Social Media Apps as a Tool for Procedural Learning During COVID-19: Analysis of Tiktok Users

Bachar Kahil[a,*], Buthina Alobidyeen[b]

[a] *ITPH Academy, Amsterdam, The Netherlands*
[b] *Business Administration Department, Business College, Tafila Technical University, Jordan*

Abstract

The objective of this study is to investigate the factors that influence the use of social media apps as a procedural learning tool during COVID-19. The primary aim of this research is to assess the impacts of content quality, task technology fit, vividness, and anxiety on perceived usefulness, and the impact of PEOU on and PU desire to use for procedural learning. Data was collected through an online questionnaire from 313 Tiktok users. The findings revealed that content quality, task technology fit, and vividness have a significant influence on overall effectiveness. The results also indicated that PEOU and PU have a strong favourable effect on the purpose to use for procedural learning. The structural equation modeling result revealed that all of the hypotheses were supported.

Keywords
Procedural learning, Technology acceptance model, Tiktok, Perceived ease of use, Content quality, Perceived usefulness, Anxiety, Task Technology Fit

1. Introduction

Social media is a type of online media that facilitates social interaction. Social media has an excessive impact on our lives today. The increasing usage of social media in numerous industries is due to the advent of the internet as a communication channel, and this is why social media offers several advantages. Some of the benefits of social media over previous forms of communication include ease of access, low cost, speed, interaction, a broad reach, and the ability to be accessible for an extended time (Cornejo et al., 2013). The majority of people utilize social networking sites for a variety of reasons, including business, politics, marketing, and education (Cornejo et al., 2013). Every day, billions of individuals use social media mobile apps. According to Grover et al. (2020) throughout the COVID-19 pandemic's multiple lockdowns, there is a tremendous increase in the use of social networking sites. For example, in the second quarter of 2020, over 2.7 billion individuals used Facebook every month (Adnan et al., 2021), and over 1.2 billion people used WeChat mobile app every month (Amosun et al., 2021). In September 2017, Tiktok, a relevantly new app, was released to the worldwide market. In today's world, TikTok has over 800 million active users (Sunhare & Shaikh, 2019). The uploaded videos and shared experiences affect people's lives (AlQudah et al., 2021; Chatzoglou et al., 2020; Dawud & Nikolic, 2020). The widespread use of social media in everyday life has a significant influence on people's communication patterns. Consequently, a study on social media use and its impacts on learning is required in European Union countries such as Belgium, Bulgaria, France, Germany, and Denmark.

Recently, social networking sites are heavily used by users (Alshurideh et al., 2021). For instance, TikTok. TikTok was launched in 2016 in China and internationally in 2017. Since then, it has become, the most general user-generated content video-sharing platform (UGC) (Chen et al., 2019). TikTok offers its users a short-video functionality. Short video distinguishes it from YouTube, which has long videos.

---

*Corresponding author: e-mail addresses: bashar.kaheel@gmail.com (B. Kahil)

Short movies/videos were used by the Chinese authorities to enhance the government's relationship with Chinese citizens. It encourages individuals in China to use micro-videos. As a result, TikTok is widely regarded as China's most popular app for short video sociability and as a platform for disseminating numerous themes through new media. with developments in information technology, Tiktok seems to be a viable learning network for short-term procedural activities. TikTok distinguishing feature is that it allows any fellow user to produce, post, and share an extensive spectrum of content, from home-produced videotape to film acts (Al-Maroof et al., 2020).

It is hardly unexpected that Tiktok is jam-packed with conveniently accessible motor sequence learning content. Procedural learning is an important chunk of numerous everyday activities (Lee & Lehto, 2013). It is described as the development of psychomotor skills in the execution of a task using steadily procedural guidelines (Ellis et al., 1996). A great deal of effort was put into researching how the style of procedural information affects learning, transmission, and performance within the cognitive processing conceptual paradigm (Al-Maroof et al., 2021). However, on a more practical level, people frequently avoid employing procedural instruction in real-world job environments (Eiriksdottir & Catrambone, 2011). This could be due to difficulties in comprehending procedural materials developed in complex layouts or given in technical terminology. Academic disciplines around the world are increasingly interested in procedural learning, and the need to deepen this method of teaching has arisen in the days foremost up to COVID-19. Students could learn, engage with peers, and connect with instructors while taking advantage of a social and educational framework that is similar to that of a typical classroom and use the latest cutting-edge technical advancements (Chrysafiadi & Virvou, 2015).

Previous research on TikTok has focused on a variety of critical aspects that influence the app's acceptability in both educational and non-educational settings (Al-Maroof et al., 2020). Researchers have focused on TikTok as a learning tool in the educational setting (Kurdi et al., 2021). Particularly on how diverse elements, such as motives and benefits, affect user adoption of TikTok such as students and educators. TikTok is being studied in non-educational contexts to see how it affects people who aren't in universities or schools. The study conducted by Omar and Dequan (2020), measured the acceptance of TikTok using the Gratifications model. They, particularly, focused on the impact of TikTok on behaviour variables and user encouragement. Similarly, another research examined the impact of technical aspects on customers' intentions to use TikTok in China (Han & Zhang, 2020).

Based on earlier discussions and gaps, the present study purposes to measure the novel aspects such as anxiety, vividness, Task technology fit, intention to use TikTok for procedural knowledge. More specifically, the current study investigates four antecedents: content quality, technology fit, vividness, that influence perceived usefulness, anxiety influence perceived ease of use, which subsequently, together with perceived usefulness influence intention to use TikTok for procedural learning. Time constraints and the immediate accessibility of current information are crucial aspects in using social sites, however, TikTok appears to be a friendlier site for users to copy their earlier knowledge and record new information or remarks than Instagram, which lacks several of TikTok's newly added features. To the best of our knowledge, none of the prior studies investigated the role of TikTok in procedural learning, which is based on a contextual model that compares the efficacy of this platform (Mhamdi et al., 2018). As a result, this research investigates what elements can significantly encourage users to benefit from this platform based on a conceptual model developed to measure user intention.

