The Influence of Mobile App Store Ratings and Reviews on Download Intentions: A Study of Sri Lankan Consumers

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ABSTRACT

Purpose: This study aims to understand the impact of user reviews and ratings on mobile app download intention and the moderating impact of perceived usefulness on the strength of this relationship.

Design/methodology/approach: A scenario-based survey method was selected following the positivism research paradigm. For this purpose, 304 responses were collected using different versions of the same scenario.

Findings: The statistical results show that 37.5% of Sri Lankan consumers' mobile app download intention is explained by mobile app ratings and reviews, which have been found to be a significant influencing factor in potential users' intentions to download the app. However, perceived usefulness does not significantly moderate this relationship.

Originality: This study is the first attempt to understand the impact of user reviews and ratings on mobile app download intention in the Sri Lankan context.

Implications: The findings encourage Sri Lankan mobile app developers and owners to closely monitor and respond to user reviews and ratings to better meet user expectations and improve app ratings.

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Introduction

At present, smartphones are capable of addressing practically every episode of an individual's life and affecting numerous aspects of society. Technological improvements have enabled mobile devices with advanced features to increase the current worldwide unique mobile phone users to reach a whopping 5.22 billion (Kemp, 2021). Smartphones bring productive resources through mobile apps (Keith et al., 2013) which are the software that allows users to carry out specific actions on their smartphones (Islam et al., 2010). Especially with the COVID-19 pandemic, people turned to mobile devices as physical contact was limited and businesses suffered. Mobile banking services (Chen, 2013), mobile payments, and financial and health services (Chemingui, 2013; Luarn and Lin, 2005; Zhou, 2013) were mostly facilitated by mobile apps, which were made available by different service providers. Mobile apps can be pre-installed on mobile devices during mobile manufacturing or even downloaded

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from various mobile application distribution arenas (Wu, 2013) and currently iOS App Store and Google Play Store are the leading platforms used by smartphone users to download their desired mobile applications (Zolkepli et al., 2020). These platforms allow app users to evaluate applications on their mobile devices, as well as score and review them publicly and leave reviews which include a 1 to 5-star rating and to share their thoughts on it and to assist other users in choosing between comparable applications (Mukherjee et al., 2020). When it comes to potential mobile app users, they obtain information on mobile apps by reviewing the user ratings and reviews (Le et al., 2023) because app stores are a very new concept that has been in people's lives for a few years. The newness of this concept also emphasizes the need for more research focused on users' intentions to download apps from app stores based on the reviews and ratings on app stores (Vasa et al., 2012; Wu, 2013).

According to prior research, users' decision to download a mobile app would be influenced by their expectations of personal gains and benefits (Wu, 2013). Previous research has explored various mobile services, such as the usage of mobile advertising and mobile internet (Fogelgren et al., 2003; Zhang & Mao, 2008), aiming to understand how mobile applications change human behaviour. Yang (2013) studied the factors that have affected the usage of mobile apps, which initially require downloading in most instances. Much of the research was successful enough to clarify that social influence on a given mobile app user has a beneficial impact on an individual's use of technology (Luarn and Lin, 2005; Cheung et al., 2011). Harris et al. (2016) have given evidence in the digital world, customer reviews, and ratings will play a crucial part in potential app users' decision-making.

As the mobile apps and mobile app store concept are novel, the human behavior adjustments can be justified according to the Technology Acceptance Model, which describes how users adapt when confronted with new technology (Chin et al., 2018). Out of the two key variables of the model, perceived usefulness plays a significant role in mobile app usage (Wu, 2013). Hence, this research further intends to identify whether perceived usefulness moderates the direct relationship between user rating and reviews and mobile app download intention.

