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Technology Acceptance Model in Islamic Education (TAMISE) for Digital Learning: Conceptual Framework Proposal

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Abstract

Digital learning has become crucial to all education systems, particularly after the pandemic eruption. However, accepting digital technologies among students and teachers in Islamic education remains challenging. The Technology Acceptance Model (TAM) is a well-known model that explains digital technology acceptance among users. This conceptual study aims to suggest a theoretical model that integrates TAM with perceived Islamic education compatibility and perceived digital self-efficacy variables, known as Technology Acceptance Model in Islamic Education (TAMISE). The review of related studies involved searching relevant literature published in various databases, including Web of Science, Google Scholar, and Scopus. Documents analysis resulted in the conceptual model. The proposed TAMISE model is a conceptual model that integrates the TAM model with perceived Islamic education values to provide a framework for digital learning acceptance in Islamic education. The model suggests that perceived usefulness, perceived Islamic education compatibility, perceived ease of use, perceived digital self-efficacy, and behavioral intention will predict digital learning acceptance in the Islamic education context. The TAMISE model can guide researchers and practitioners in designing and implementing effective digital learning acceptance in Islamic education.

Keywords: Digital Learning, Islamic Education, TAM, Higher Education, Technology Acceptance

Introduction

The advancement of digital technologies (DT) has undoubtedly transformed the way people live, socialize, work, and learn. As a result, DT has become an integral part of teaching and learning processes in the education sector, particularly in digital learning (García-Martínez et al., 2020). Digital learning is using electronic devices and multimedia to facilitate learning (Wheeler, 2012). The usage of digital learning is prevalent across different educational contexts, including Islamic education. Islamic education, also known as madrasa education, is a form of education that emphasizes Islamic values, beliefs, and

practices (Waghid, 2014). In recent years, Islamic education in some countries, like Indonesia and Saudi Arabia, has embraced technology to enhance the quality and accessibility of education (Al-Harbi, 2019; Jamaluddin et al., 2019).

Islamic education emphasizes the teachings of the Quran and the Sunnah of the Prophet Muhammad (Arjmand, 2018). It aims to provide individuals with the knowledge and skills to live righteous lives and serve society's needs (Daun & Arjmand, 2021). In recent years, the use of technology in Islamic education has gained significant attention (Alsharbi et al., 2021; Subiyakto et al., 2022). Various technologies, such as online learning platforms, multimedia content, and mobile applications, have been developed to facilitate teaching and learning activities (Alsharbi et al., 2021). The usage of digital technologies in Islamic education has the potential to enhance the quality of education and reach a wider audience (Shan-a-alahi & Huda, 2017).

Generally, DT integration in various education systems has become increasingly prevalent (ITU et al., 2019). Islamic education, which emphasizes the teachings and principles of Islam, also stands to benefit from the effective utilization of digital resources. However, the acceptance and adoption of digital technologies in Islamic education remain understudied (Al-rahmi et al., 2017) and require a specific framework to comprehend the unique factors influencing its acceptance (Abubakari et al., 2023; Abubakari & Priyanto, 2021). In this article, we propose a conceptual model of digital technology acceptance in Islamic education, built upon the foundation of the well-established Technology Acceptance Model (TAM) but tailored to the specific needs and characteristics of Islamic education.

Technology acceptance is a critical factor in the success of digital learning culture. The Technology Acceptance Model (TAM) is a widely implemented model that can explain digital technology acceptance behavior (Davis, 1989). The model proposed that perceived usefulness and perceived ease of use are the primary factors influencing user behavior toward digital technology adoption. Despite the usefulness of TAM in predicting technology acceptance, it has some limitations in explaining DT acceptance in Islamic education. TAM does not consider the compatibility of technology with the cultural and religious values of Islamic education. Islamic education has unique cultural and religious characteristics that influence the acceptance of digital technologies. Therefore, there is a need to integrate perceived Islamic education compatibility into TAM to develop a Technology Acceptance Model in Islamic Education (TAMISE) for digitally enhanced learning.

The objective of this article is to review related literature on technology acceptance and propose a conceptual model of TAMISE by integrating perceived Islamic education compatibility (PIC) and digital self-efficacy (DSE) constructs. The proposed model will provide insights into the key factors affecting digital technology acceptance in Islamic education, particularly in digital learning. Moreover, hypotheses are suggested based on

the conceptual model for future studies to empirically test them.