The current study seeks to create and endorse a theoretical model for user acceptability of Tiktok for normative education. It is critical to emphasize that normative education is not a Tiktok-specific job. TikTok's primary function is to share and view video material formed by users in a volunteer and interactive way. Gefen and Straub (2000) provided a differentiation among inherent and responsibilities beyond the company. The prior is described as a task in which an information system is used to have significant effects on separate result values that aren't part of the intrinsic task, whereas the latter is defined by a task in which an information system is used to support the intrinsic goal achievement. Considering the diverse and adaptable state of modern informatics, Muthitacharoen et al. (2006) highlighted the need of evaluating how individuals tolerate relying on a sole way to achieve outside activities. According to past studies, external task behaviour is influenced by outside motivation (Rigby et al., 1992).

The key goal of the present research is to examine the effect of content quality, task technology fit,

vividness, and anxiety that influence perceived usefulness, also to demonstrate the effect of PEOU and PU on intention to use TikTok for procedural learning.

2. Literature review

2.1. Theoretical foundation

According to Davis (1989), the Technologies Acceptance Model could be used to investigate how and when customers would embrace and use new technology (TAM). This model is the most extensively used paradigm for examining consumers' attitudes toward technology and their purposes to use it. Teo (2010) claims that the technologies acceptance model is effective in understanding users' computing behaviours. According to Davis (1989), attitude toward use influences behavioural intention, which is influenced both straight and secondarily by perceived user significance and perceived utility. Attitude is a key aspect in explaining user behaviour when it comes to technology (Cruz-Cárdenas et al., 2019). Technologies Acceptance Model isn't simply for looking into how new technology is adopted in educational contexts. It might be extended to look at employees' intentions to participate in an e-learning process; Lee and Kozar (2012)used it in conjunction with the diffusion of innovation theory to describe employees' attitudes toward learning with current technology. Procedural learning is another type of learning in which a technology acceptance model is utilized to draw inferences regarding acceptance. While procedural learning is not based on mobile learning, it can be carried out utilizing YouTube, which is accessible via a variety of electronic devices, as well as, of course, movable ones (Lee & Lehto, 2013). Matzavela and Alepis (2021) formed a TAM-based system that was used to explore the use of portable devices by students for primary school teachers. Researchers have used the TAM model to study how users in various sectors accept and embrace technology. Users' attitudes and views regarding the information system are heavily influenced by PEOU and perceived PU. TAM has been criticized for not paying enough attention to the task at hand. For instance, according to Nance and Straub (1996), whereas a user sees a method to be beneficial and simple to use for a task, TAM is less capable of explaining if the system supplies the skills required for the activity. Nevertheless, the capability of a platform of instruction to assist an assignment, on the other hand, can be stated using the task-technology fit (TTF) paradigm (Lee & Lehto, 2013). The TTF seeks to explain how assignment and technology variables influence the result of technology deployment (Strong et al., 2006). In the framework, technology and a task represent the social needs for achieving specific objectives (Zigurs & Buckland, 1998), as well as the instrument that a user employs to complete a task (Fuller & Dennis, 2009), respectively. In addition, when compared to actual use, intention to use is a more escalating dependent variable (Teo, 2010). Previous research has focused on these two categories as critical elements in the acceptance of technologies and behavioural intention to use (Alshurideh et al., 2021). Nevertheless, the studies are absent in discovering the impact of content quality on perceived usefulness in terms of intention to use technology for procedural learning. As a result, we employed the intention to use procedural learning as an outcome variable in this research.

2.2. Relationship content quality and perceived usefulness

Consumer perceptions of the correctness, timeliness, relevance, and completeness of the content on the social media page can be classified as content quality (Carlson & Dreher, 2018). Previous study reveals that unique and appealing material promotes customer engagement and supports drawing their attention to procedural learning (Berger & Milkman, 2012). Moreover, studies believe that information quality supports an eco-friendly cue that is important in determining online buyer behaviour (O'cass & Carlson, 2012). Berger and Milkman (2012) researched the tourism business and discovered that the feature of the content offered by firms on social media impacts the degree of learning exposure of customers over time, allowing these persons to identify the video. Several studies have revealed that content qualities are major analysts of the perceived utility of electronic-learning systems and staff drill programmers, correspondingly. According to Chen et al. (2019), apparent content has a significant impact on the PU of portable device. Once useful to the topic of this research, YouTube is anticipated to deliver excellent insights into rich and diversified foundations of procedural content. People do not

consider erroneous or outdated procedural guidelines to be beneficial. Furthermore, the crucial training of procedural actions that must be executed through a wide range of conditions as part of routine behaviour is becoming increasingly important. Nevertheless, traditional procedural guidelines still depend on a demo of generic pictures of mechanisms or examples to complete a single procedural activity. As a result, people may have a stronger sense of usefulness toward a technology that is built to be nearby for any of such task objectives. Mutually, the degree to which users believe Tiktok offers procedural learning content when requested is likely to have an impact on its perceived usefulness.

Content quality has three main vital constructs, which are sufficiency, timeliness, and relevance. Relevance describes how important the shared content is, whereas sufficiency describes how complete the shared content is and how well it represents a coherent concept. Finally, timeliness states to a technology's capacity to present its consumers with the most up-to-date development information within the essential content (Al-Maroof et al., 2021). Content quality is a distinct direction in terms of technology adoption. Content has a favourable effect on user acceptance of technology. Other earlier research has addressed the issue of content quality, indicating that the developed content quality, the greater the usefulness, and hence the greater the technological acceptance. For example, Park et al. (2014) claim that when content quality is high, the technology's usefulness is also high. Previous research has demonstrated that out-of-date content is less valuable in terms of timeliness. As a result, users' perceptions of technology are influenced by time-critical components. This study proposed the following hypothesis based on the previous discussion.

H1: Content quality is positively related to perceived usefulness.