Many of the previously conducted studies regarding adapting to mobile technology over the years have identified features, development, usability, compatibility, and complexity of mobile applications that affect the mobile app users to adapt to the piece of technology (Hsu et al., 2015). As per Cata and Martz (2015), an app's rating and pricing have some influence on deciding mobile customer behaviour. Previous studies have discovered user reviews given for mobile apps have a direct positive impact on mobile app download and usage intentions (Kim et al., 2016). Research was able to find that to prevent installing non-functional or defective apps, users critically evaluate the feedback given on these programs (Rogerson, 2019). However, most of these studies were based on Western countries (Hsu et al., 2015), and there is a lack of similar studies in Asian countries like

Sri Lanka. Given the increasing trend in app usage, understanding mobile app download intentions in Sri Lanka is important. Statistics suggest that smartphone users in Sri Lanka are projected to reach 9.11 million by 2025 (Statista, 2020), with a 32% increase in usage during lockdown periods (Perera, 2020).

Hence, this study aims to explore the impact of the mobile app user ratings and reviews on the potential app user's download intention with the growth of mobile technology in the Sri Lankan context. Thus, this study aims to empirically evaluate the research problem of, "Do perceived mobile app store user ratings and reviews impact the potential users' mobile app download intention?". To answer this research problem, two key objectives have been outlined: *1. To identify the impact of mobile app users' ratings and reviews towards potential app users' download intention and 2. To assess the impact of the perceived usefulness of the mobile app on the relationship between perceived mobile app user reviews and ratings and potential app users' download intention of the mobile app*.

Literature Review

Smartphones have become ubiquitous, offering various functionalities beyond traditional voice communication and text messaging (Gummaraju, 2010). Advancements in technology have led to more powerful processing capabilities and enhanced data access through wireless service connections like Wi-Fi, 3G, 4G, and 5G (Middleton, 2010; Sharma et al., 2020). The widespread adoption of smartphones has fuelled the growth of the mobile app market. Mobile applications offer diverse services, ranging from weather forecasts to entertainment options (Hsiao et al., 2017). The availability of app functionalities has expanded to include gaming, banking services, and location-based services (Hew et al., 2015; Tarute et al., 2017). Users can download mobile applications from various distribution platforms like the iOS App Store and Google Play Store (Wu, 2013). These platforms allow users to evaluate and review apps publicly, influencing others' download decisions (Vasa et al., 2012). As per this study, in preventing the installation of non-functional or defective apps, it is identified that critically evaluating and observing these ratings and reviews mentioned by current or previous users is important (Rogerson, 2019). The user reviews that are beneficial for mobile app users have a direct positive impact on app download and usage intentions (Kim et al., 2016). Many smartphone users prefer to link overall positive feedback with more specific details on a specific feature/s of the app evaluations (Lacob et al., 2013). Therefore, these reviews and ratings serve as a valuable decision-making tool for mobile app consumers decisions (Lackermair et al., 2013).

Numerous studies in the mobile services and consumer behavior field have established that user reviews of mobile apps directly influence app usage intention (Harris et al, 2016; Kim et al., 2016). However, few studies have been conducted to investigate the impact of review and rating on download intention (Harris et al. 2016). While many studies have shown that user reviews and ratings positively influence mobile app download intentions (Kim et al., 2016), there are conflicting findings and limitations in the existing research.

For example, the effectiveness of user reviews may vary across different app categories; apps in categories like health and finance might be more influenced by reviews than those in entertainment or gaming. Additionally, user demographics, such as age, gender, and technological familiarity, can lead to different interpretations of reviews, suggesting that what works for one group may not be as effective for another. These conflicting findings indicate a need for more context-specific research in this area (Lim et al, 2014). Based on these arguments, this study proposes a hypothesis as follows;

H1: Positively perceived mobile app user ratings and reviews will have a positive impact on potential app users' download intention of mobile apps.

The Technology Acceptance model is commonly used to describe the acceptance of new technology. It is supported by two notions, one of which is Perceived Usefulness (Davis, 1989). Perceived Usefulness (PU) is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320).

As this study tends to understand the download intentions of the potential mobile app users, the level to which app users perceive that utilizing a mobile app would improve their work performance will be the perceived usefulness. From the two specific beliefs that affect behavioral intentions, Perceived usefulness plays a significant role in mobile app usage (Wu, 2013). The PU of the mobile app will, therefore, be a factor considered in order for them to adapt to this novel technology.