Literature Review

Digital Technologies in Education

The introduction of digital technologies (DT) in classrooms has transformed teaching and learning practices. Interactive digital resources, such as online textbooks, multimedia presentations, and educational apps, have made learning more engaging and interactive (Haleem et al., 2022). Digital technologies also enable personalized learning experiences, allowing students to learn at their own pace and explore topics in greater depth (Alshammari & Qtaish, 2019). Moreover, digital tools facilitate collaboration among students and encourage active participation in the learning process (Wheeler, 2012).

Digital technologies offer numerous benefits in education. They promote student engagement, as interactive and multimedia resources capture students' attention and cater to various learning styles (Alamri et al., 2020; Surjono, 2014). Further, digital technologies enable access to vast information and educational resources (Serin, 2022), expanding learning opportunities beyond the traditional classroom (Daniela, 2019). Teachers also benefit from digital technologies, as they can leverage online platforms for instructional planning, assessment, and collaboration with colleagues (UNESCO, 2021). Even though various digital resources are established in educational institutions, most individuals do not optimally use them to capture their full benefits (Islam et al., 2019).

DT underutilization and influential factors for its adoption, especially in the Islamic education context, are not well studied in the literature. Therefore, explaining how DT is accepted and utilized in different contexts is an intriguing topic. Several theories based on social-technical, and psychology have been founded to demonstrate this phenomenon of DT acceptance in various contexts. The technology acceptance model (TAM) is among those theories which this conceptual study will adapt and modify to match the context under investigation.

The TAM Model Overview

TAM is a theoretical model that explains the probable factors that influence user acceptance and adoption of digital technologies. In 1986, Davis developed the TAM model based on previous behavioral theories, especially the theory of reasoned action and the theory of planned behavior (Davis, 1989). TAM posited that perceived usefulness (PU) and perceived ease of use (PEOU) are the key driving factors of digital technology adoption (Davis, 1989). PU refers to the degree to which a user believes that digital technology will improve their performance, while PEOU refers to the degree to which a user perceives that digital technology is easy to use. TAM proposed that if users perceive a particular

technology as valuable and easy to use, they are more likely to adopt it.

Despite the broad adaptation of the TAM model in multiple contexts, there are limitations that require further empirical investigations (Scherer & Teo, 2019). Moreover, regardless of the praise TAM receives for its simplicity and ability to understand DT adoption, researchers insist that it is crucial to conduct further studies to improve the external validity of the model (Dishaw & Strong, 1999). Furthermore, the literature revealed that numerous studies on TAM were primarily explored in Western settings and rarely studied in non-Western contexts (Teo & van Schaik, 2012), especially in Islamic education. This fact implies that more investigations into TAM should be conducted in different contexts and cultures. Accordingly, while TAM will be a foundational framework for the proposed study, suitable individual and religious constructs will be considered to formulate the proposed conceptual model.

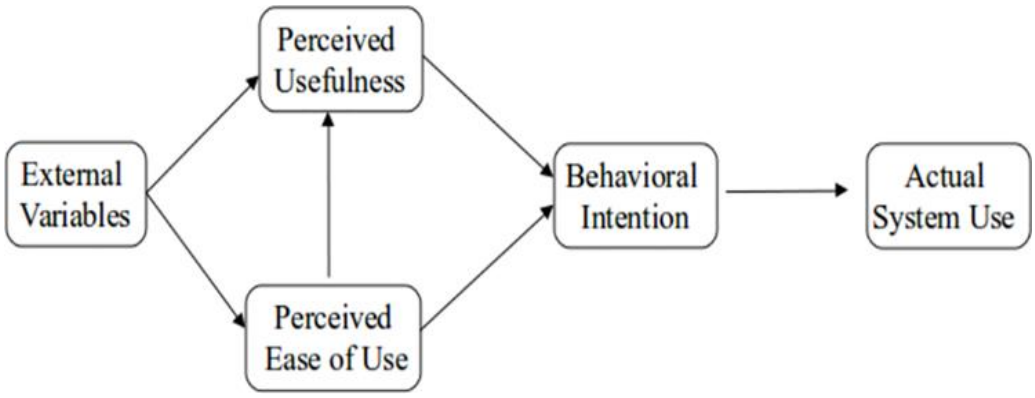

Figure 1: The parsimonious TAM Model (Venkatesh & Davis, 1996)