2.3. Relationship vividness and perceived usefulness

The capability of technology to create a sensory-rich mediated atmosphere is known as vividness (Steuer, 1992). It combines the sensory experience of genuine objects with hallucination, which is the sensory experience of fictitious objects but with no sensory experience (Sher & Lee, 2004). Other scholars have coined terms like "realness," "realism," and "richness" to describe this concept (Sadowski & Stanney, 2002). The concept of vividness derives from the experience of telepresence, or "being there" (Reeves et al., 1992). By the approval of social media for procedural learning, there's a strong case to be made that intelligence of vividness can boost the perceived quality of an understanding, influencing users' evaluations of its value (Lee & Lehto, 2013). More vivid detail may contribute to a more favourable assessment of the online shopping experience (Jiang & Benbasat, 2007). Adding high-standard sensory inputs, such as video, increases the representational richness of the information provided, resulting in increased levels of vividness. Text-only presentations, on the other hand, are thought to be dull (Griffith & Gray, 2002). It has been proposed that acquiring procedural abilities can be promoted and benefited by viewing a dynamic or realistic visual example. For instance, prior research on psychological model creation states that movies or videos "amplify cognition" (Card, 1999, p. 6) by directly illustrating the way of sequences, waves, and 3-D-temporal changes in the shape or act features (Arguel & Jamet, 2009). Procedural content can be easily grasped as an intuitive explanation from side to side the informationally comprehensive external display of moving acts on Tiktok. As a result, the users' increased sense of its effectiveness for procedural learning is most likely due to their enhanced insight, which is enabled by the more vividness of TikTok's procedural material. Based on previous explanation this study proposed;

H2: Vividness positively affects perceived usefulness.

2.4. Relationship between anxiety and perceived ease of use

The use of technology frequently causes undesirable side effects, such as powerful, negative sensitive situations that develop during computer engagement. Frustration, misperception, anger, worry, and other negative emotions can have an impact on the encounter but also productivity, learning, public relations, and general well-being.

Anxiety is classified into three types: trait, state, and concept specific. Trait anxiety is well-defined as broad pervasive anxiety that a person experiences throughout their life. People with trait anxiety are

nervous and tense all of the time, no matter what their circumstances are. Anxiety is a personality, learning theory, and psychopathology concept that is frequently used. Trait anxiety is a personality trait that can be passed down through generations. Given that some research has discovered a relationship between math anxiety and trait anxiety, it's only logical to think about a link between trait and computing concerns. A person with a high trait anxiety level is thought to have higher computer anxiety than someone with a low trait anxiety level (Howard et al., 1986). When an individual has anxiety that varies over time and develops in a responsive setting, this is referred to as state anxiety. State anxiety is linked to one's educational background. A person may have felt anxious in the past and this concern is transferred to a new scenario. Concept-specific anxiety is a sort of anxiety that comes and goes. The spectrum between trait and state anxiety is called concept-specific anxiety. It's a type of anxiousness that's linked to a certain circumstance. As a result, computer anxiety is concept-specific anxiety, because it is an emotion tied to a person's connection with computers. Howard et al. (1986) describe computer anxiety as an individual's inclination to feel uneasy about using a computer.

Bervell and Umar (2020) study the impact of tutors' concern in using LMSs in distant education and the adoption of a new system. As a result, this study proposes the following hypothesis;
H3: Anxiety is the strongest predictor that has a negative effect on perceived ease of use.

2.5. Relationship between Task Technology Fit and Perceived Usefulness

The TTF model is a frequently used paradigm for assessing how information technology affects performance by measuring task-technology fit (Wu & Chen, 2017). According to the fundamental TTF model, people use information technology to acquire advantages such as increased work performance. TTF refers to how effectively a technology matches task-associated needs, and the term is tied to the structure, which measures individuals' perceived effectiveness (Yaakopa et al., 2021). The TAM and task-technology fit models combined may provide credible details for how information technology and mobile apps are used in a pandemic situation. Individual-technology fit relates to people's connections with information systems, which are frequently linked with their technological adaptive behavior. In addition, task-technology fit describes how an information system's capabilities align with the tasks that the customer must do (Wu & Chen, 2017).

The TTF aims to explain how technology and task factors influence the consequence of technology use. The four key aspects of the TTF's fundamental model are task characteristics, technological attributes (or functionality), TTF, and technology usage (Strong et al., 2006). The TTF model's central premise is that the more assistance a certain technology gives for an assignment. The TAM & TTF provide distinct details of the mechanics underlying the user's decision to embrace an information system or technology.

The TTF is employed to appraise user performance. The features that affect the use and the examination of the capabilities of technology utility and task requirements are determined by the TTF model (Yaakopa et al., 2021). The effectiveness of technology acceptance is determined by user acceptability and how well the task fits. The TTF is an empirical metric. The utility's fitness between task and technology must be acknowledged by the user. When consumers accept the technology and the association between the task technology fit on perceived effectiveness and perceived user significance desire to use for procedural learning throughout this period of Covid19 cataclysm, the technology likely matches the task. According to the literature, a better match between task and technology should result in higher learning outcomes (McGill & Klobas, 2009). The perceived compatibility amongst the chosen method of learning procedural tasks and the technology used in this research is referred to as task-technology fit. The current study adds the TTF concept into our conceptual model to investigate its impact on PU. With this understanding, this study proposes the following hypothesis;
H4: Task-technology fit will positively influence perceived usefulness.

2.6. Relationship of perceived usefulness with the intention to use for procedural learning

Perceived usefulness (PU) is defined as the extent to which users trust that e-learning will help them attain their teaching and education goals. Earlier research found that PU had the greatest effect on attitude (Teo, 2010). PU reflects users' subjective opinions about the effectiveness of employing a social media

platform to boost instructor motivation and procedural learning. This element suggests that a social media user could use social media apps as a motivator to attain training goals (Nguyen & Nguyen, 2020). PU has been used to uncover the direct predictors of users continued use on numerous occasions (Iriani & Andjarwati, 2020).

Perceived usefulness becomes the determinant of a system, adoption, and user behaviour. Technology is deemed to be successful if it provides the customer with the value of usefulness that they require. According to Iriani and Andjarwati (2020), the PU has a strong influence on procedural learning decisions.

Santhanamery and Ramayah (2018) also investigated the mediating influence of PU and described it as the extent to which users perceive the system as easy to use. Previous research has concentrated on these two dimensions as important elements in technology acceptability and behavioural intention to use. Based on prior research, this study proposed the following hypotheses;

H5: Perceived usefulness will positively influence intention to use for procedural learning.

