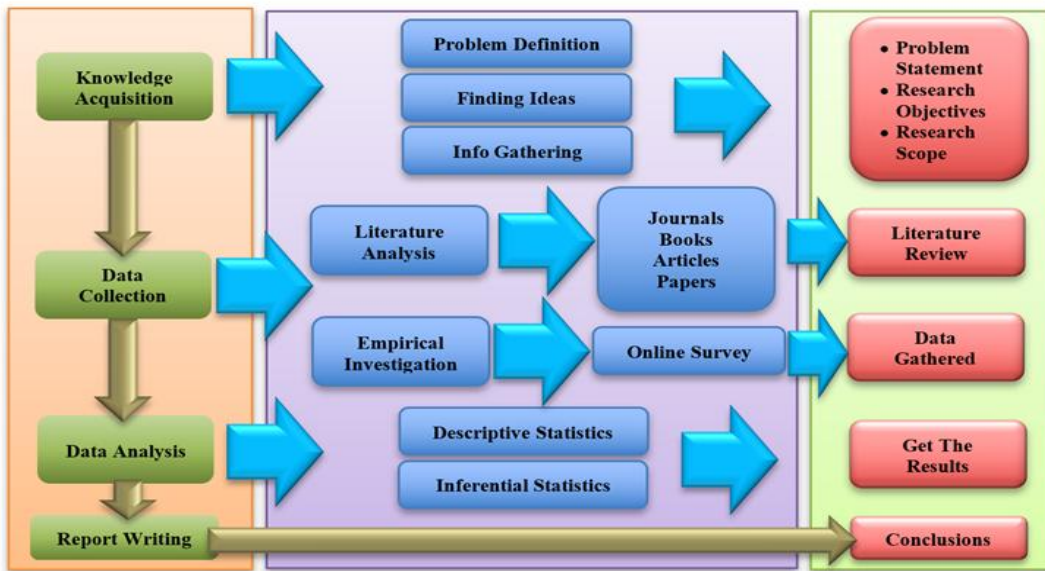
Fig. 2 Research Approach

## RESULT AND DISCUSSIONS

### Descriptive Statistics

160 respondents provided valid information for the online questionnaires. The outcomes in descriptive statistics are shown below, as was said before. Following is a list of the descriptive statistics:

Table I. Descriptive Statistics (Respondents Profile)

| No | Measure | Item | Frequency | Percentage |
|---|---|---|---|---|
| 1 | Gender | Male | 60 | 37.5 |
| | | Female | 100 | 62.5 |
| 2 | Age | <21 | 0 | 0 |
| | | 21-30 | 8 | 5 |
| | | 31-40 | 52 | 32.5 |
| | | 41-50 | 84 | 52.5 |
| | | 51 > | 16 | 10 |
| 3 | Education | < SPM | 0 | 0 |
| | | SPM or equivalent | 5 | 3.1 |
| | | STPM/Diploma | 40 | 25.0 |
| | | Bachelor's degree | 61 | 38.1 |
| | | Master | 48 | 30.0 |
| | | PhD | 6 | 3.7 |
| 4 | Position | <Gred 40 | 60 | 37.5 |
| | | Gred 41 to 44 | 61 | 38.1 |
| | | Gred 48 to 54 | 38 | 23.7 |
| | | >JUSA | 1 | 0.6 |
| 5 | Years of Working in Government | <1 year | 1 | 0.6 |
| | | 1-5 years | 13 | 8.1 |
| | | 6-10 years | 15 | 9.4 |
| | | 11-15 years | 48 | 30.0 |

| No | Measure | Item | Frequency | Percentage |
|----|---------|------|-----------|------------|
|  |  | 16-20 years | 50 | 31.2 |
|  |  | >21 year | 33 | 20.6 |
| 6 | Which UC&C Services Use Frequently (Can Answer > 1) | Email | 158 | 98.8 |
|  |  | Chat | 48 | 30.0 |
|  |  | Video Call | 107 | 66.9 |
|  |  | Calendar | 108 | 67.5 |
|  |  | Cloud Storage | 92 | 57.5 |

**Inferential Statistics**

The composite reliability (CR) of the respective measures varies from 0.854 to 0.924 for the assessment of the measurement model, which surpasses the suggested threshold which is 0.70. The suggested average variance extracted (AVE) for each variable construct is more than 0.50. PE has (CR=0.924, AVE=0.803), EE has (CR=0.874, AVE=0.700), SI has (CR=0.854, AVE=0.671), FC has (CR=0.878, AVE=0.707), T has (CR=0.884, AVE=0.718) and BI has (CR=0.898, AVE=0.747). Table 4.2 shows the assessment result of the measurable model.

Table II. The Assessment of the Measurement Model

| Variable Construct | Composite Reliability (CR) | Average Variance Extracted (AVE) |
|--------------------|---------------------------|----------------------------------|
| Performance Expectancy – PE | 0.924 | 0.803 |
| Effort Expectancy – EE | 0.874 | 0.700 |
| Social Influence - SI | 0.854 | 0.671 |
| Facilitating Conditions - FC | 0.878 | 0.707 |
| Trust - T | 0.884 | 0.718 |
| Behavioral Intention - BI | 0.898 | 0.747 |