Methodology

The study implements a qualitative approach by reviewing previous literature on technology adoption in educational contexts, applying integrative (Snyder, 2019) and model approaches (Jaakkola, 2020) for literature synthesis and building a theoretical model. The study searched relevant literature published in several electronic databases, including Web of Science, Scopus, and Google Scholar. The search process was conducted from 05 January to 08 May 2023, and searching did not limit the time of literature publication. The search was performed using the following keywords: "technology acceptance model," "Islamic education," “TAM,” “Madrasa,” “technology acceptance,” “higher education,” and "digital learning or e-learning." The inclusion criteria were articles written in English, grey, and peer-reviewed literature and focused on technology acceptance in general and Islamic education. The exclusion criteria were articles written in

languages other than English and articles not focused on technology acceptance in education contexts. Further, The literature review emphasized text analysis using the analytical technique (Delbridge & Fiss, 2013; Jaakkola, 2020), which scrutinizes the clarity of the constructs' relationship and concepts about technology acceptance and digital learning. Finally, the analysis result aims to develop a technology acceptance model in Islamic education (TAMISE) that exhibits potential latent variables from previous empirical studies on technology adoption in education, including a construct that suitably reflects the Islamic education context.

Analysis Results and Discussion

Digital Technologies Acceptance in Education

Digital technologies have revolutionized the way information is accessed, shared, and consumed in various domains, including education. The integration of digital tools, such as interactive whiteboards, learning management systems, educational apps, and online resources, has the potential to enhance teaching and learning experiences (Islam et al., 2019; Šumak & Šorgo, 2016). Thus, DT adoption has proved to be beneficial in various ways, such as enhanced service quality and academic task automation, which are attractive to contemporary digital learners (Susanto et al., 2018). Therefore, effective DT usage, such as e-learning, is promising for the enhanced learning process (Abubakari et al., 2021; Muries & Masele, 2017). However, the acceptance and effective utilization of digital technologies in educational settings remains challenging, especially in Islamic education contexts that warrant thorough investigations.

Despite various challenges in DT acceptance in education institutions (Mynaříková & Novotnỳ, 2020), digital technologies are still perceived as critical for sustainable development (Martins et al., 2019). Studies indicate that effective DT usage in education is vital for simplifying many processes, such as automatic grade calculation that enhances accuracy (Lwoga & Komba, 2014; Panday & Purba, 2015), hence improving learners' satisfaction (Mtebe, 2015). Other researchers discovered that instructors and learners are ready to adopt DT for their daily educational activities (Nawi et al., 2020), indicating a promising sustainable future in using DT for enhanced decision-making (Martins et al., 2019).

Nevertheless, The acceptance and effective utilization of digital technologies in education depends on various factors at the individual, institutional, and contextual levels (Tarhini et al., 2013). Understanding these factors is crucial for promoting successful DT integration and harnessing the potential benefits of digital tools for educational transformation (Keengwe et al., 2008). Educators, policymakers, and researchers need to collaborate to address the challenges associated with technology acceptance and implementation while also capitalizing on the opportunities afforded by DT in enhancing

teaching and learning experiences.

Muslims' Perspective on Digital Technologies and Other Innovations

Islam is a religion that promotes knowledge and encourages the use of technology to enhance life. The Quran states: "He taught man that which he knew not" (Quran 96:5). This verse highlights the importance of learning and the acquisition of knowledge, including technological knowledge. Therefore, Muslims are encouraged to embrace technology and use it to benefit humanity while adhering to Islamic principles and values (Khashab et al., 2016). However, the adoption of digital technologies in Islamic societies can pose some challenges. Some Islamic scholars argue that digital media can promote immoral behavior and lead to the erosion of traditional Islamic values. They say that the extensive usage of digital technologies like the internet can lead to the propagation of inappropriate content, such as pornography, which can corrupt Muslim societies (Al-Kandari & Dashti, 2014). Moreover, the use of DT can also be seen as a threat to privacy and security (Fauzi & Ayub, 2019), as the dissemination of personal information and data can be easily compromised. Thus, Islamic societies that adopt DT must be careful to ensure that privacy and security are maintained, and that the technology is used ethically and responsibly.