2.7. Relationship of perceived ease of use with the intention to use for procedural learning

According to Davis (1989), PEOU is referring to the extent to which the user perceives technology can be used effortlessly and without problems. The frequency in which users engage with the system might also reflect how it's simple to use. Moreover, Nguyen and Nguyen (2020) stated that PEOU can boost consumer acceptability of a product or service.

Several studies have recognized the significance of PEOU on ICT adoption (Gefen & Straub, 2000). The perceived ease of use is crucial for grasping users' attitudes or thoughts about the information system. Based on past research, the following hypothesis has been proposed.

H6: Perceived ease of use will positively influence intention to use for procedural learning.

3. Research Methodology

This research aims to validate the suggested framework through the formation of theoretical hypotheses. This study follows a quantitative approach. r. In common, a quantitative study entails a substantial descriptive sample and a defined data collection technique (Yaakopa et al., 2021). Specifically, this research aims to analyze hypotheses, the variable correlation for Berlin youths' Covid-19 intra-period for the purpose to use social media for procedural learning, and the influence of independent variables toward outcome variable.

Table 1: Data Analysis

		Frequencies	%
Age	20-30	133	42%
	31-40	109	35%
	41-above	71	23%
Gender	Male	145	46%
	Female	168	54%
Experience	0-1 year	102	33%
	1-2 year	133	42%
	2-3 years	52	17%
	3-4 years	26	8%
Ownership	Only Smartphone	134	43%
	Only Tablet	96	31%
	Smartphone and Tablet	83	27%
Operating System/Smart Phone	iOS (iPhone)	132	42%
	Android	123	39%
	Windows 8	37	12%
	Other	21	7%

In this research, the independent variable consists of content quality, vividness, anxiety, task technology fit, and its impact on PU and PEOU and while the outcome variable consists of intention to use for procedural learning.

The population of this research is TikTok users from the Netherlands with the age of 20 to 41 years and above who can use social media for procedural learning., TikTok users have long been considered to be the most active user group of social media (Dimock, 2019). A temporally separated research design of three-time lag was conducted to gather data from Tiktok users. Time lagged was adopted to control the issue of common method biases that may occur when related variables are measured using common criteria and same time (Podsakoff et al., 2003). An invitation to fill out the survey questionnaires, in the English language, was made public on various regularly visited community websites in the Netherlands. Participants were informed about the study's goal and assured of the complete anonymity of their responses to obtain their voluntary participation in the study.

The online survey consisting of two parts was distributed to the respondents. The first part of the questionnaire comprised demographic features of the individuals, including age, gender, marital, and qualification. Whereas the second part consists of the survey, 28 items related to the study constructs, such as content quality, vividness, anxiety, task technology fit. The questionnaire was sent to respondents on June 01, 2020. In twelve-week time, the authors received 312 filled responses.

The follow-up reminders were given every week, and finally, we received 430 filled responses in 02 months. The third and last reminder of the survey was sent to respondents on December 01, 2020, authors received 520 questionnaires back on January 31, 2021. The. After careful screening, it was found that 100 responses were missing values, and 107 were unengaged; therefore, they were not included in further analysis. Thus, 313 responses were considered a final response for this study which has all three parts of the survey successfully filled by study respondents, with a final response rate of 35% in a total duration of 8 months long data collection.

For all of the question items, an online survey was created using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). It can assist scholars in determining the relationship between antecedent and outcome variables. In this study, overall, 313 responses were useable after screening of data, which was then examined with the help of statistical software SPSS and SmartPLS. To prove the research aims and hypotheses, descriptive and correlation analyses were performed to examine each section of the data gathered.

4. Outcomes

4.1. Data Analysis

Following the data cleaning procedure, 313 replies were e usable after deleting incorrect and missing data, resulting in a 35% reply rate. The sample contained 145 (46 %) females and 168 (54 %) males. The defendants in the survey ranged in age from 20 to 41 years and above. About the using experience, 33% of users were having 1 year, 42% were between 2 years, 17% were between 3 years and a lesser amount of ratio was noticed for 4 years (i.e. 8%). The demographic variables are described in detail in Table 1.

Table 2: Discriminant Validity

	SUF	RLV	TME	VID	TTF	ANX	PU	PEOU	INUSE
Sufficient	.76								
Relevance	.254	.81							
Timeliness	.323	.192	.776						
Vividness	.174	.208	.415	.670					
Task technology fit	.132	.447	.264	.233	.785				
Anxiety	.556	.317	.309	.135	.294	.833			
Perceived Usefulness	.104	.441	.237	.225	.218	.109	.792		
Perceived Ease of Use	.104	.441	.237	.225	.218	.109	.109	.779	
Intention to Use for Procedural Learning	.104	.441	.237	.225	.218	.109	.109	.109	.824

4.2. Measuring Models

The measuring model assessment evaluates the items as well as the constructs they are linked to (Hair et al., 2019). To validate measures and evaluate the hypothesis, this study used the partial least squares analysis technique with SmartPLS 3.3. The average variance extracted, internal consistency, convergent validity, reliability test (outer loadings), and discriminant validity are all aspects evaluated while evaluating the measurement model. According to Hair et al. (2017), the acceptable ratio for composite reliability is between .70 and .90. The AVE values of .75 to .85 were all more than .5, indicating the convergent validity. Moreover, a range of all VIF values from 1.19 to 3.58, was less than 10, showing the absence of multicollinearity (Hair et al., 2017). Consequently, discriminant validity was obtained based on suggested criterion (see Table 2).

All of the items' standardized loadings beat the recommended threshold of .5. (Hair et al., 2017). Using Exploratory Factor Analysis, we investigated the study question is 28-variables for determining validity. For factor analysis, Bartlet's Sphericity test must yield a statistically significant result. Following a comprehensive analysis of the final data set, the KMO measure of sampling adequacy was exceptional, and Bartlett's test of sphericity produced a statistically substantial result (.889). As shown in Table 3, entire loadings are above the .70 cutoff limit (Hair et al., 2017).