After running the SPSS Amos, a structural equation model was generated and is stated in Fig. 3 below:
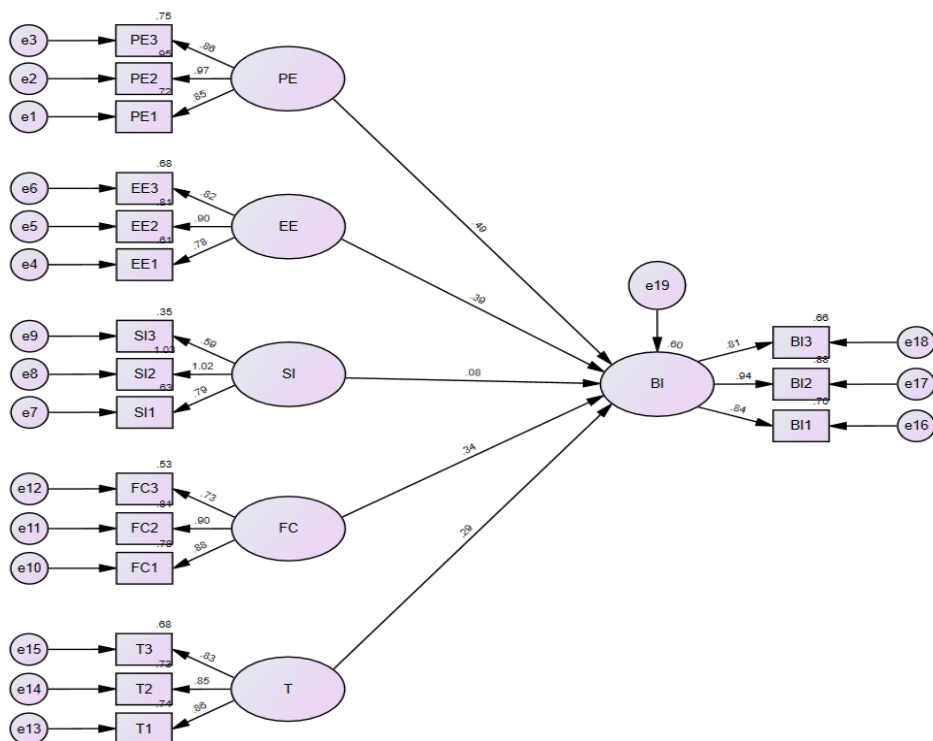


Fig. 3 Structural Modal Results

Regarding the entire effectiveness of the research model, the goodness of fit (GoF) and coefficient of determination (R2=0.60) were examined using the SEM approach based on PLS regression. The geometric mean of the average commonality and average R2 value is the GoF (0<GoF<1). In this investigation, the formula was used to calculate GoF, $GoF = \sqrt{AVE \times R^2}$. According to our research, the GoF value was 0.729, which was higher than the 0.36 indicated by the experts. As a result, the suggested model had an acceptable overall fit and was completed effectively. Based on the Path Coefficient (beta, β) of each independent variable (IV) to a dependent variable (DV), we can have the result of the hypothesis as per Table 3 below:

Table III. Hypothesis Results

| Hypothesis | Hypothesized Relationship | Standardized Estimates (β) | t-value | p-value | Decision |
|---|---|---|---|---|---|
| H1 | PE -> BI | 0.494 | 7.107 | 0.001 | Supported |
| H2 | EE -> BI | 0.395 | 5.639 | 0.001 | Supported |
| H3 | SI -> BI | 0.080 | 1.393 | 0.164 | Not Supported |
| H4 | FC -> BI | 0.339 | 5.165 | 0.001 | Supported |
| H5 | T -> BI | 0.289 | 4.439 | 0.001 | Supported |

## DISCUSSION

Effective communication is critical for successful change management because it ensures information flow and reduces resistance to change. In the context of government UC&C, communication should emphasize Chat features, with weekly recommendations, brief videos, and monitoring. Training approaches like onsite training sessions, electronic learning, simulations, mentoring, and group discussions including Change Agents (CAs) are critical in change management. CAs help to support and promote organizational transformation [14]. Change management training is critical for adjusting to a quickly changing organizational environment and educating personnel to embrace and execute change successfully, including the growing usage of Chat features (Table 4).

Table IV. Example of Change Management Plan to Increase Usage of Chat Service (Physical Workshop)

| Target | Outcome | Activity | Mechanism | Responsibility | Duration | Note |
|---|---|---|---|---|---|---|
| End users | Increase Usage of Chat | Training | Physical Workshops | Change Agents | 12 months | Monthly Status of Execution |

Alternatively, UC&C can be utilized to deliver online-based training, similar to how educational institutions in both urban and rural areas have employed UC&C applications as a solution tool in the learning process [15, 16, 17].

## CONCLUSION

Based on the study, UC&C administration should focus on complete end-user training, which includes creative methods such as in-person classrooms, online seminars, and written material communications, to demonstrate the technology's benefits beyond email and chat. Government initiatives should focus on using social influence to increase levels of satisfaction. The absence of factors such as service load time and location, which might affect infrastructure development decisions, is a limitation of the study, particularly in rural and foreign regions. The month and completed in a short period, around one month, and did not meet the required sample size of 384 respondents as specified in the Sakaran table.

This paper emphasizes UC&C's critical role in improving government services through enhanced communication, cooperation, cost-effectiveness, and security. As technology progresses, governments need to adjust their UC&C executions to address citizen needs and worldwide challenges. UC&C addresses gap, improves accessibility and security, and stimulates innovation, making governments more responsive and efficient. As technology advances, UC&C usage in government services is projected to increase, transforming

public administration. The study effectively investigated UC&C adoption, difficulties, and possible enhancements in Malaysian public-sector organizations.

# ACKNOWLEDGEMENT

**Author Contribution**

Surya Sumarni Hussein and Fazlina Mohd Ali prepared the literature review and oversaw the article writing. Saiful Nizam wrote the research methodology and performed fieldwork. Saidatul Rahah and Aliana Wisnu conducted a statistical analysis and interpreted the results.

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