Some studies have been done from an Islamic perspective about various life aspects such as financing, hoteling, and others. These investigations aimed to explain how Muslim individuals perceive and accept such innovations by assessing critical factors reflecting the Islamic context. A study (Saleh et al., 2020) was carried out explaining behavioral intention and how Muslims perceive money transactions based on crypto-currency technology. The authors adopted the TAM model and added three more variables, including the sharia-compliance factor. The variable sharia-compliance is of interest as it fits well with this current study. The findings of the study showed that, among other variables, sharia-compliance also directly influenced the behavior intention of Muslims in adopting crypto-currency-based transactions. This finding supports the previous studies (Hammad, 2018; Muedini, 2018) concerning the acceptance of digital money such as Bitcoin by considering the Sharia compliance factors based on Islamic regulations about money transactions (Siswantoro et al., 2020).

Besides that, two studies applied the UTAUT model and added two more external variables, including Religious Perspective (RP) on ICT (Abubakari et al., 2023; Abubakari & Priyanto, 2021). These studies found that RP was the strongest predictor of BI of individuals adopting ICT in Islamic education. Thus, religious-related factors are very crucial to understand the behavioral intention of religious individuals to adopt technological innovation in a particular context, such as in Islamic education systems.

Related Studies on DT Acceptance in Islamic Education

Findings from earlier studies on TAM have inconsistencies as the effects of some constructs vary from one study to another (Scherer et al., 2019). To demonstrate, a study (Rahman et al., 2022) conducted in Malaysia extended TAM by adding other external factors, including technology familiarity and computer competency. The study observed that all direct effects of variables such as PU and PEU were positive on BI to utilize e-learning. Contrarily, another study (Ngabiyanto et al., 2021) in Indonesia found a significant but negative effect of PEU on BI to implement online learning. Further, another study (Ali et al., 2016) added two factors: Basic Islamic Knowledge and Self-Efficacy, into TAM to assess blog acceptance for learning Islam and discovered that PEU had significant effects on BI and PU was insignificant on BI, opposite to other scholars (Haris et al., 2022) who found that PU significantly affected BI but PEU had no substantial effect on BI.

Further, other researchers (Subiyakto et al., 2022) applied TAM while extending it with perceived validity (PV) and trust (PT) in using electronic resources in Islamic education. They uncovered that both PT and PV significantly affected PU, while PEU and PU had considerable influence on BI to utilize e-resources in Islamic education. Similarly, other studies (Nuryanna et al., 2021; Wardayanti et al., 2022) found that PU and PEU have significant correlations with BI. Scholars (Scherer et al., 2019) argued that these similar yet different findings might be influenced by varying technologies understudy, and samples across studies; however, these varied findings cannot enlighten the educational community properly. This situation proves the significance of technology specificity, contextual variables, and sample types on intervening TAM effects on DT acceptance (Dimitrijević & Devedžić, 2021). Accordingly, the present study proposes the TAMISE model by adding two external constructs: DSE and PIC, which might properly fit the Islamic education context.

Proposed Technology Acceptance Model in Islamic Education (TAMISE) and Hypotheses

The proposed conceptual model extends the original TAM by incorporating two more constructs: perceived Islamic education compatibility (PIC) and digital self-efficacy (DSE), to reflect the unique context of Islamic education. Originally, TAM posited that DT acceptance is primarily influenced by perceived usefulness (PU) and perceived ease of use (PEU). However, in the Islamic education context, the model should include an added unique construct: perceived Islamic education compatibility (values and pedagogical needs compatibilities) to contextualize the Islamic education setting.