Table 3: Reliability Analysis					
Variables	Items	Cronbach's Alpha	Factor Loading	Composite Reliability	Average Variance Extracted
Sufficient	SUF1	.81	.720	.79	.75
	SUF2		.730		
	SUF3		.810		
Relevance	RLV1	.76	.812	.84	.80
	RLV2		.761		
	RLV3		.850		
Timeliness	TME1	.83	.782	.81	.77
	TME2		.814		
	TME3		.731		
Vividness	VID1	.76	.833	.81	. .66
	VID2		.712		
	VID3		.771		
Task technology fit	TTF1	.87	.721	.82	.78
	TTF2		.777		
	TTF3		.851		
Anxiety	ANX1	.78	.834	. .87	.83
	ANX2		.854		
	ANX3		.811		
Perceived Usefulness	PU1	.80	.701	.83	. .82
	PU2		.881		
	PU3		.785		
Perceived Ease of Use	PEOU1	.79	.811	.85	.77
	PEOU2		.659		
	PEOU3		.844		
	PEOU4		.788		
Intention to Use for Procedural Learning	InUse1	.86	.872	.86	.82
	InUse2		.864		
	InUse3		.734		

4.3. Assessment of structural model

PLS-SEM was used to examine the significance and relevance of the constructs using 1000 samples and bootstrapping. Table 4 sums up the results of all hypotheses. The direct influence of Content Quality on Perceived Usefulness is represented in Table 4. The results of H1 are confirmed by the fact that the value of t is greater than one (β = .513, t = 5.134, P = .01). This suggests that content quality has a significant positive impact on perceived usefulness. The t value (β = .511, t = 1.98, p = .05) supports the results of H2. This suggests that Task Technology Fit has a significant positive effect on Perceived Usefulness. The t value (β =. 341, t = 4.114, p = .001) supports the results of H3. This indicates that vividness has a strong positive influence on perceived usefulness. The t value (β = -.213, t = 2.101, p = .05) supports the results of H4 this demonstrates anxiety's negative influence on PEOU. The finding of H5 is likewise supported (β =. 614, t = 5.931, p = .00), indicating that the positive effect of PEOU on intention to use for procedural learning is substantial. The result of H6 is similarly reinforced (β =. 412, t = 2.741, p = .02), indicating that perceived utility has a significant positive effect on procedural learning intention. The study outcomes demonstrated that all hypotheses were checked in the research; The results of hypothesis testing are summarized in Table 4.
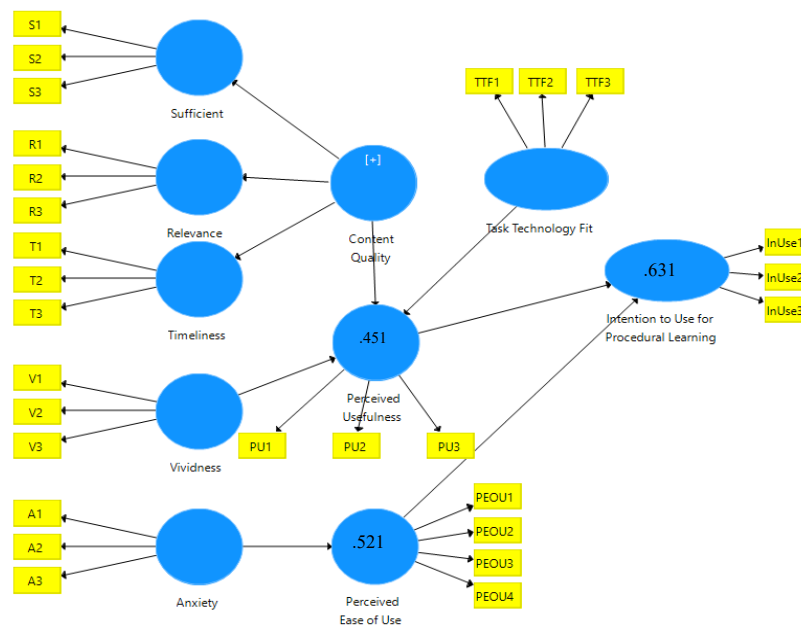

Figure 1. Resulting Framework

Table 4: Summary of Testing Hypothesis

Hypothesis	Standardized Coefficient	T-Value	P Values	Results
Content Quality -> Perceived Usefulness	.513	5.134	.01	Supported
Task Technology Fit -> Perceived Usefulness	.511	1.982	.05	Supported
Vividness -> Perceived Usefulness	.341	4.114	.01	Supported
Anxiety -> Perceived Ease of Use	-.213	2.101	.05	Supported
Perceived Ease of Use -> Intention to Use for Procedural Learning	.614	5.931	.00	Supported
Perceived Usefulness -> Intention to Use for Procedural Learning	.412	2.741	.02	Supported

5. Discussion

The analysis provided sight on the significance of social media in procedural learning contexts, taking into account the major aspects that influence social media acceptability (Oum & Han, 2011). However, this study focuses on the important characteristics that demonstrate TikTok app acceptability for procedural learning. This study gives a thorough grasp of the antecedents and advantages of perceived ease of use and perceived usefulness on procedural learning intentions. The findings revealed that content quality is positively linked with perceived usefulness. The findings on content quality were similar to prior research, which claimed that content quality is a significant component in the acceptance of any novel technologies (Ahmad et al., 2019). Similarly, the vividness of perceived usefulness as well as an essential factor that defines the use of social media for procedural learning. The outcomes were reliable with the prior study, which indicated that perceived usefulness has a substantial influence on intended usage. Another antecedent of perceived usefulness is task technology fit has a positive impact on the intention to use for procedural learning. These findings were supported by earlier studies that found perceived usefulness has a considerable effect on the intention to use (Park et al., 2014). Vividness was also found to be significant with PU(Sin Tan et al., 2009), whereas anxiety was also found to be significant with PEOU. The outcome of this research also displays that PEOU, PU has a very strong positive effect on the intention to use for procedural learning. Social media allows users to communicate with current and possible future users in an interactive manner which promotes procedural learning. The results are also in line with earlier research that revealed positive correlations between perceived utility, perceived ease of use, and intention to use for procedural learning (Ahmad et al., 2019).
Wang and Wang (2009) analyze the key effect of system value, data standard, service standard, user satisfaction and personality on the desire of using via PU by collecting data from teachers in southern Taiwan. The ease of use is an internet-based learning system is influenced more directly by perceived system quality than by the other two factors.