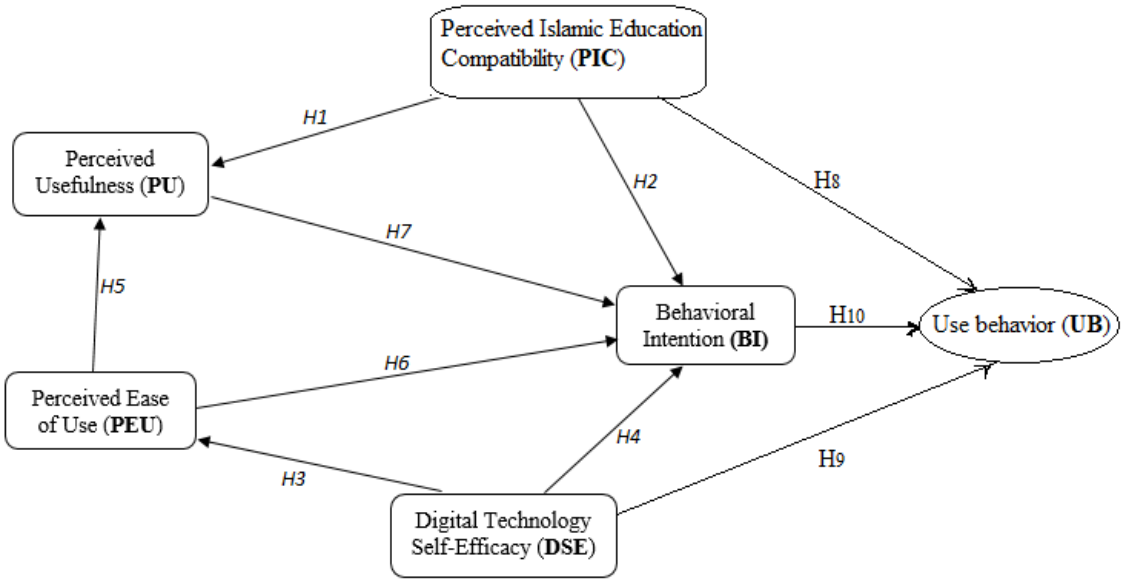

Figure 2: Proposed TAMISE Model

Figure 3 shows that there are five constructs in the proposed TAMISE model, two external factors (PIC and DSE) and four constructs from TAM. The following is the theoretical explanation of each construct.

Perceived Usefulness (PU)

PU is considered the most profound factor in predicting and explaining an individual's intention to utilize a certain technology in the TAM theory (Davis, 1989). PU refers to an individual's belief that a particular DT system is beneficial and provides advantages in using it (Davis, 1989). PU is synonymous with some variables used in other studies like job fit variable (Davis et al., 1992), performance expectance (Venkatesh et al., 2003), expected outcome (Compeau et al., 1999), and technology relative advantage (Moore & Benbasat, 1991). All those variables target the same purpose, explaining to what extent an individual believes a given technology benefits them and their task in a specific context. Therefore, PU is a theoretically crucial factor that can determine students' intention to utilize DT in educational activities.

Perceived Ease of Use (PEU)

In TAM, PEU is the second influential factor after the PU factor in explaining the user's intention to use DT (Davis et al., 1989; Scherer et al., 2019). PEU is described as

the extent to which an individual believes that a particular technology does not require much effort and time when using it (Davis, 1989; Davis et al., 1989). Earlier studies argued that even if a person perceives that certain technology is beneficial, they might still not use it if they perceive it will take a lot of time and effort to utilize it (Davis et al., 1989). That is to say, PEU can intervene in the effect of PU on an individual's intention to use DT. Some studies found PEU was insignificant in affecting users' intentions directly but significantly affected PU (Scherer et al., 2019). Therefore, the PEU variable is theorized to influence PU and behavioral intention in this proposed study.

Perceived Islamic Education Compatibility (PIC)

Considering that DT adoption in an Islamic context is a sensitive matter, there is a need for careful examination of the situation. Earlier researchers (Abubakari et al., 2023; Al-rahmi et al., 2017; Nabavi et al., 2016) insisted on studying DT adoption from Muslims' perspectives by considering contextualized religious-related factors. Some scholars (Eid & El-Gohary, 2015) found that religious-related factors influenced physical and non-physical values in Muslim's adoption of technology. Religious values tend to influence the acceptance of technological innovations by religious individuals as they influence their perspective on deciding what technology to adopt (Ateeq-ur-Rehman & Shabbir, 2010). Thus, the religious perception of a person plays a critical cultural force on an individual's behavioral intention (El-Gohary & Eid, 2013; Zamani-Farahani & Musa, 2012).

Therefore, the TAM theory should be polished from different research contextual findings to understand better individuals' intention to use DT (Nabavi et al., 2016). Based on earlier arguments, in this proposed study, based on the construct of perceived compatibility from innovation diffusion theory (IDT), perceived Islamic education compatibility (PIC) is formulated to suit the Islamic education perspective. In IDT, perceived compatibility is explained as the extent to which technology adopter perceives that a particular technological innovation is consistent with pre-existing values and needs (Rogers, 1995, 2003). Accordingly, for the sake of the present study's context, PIC is described as the perception of a Muslim individual on the relevance and compatibility of using digital technologies in an Islamic education context. Thus, PIC is theorized to capture the feeling of potential DT adopters concerning the consistency between Islamic education values and technological innovation. Studies found that perceived compatibility significantly affected consumer behavioral intention to use various innovations (Amaro & Duarte, 2015; Li & Buhalis, 2006).

Digital Self-Efficacy (DSE)

Psychology-based research focused on the cognitive aspect (Bandura, 1977, 2001) indicated that self-efficacy is crucial in predicting human behavior. Some researchers

(Peiffer et al., 2020) argue that subjective beliefs about an individual's skills are as important as objective skills in using digital technologies effectively. Self-efficacy related to DT refers to a person's belief in their capability to interact with and comfortably use a specific information technology (Compeau & Higgins, 1995). Thus, the self-efficacy of a person in using digital systems is crucial in predicting the efficient use of DT (Ulfert-Blank & Schmidt, 2022; Ulfert et al., 2022). Literature shows that self-efficacy beliefs can determine whether an individual is willing to utilize DT (Venkatesh & Bala, 2008). Other researchers (Janssen et al., 2013) view digital self-efficacy (DSE) as a foundational factor of a person's digital competencies. Therefore, DSE is theorized to influence both intention and actual behavioral use of digital systems (Bandura, 2001; Compeau et al., 1999).

Behavioral Intention (BI) and Use Behavior (UB)

Research on behavior psychology indicates that behavioral intention (BI) determines a particular behavior (Ajzen & Fishbein, 1977; Fishbein & Ajzen, 1975), such as DT usage. An intention highly predicts human behavior (Ajzen & Fishbein, 2002; Fishbein & Ajzen, 2015). BI is the subjective probability of carrying out the behavior and the cause of particular usage behavior (Yi et al., 2006). The intention is theorized as a motivational factor that strongly affects a particular usage behavior (UB), such as DT usage, and indicates to what extent a person will exert effort to perform an act (Ajzen, 1991). Therefore, BI is a variable intended to explore to what extent an individual is willing to literally use DT. Finally, Table 1 portrays the hypotheses based on the earlier theoretical explanations of the conceptual model's constructs.

Table 1: Proposed hypotheses based on the TAMISE model

No:	Hypothesis
H1	Perceived Islamic education compatibility will have a positive relationship with the perceived usefulness of digital technologies (DT) in Islamic education.
H2	Perceived Islamic education compatibility will significantly influence behavioral intention to use DT in Islamic education.
H3	Digital self-efficacy will positively correlate with DT's perceived ease of use in Islamic education.
H4	Digital self-efficacy will significantly influence behavioral intention to use DT in Islamic education.
H5	Perceived ease of use will positively affect the perceived usefulness of DT in Islamic education.
H6	Perceived ease of use will significantly influence behavioral intention to use DT in Islamic education.
H7	Perceived usefulness will significantly affect behavioral intention to use DT in Islamic education.
H8	Perceived Islamic education compatibility is positively related to the actual usage of DT in Islamic education.
H9	Digital self-efficacy will positively affect the actual behavioral usage of DT in Islamic education.
H10	The behavioral intention will significantly affect DT use behavior in Islamic education.

Conclusion and Recommendations

This article proposed a conceptual model of technology acceptance in Islamic education, integrating critical constructs from the Technology Acceptance Model (TAM) and incorporating two more factors, one of which is specific to the context of Islamic education. The conceptual model contributes as a foundation for future research and informs the development of effective digital technology interventions in Islamic educational settings. Thus, based on the proposed TAMISE, the study recommends future

research to assess the reliability and validity of the model empirically and then investigate digital technology acceptance in the Islamic education context using a robust inferential statistical approach, especially the structural equation modeling (SEM) technique. By understanding the factors influencing digital technology acceptance, policymakers, educators, and researchers can enhance digital technology integration in Islamic educational institutions.

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