In conclusion, user acceptability is linked to an individual's assessment of its usefulness as well as their assessment of their sentiments in reply to the user experience. Furthermore, TikTok has a huge number of related, latest, and enough education resources feeling of life enforced by the process material provided on TikTok, as well as their views of content quality concerning their chosen methods of learning procedural tasks and the variations and support offered by TikTok. Overall, the findings support the TAM's relevance to this research. Given the usage of TikTok as a practical model for investigating the current study, our findings show that TikTok's usefulness as a shared network for procedural learning and teaching may be augmented. Nevertheless, because it is frequently regarded as a kind of enjoyment rather than an educational tool, not everyone will be equally motivated to perceive its educational worth. The outcomes of this research demonstrate the fact that the COVID-19 pandemic has transformed the use of digital technology and social media apps, as discussed and analyzed in this paper. Digital technology and mobile apps have proven to be indispensable resources for procedural learning.

5.2. Theoretical implications

Due to the current and speedy evolution of social media, Tiktok has become one of the most popular types of social networks. To put it in another way, TikTok has been identified as a capable conduit for procedural learning. People can share specialized and up-to-date knowledge by posting and downloading it. Furthermore, TikTok is regarded as the most pleasant micro-video sharing tool. Millions of people watch because of the short time and content (Lee & Lehto, 2013). In theory, users in procedural learning have had pleasurable and helpful experiences when TikTok has been employed as a source of information. As a result, more specified and informed videos that expand viewers' understanding and practice are required. TikTok has narrowly influenced users in procedural learning due to its brief videos, which contribute users' information in a limited way. The single distinguishing feature is that it maintains users' memories more delightful with amusing experiences (Yang, 2020). As a result, the content should be examined to ensure that the developers of TikTok provide richer, more up-to-date, and specialized information.

5.3. Practical Implications

Firstly, by utilizing the new framework, users may be able to concentrate their efforts toward activities that promote meaningful interaction rather than wasting valuable resources. This may cause users to understand the value that can be captured from the platform, which results in both more academic, non-academics, and business anchored activities. Secondly, users do not grasp the platform well enough to use it confidently to achieve trustworthy and successful results. As participants mentioned, users are highly perceived as a learner. Since entertainment is the most prominent reason for using the platform, the commercializing of the platform may not be welcomed.

5.4. Managerial implications

The point that Tiktok is a source of information for users in various sectors shows that it is a substantial and widely used platform for information exchange. Although the Chinese government just recently developed TikTok as a means of disseminating information during COVID-19, the short videos enticed consumers to use it. However, there is a chance that adoption will be higher. Long-term acceptability will be higher if executives and developers concentrate on improving more significant features, concentrating on the substance of uploaded videos, as well as increasing the undersized form of video-sharing apps to better assess and recover user experiences.

5.5. Limitations and future directions

Certain limitations were proposed in the study. First and foremost, the study is restricted to one sort of social network, TikTok. Many additional platforms, such as Snack, have recently been launched to provide similar tasks to the chosen one. As a result, upcoming research can concentrate on these novel platforms or apps. By examining their efficacy and conducting a comparison study in this regard. Moreover, the present research has engrossed users in the Netherlands. As a result, future research can concentrate on TikTok's usefulness in other domains which compare the different outcomes due to variations in the situation. Third, the current study demonstrates TikTok's acceptance of procedural learning. The researchers identified procedural learning as a key category for motivation, which often showed to supersede other forms of motivation. Thus, further research should dig deeper into the importance of different types of learning and then juxtapose them to be able to further tailor campaigns.

Therefore, future research could focus on the factors that motivate people to use TikTok to improve the quality of their learning, permit students to benefit from their academic and instructional potential, and, in general, endorse and inspire the use of these unique styles of learning and education. The methods in which this growth of learning-related content develops in a modern environment that are increasingly concentrated on entertainment and comic content should be studied through research. In the Future, Researchers should conduct a study to investigate marketing strategies used by companies on Tiktok that may be of value to better understand what marketing strategy is superior on the platform and create a potential recipe for success on the platform.

References

Adnan, M., Mehmood, F., & Ahmad, B. (2021). Pattern of Facebook Usage and its Impacts on Physical Activity. *THE SKY-International Journal of Physical Education and Sports Sciences (IJPESS)*, *5*(1), 44-60. https://doi.org/10.51846/the-sky.v5i1.1040

Ahmad, S. Z., Abu Bakar, A. R., & Ahmad, N. (2019). Social media adoption and its impact on firm performance: the case of the UAE. *International Journal of Entrepreneurial Behavior & Research*, *25*(1), 84-111. https://doi.org/10.1108/IJEBR-08-2017-0299

Al-Maroof, R., Ayoubi, K., Alhumaid, K., Aburayya, A., Alshurideh, M., Alfaisal, R., & Salloum, S. (2021). The acceptance of social media video for knowledge acquisition, sharing and application: A comparative study among YouYube users and TikTok users' for medical purposes. *International Journal of Data and Network Science*, *5*(3), 197. https://zuscholars.zu.ac.ae/works/4415

Al-Maroof, R. S., Salloum, S. A., Hassanien, A. E., & Shaalan, K. (2020). Fear from COVID-19 and technology adoption: the impact of Google Meet during Coronavirus pandemic. *Interactive Learning Environments*, *Ahead of Print*, 1-16. https://doi.org/10.1080/10494820.2020.1830121

AlQudah, A. A., Salloum, S. A., & Shaalan, K. (2021). The Role of Technology Acceptance in Healthcare to Mitigate COVID-19 Outbreak. *Emerging Technologies During the Era of COVID-19 Pandemic*, *348*, 223. https://doi.org/10.1007/978-3-030-67716-9_14

Alshurideh, M. T., Kurdi, B. A., AlHamad, A. Q., Salloum, S. A., Alkurdi, S., Dehghan, A., Abuhashesh, M., & Masa'deh, R. e. (2021). Factors affecting the use of smart mobile examination platforms by universities' postgraduate students during the COVID 19 pandemic: an empirical study. Informatics,

Amosun, T. S., Jianxun, C., Rufai, O. H., Muhideen, S., Shahani, R., Shah, Z., & Koroma, J. (2021). WeChat usage during COVID-19 pandemic lockdown: the mediating role of online self-disclosure on quality of friendship and well-being. *Global Knowledge, Memory and Communication*, *March 08*. https://doi.org/10.1108/GKMC-09-2020-0136

Arguel, A., & Jamet, E. (2009). Using video and static pictures to improve learning of procedural contents. *Computers in Human Behavior*, *25*(2), 354-359. https://doi.org/10.1016/j.chb.2008.12.014

Berger, J., & Milkman, K. L. (2012). What makes online content viral? *Journal of marketing research*, *49*(2), 192-205. https://doi.org/10.1509/jmr.10.0353

Bervell, B., & Umar, I. N. (2020). Blended learning or face-to-face? Does Tutor anxiety prevent the adoption of Learning Management Systems for distance education in Ghana? *Open Learning: The Journal of Open, Distance and e-Learning*, *35*(2), 159-177. https://doi.org/10.1080/02680513.2018.1548964

Card, M. (1999). *Readings in information visualization: using vision to think*. Morgan Kaufmann.

Carlson, B., & Dreher, T. (2018). Introduction: Indigenous innovation in social media. *Media International Australia*, *169*(1), 16-20. https://doi.org/10.1177/1329878X18803798

Chatzoglou, P., Chatzoudes, D., Ioakeimidou, D., & Tokoutsi, A. (2020). Generation Z: Factors affecting the use of Social Networking Sites (SNSs). 2020 15th International Workshop on Semantic and Social Media Adaptation and Personalization (SMA,

Chen, Z., He, Q., Mao, Z., Chung, H.-M., & Maharjan, S. (2019). A study on the characteristics of douyin short videos and implications for edge caching. Proceedings of the ACM Turing Celebration Conference-China,

Chrysafiadi, K., & Virvou, M. (2015). Student modeling for personalized education: A review of the literature. *Advances in personalized web-based education*, 1-24. https://doi.org/10.1007/978-3-319-12895-5_1

Cornejo, R., Tentori, M., & Favela, J. (2013). Enriching in-person encounters through social media: A study on family connectedness for the elderly. *International Journal of Human-Computer Studies*, *71*(9), 889-899. https://doi.org/10.1016/j.ijhcs.2013.04.001

Cruz-Cárdenas, J., Zabelina, E., Deyneka, O., Guadalupe-Lanas, J., & Velín-Fárez, M. (2019). Role of demographic factors, attitudes toward technology, and cultural values in the prediction of technology-based consumer behaviors: A study in developing and emerging countries. *Technological Forecasting and Social Change*, *149*, 119768. https://doi.org/10.1016/j.techfore.2019.119768

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340. https://doi.org/10.2307/249008

Dawud, Y., & Nikolic, S. (2020). Impact of Gamification on Social Network Platforms. https://doi.org/http://lup.lub.lu.se/studentpapers/record/9020753

Dimock, M. (2019). Defining generations: Where Millennials end and Generation Z begins. *Pew Research Center*, *17*(1), 1-7. https://doi.org/10.4324/9781410600899

Eiriksdottir, E., & Catrambone, R. (2011). Procedural instructions, principles, and examples: How to structure instructions for procedural tasks to enhance performance, learning, and transfer. *Human factors*, *53*(6), 749-770. https://doi.org/10.1177/0018720811419154

Ellis, J. A., Whitehill, B. V., & Irick, C. (1996). The effects of explanations and pictures on learning, retention, and transfer of a procedural assembly task. *Contemporary Educational Psychology*, *21*(2), 129-148. https://doi.org/10.1006/ceps.1996.0012

Fuller, R. M., & Dennis, A. R. (2009). Does fit matter? The impact of task-technology fit and appropriation on team performance in repeated tasks. *Information Systems Research*, *20*(1), 2-17. https://doi.org/10.1287/isre.1070.0167

Gefen, D., & Straub, D. W. (2000). The relative importance of perceived ease of use in IS adoption: A study of e-commerce adoption. *Journal of the association for Information Systems*, *1*(1), 8. https://doi.org/20091115035657id

Griffith, D. A., & Gray, C. C. (2002). The fallacy of the level playing field: The effect of brand familiarity and web site vividness on online consumer response. *Journal of Marketing Channels*, *9*(3-4), 87-102. https://doi.org/10.1300/J049v09n03_05

Grover, S., Sahoo, S., Mehra, A., Avasthi, A., Tripathi, A., Subramanyan, A., Pattojoshi, A., Rao, G. P., Saha, G., & Mishra, K. (2020). Psychological impact of COVID-19 lockdown: An online survey from India. *Indian Journal of Psychiatry*, *62*(4), 354. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_427_20

Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*.

Han, M., & Zhang, X. (2020). Prospects for the advancement of the TikTok in the age of 5G communication. 2020 13th CMI Conference on Cybersecurity and Privacy (CMI)-Digital Transformation-Potentials and Challenges (51275),

Howard, K. I., Kopta, S. M., Krause, M. S., & Orlinsky, D. E. (1986). The dose–effect relationship in psychotherapy. *American psychologist*, *41*(2), 159-164. https://doi.org/org/buy/1986-17818-001

Iriani, S. S., & Andjarwati, A. L. (2020). Analysis of perceived usefulness, perceived ease of use, and perceived risk toward online shopping in the era of Covid-19 pandemic. *Systematic Reviews in Pharmacy*, *11*(12), 313-320.

Jiang, Z., & Benbasat, I. (2007). The Effects of Presentation Formats and Task Complexity on Online Consumers' Product Understanding. *MIS Quarterly*, *31*(3), 475-500. https://doi.org/10.2307/25148804

Kurdi, B. A., Alshurideh, M., Nuseir, M., Aburayya, A., & Salloum, S. A. (2021). The effects of subjective norm on the intention to use social media networks: an exploratory study using PLS-SEM and machine learning approach. International Conference on Advanced Machine Learning Technologies and Applications,

Lee, D. Y., & Lehto, M. R. (2013). User acceptance of YouTube for procedural learning: An extension of the Technology Acceptance Model. *Computers & Education*, *61*, 193-208. https://doi.org/10.1016/j.compedu.2012.10.001

Lee, Y., & Kozar, K. A. (2012). Understanding of website usability: Specifying and measuring constructs and their relationships. *Decision support systems*, *52*(2), 450-463.

Matzavela, V., & Alepis, E. (2021). M-learning in the COVID-19 era: physical vs digital class. *Education and*

Information Technologies, 1-21. https://doi.org/10.1007/s10639-021-10572-6

McGill, T. J., & Klobas, J. E. (2009). A task–technology fit view of learning management system impact. *Computers & Education*, *52*(2), 496-508. https://doi.org/https://doi.org/10.1016/j.compedu.2008.10.002

Mhamdi, C., Al-Emran, M., & Salloum, S. A. (2018). Text mining and analytics: A case study from news channels posts on Facebook. In *Intelligent Natural Language Processing: Trends and Applications* (pp. 399-415). Springer. https://doi.org/10.1007/978-3-319-67056-0_19

Muthitacharoen, A. M., Gillenson, M. L., & Suwan, N. (2006). Segmenting online customers to manage business resources: A study of the impacts of sales channel strategies on consumer preferences. *Information & Management*, *43*(5), 678-695. https://doi.org/10.1016/j.im.2005.11.002

Nance, W. D., & Straub, D. W. (1996). An investigation of task/technology fit and information technology choices in knowledge work. *Journal of Information Technology Management*, *7*, 1-14. http://jitm.ubalt.edu/VII3-4/article1.pdf

Nguyen, H., & Nguyen, A. (2020). Covid-19 misinformation and the social (media) amplification of risk: A Vietnamese perspective. *Media and Communication*, *8*(2), 444-447. https://doi.org/10.17645/mac.v8i2.3227

O'cass, A., & Carlson, J. (2012). An empirical assessment of consumers' evaluations of web site service quality: conceptualizing and testing a formative model. *Journal of Services Marketing*. https://doi.org/10.1108/08876041211257909

Omar, B., & Dequan, W. (2020). Watch, share or create: The influence of personality traits and user motivation on TikTok mobile video usage. *International Journal of Interactive Mobile Technologies*, *14*(4), 121–137. https://doi.org/10.3991/ijim.v14i04.12429

Oum, S., & Han, D. (2011). An empirical study of the determinants of the intention to participate in user-created contents (UCC) services. *Expert Systems with Applications*, *38*(12), 15110-15121. https://doi.org/10.1016/j.eswa.2011.05.098

Park, Y. K., Song, J. H., Yoon, S. W., & Kim, J. (2014). Learning organization and innovative behavior: The mediating effect of work engagement. *European Journal of Training and Development*.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, *88*(5), 879. https://doi.org/10.1037/0021-9010.88.5.879

Reeves, B., Lombard, M., & Melwani, G. (1992). Faces on the screen: Pictures or natural experience. annual conference of the International Communication Association,

Rigby, C. S., Deci, E. L., Patrick, B. C., & Ryan, R. M. (1992). Beyond the intrinsic-extrinsic dichotomy: Self-determination in motivation and learning. *Motivation and emotion*, *16*(3), 165-185. https://doi.org/10.1007/BF00991650

Sadowski, W., & Stanney, K. (2002). Presence in virtual environments. In *Handbook of virtual environments* (pp. 831-846). CRC Press. https://doi.org/10.1201/9780585399102-51

Santhanamery, T., & Ramayah, T. (2018). Trust in the system: The mediating effect of perceived usefulness of the e-filing system. In *User centric e-government* (pp. 89-103). Springer. https://doi.org/0.1007/978-3-319-59442-2_5

Sher, P. J., & Lee, V. C. (2004). Information technology as a facilitator for enhancing dynamic capabilities through knowledge management. *Information & management*, *41*(8), 933-945. https://doi.org/10.1016/j.im.2003.06.004

Sin Tan, K., Choy Chong, S., Lin, B., & Cyril Eze, U. (2009). Internet-based ICT adoption: evidence from Malaysian SMEs. *Industrial Management & Data Systems*, *109*(2), 224-244. https://doi.org/10.1108/02635570910930118

Steuer, J. (1992). Defining virtual reality: Dimensions determining telepresence. *Journal of communication*, *42*(4), 73-93. https://doi.org/10.1111/j.1460-2466.1992.tb00812.x

Strong, D. M., Dishaw, M. T., & Bandy, D. B. (2006). Extending task technology fit with computer self-efficacy. *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, *37*(2-3), 96-107. https://doi.org/10.1145/1161345.1161358

Sunhare, R., & Shaikh, Y. (2019). Study of security vulnerabilities in social networking websites. *International Journal of Management, IT and Engineering*, *9*(6), 278-291.

Teo, T. (2010). Examining the influence of subjective norm and facilitating conditions on the intention to use technology among pre-service teachers: a structural equation modeling of an extended technology acceptance model. *Asia Pacific Education Review*, *11*(2), 253-262. https://doi.org/10.1007/s12564-009-9066-4

Wu, B., & Chen, X. (2017). Continuance intention to use MOOCs: Integrating the technology acceptance model (TAM) and task technology fit (TTF) model. *Computers in Human Behavior*, *67*, 221-232. https://doi.org/10.1016/j.chb.2016.10.028

Yaakopa, A. Y., Shia, Y. P., Fosterb, B., & Saputraa, J. (2021). Investigating e-wallet adoption of COVID19 intra-period among Malaysian youths': Integrated task-technology fit and technology acceptance model framework. *International Journal of Data and Network Science*, *5*, 295–302. https://doi.org/10.5267/j.ijdns.2021.6.004

Yang, Y. (2020). *Understanding Young Adults' TikTok Usage* Louisiana State University]. Baton Rouge, Louisiana.

Zigurs, I., & Buckland, B. K. (1998). A theory of task/technology fit and group support systems effectiveness. *MIS quarterly*, 313-334. https://doi.org/10.2307/249668