According to Purnawirawan et al. (2012), the perceived usefulness of reviews moderates the mediating influence of reviews' impression on attitude and behavioural intention for both attitude and behavioural intention as well as for positive and negative review information recall. When people think reviews are more valuable than they think they are, their attitudes and actions are more predictable. Similar to this, a study examining the moderating effects of perceived usefulness on the relationship between trust in government and on the internet discovered that PU was significantly reducing the impact of trust on the internet when the intention was to use e-government services (Mensah, 2019). The study by Arghashi and Yuksel (2022) highlights how PU can enhance consumer engagement with augmented reality apps by strengthening the link between positive attitudes towards the app and subsequent engagement behaviors. This finding suggests that when users perceive information such as reviews and ratings as useful, they are more likely to be influenced by it, which can increase the predictability of their download intentions. In addition, in a study that was conducted to determine whether perceived ease of use and other variables impact Social Network Service addiction. the moderating influence of PU has a strong influence on the association between PEOU and psychological dependency as well as SNS addiction (Pitafi, 2020). Given that most social networking sites are mobile applications, the following hypothesis was considered;

H2: There is a moderating effect of Perceived Usefulness on the relationship between perceived mobile app user reviews and ratings and potential app users download intention of the mobile app, such that the more positive the perceived usefulness of an app, the weaker the impact of user reviews and ratings.

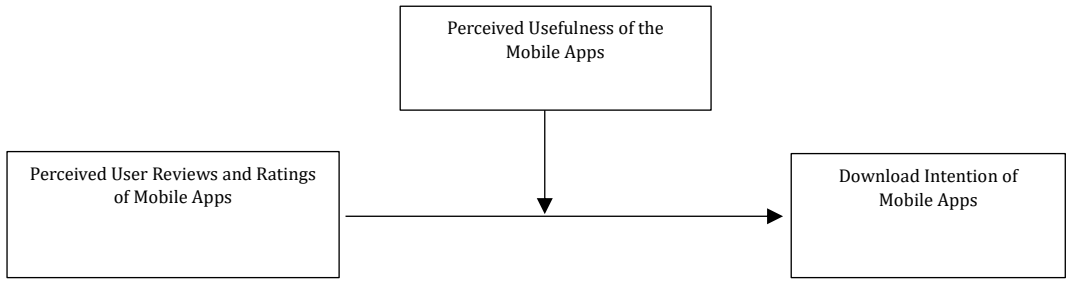

Figure 1. Conceptual Framework for The Study
Source. Developed by Author

Methodology

With the main objective of determining the impact of mobile app store user reviews and ratings on the potential app users' download intention among Sri Lankan smartphone users, this positivistic, quantitative study uses a deductive research approach that focuses on data collection and interpretation in an objective manner. To test the hypotheses over a cross-sectional time horizon, a scenario-based survey strategy with the use of three questionnaire variants was used, and the data needed was collected in a single point of time, during the months of March, April, and May of 2022. Considering this study, the unit of analysis was each individual Sri Lankan who has a smartphone and uses mobile applications. This is so that it may be determined what effect apparent user ratings and reviews have on potential users' intention to download mobile apps. The population of the study is Sri Lankans who own smartphones and use mobile applications. As a result, Sri Lankans in the age range of 20 to 30 were chosen, with the justification being that, across nine emerging economies, about one in four adults between the ages of 18 and 34 possessed smartphones (Silver, 2019). The sample size estimation approach devised by Krejcie and Morgan (1970) can be justified by claiming that each free parameter necessitates five responses. Therefore, the minimum total number of responses needed for this study is equal to 120 (40 responses each from 3 survey variants). A convenient sampling method was employed to conduct the survey across the country. However, the majority of respondents were residents of the Western Province.

The survey instrument was developed by considering previously established scales and measures in the literature. For instance, perceived user reviews and ratings were measured following Ong (2012), where two key questions were asked to get their stance on the importance of review and rating. Those two items were " I think the numerical customer rating of the mobile app is high" (in the positive scenario) and " I think the text

or written reviews of the mobile app are positive reviews (in the positive scenario). These items were measured using the Five-Point Likert Scale. Perceived Usefulness of the mobile apps was measured using measures such as "I find this app useful for me", "I think the app might be useful in getting done what I want," and "I think the app makes it easier to do what I want" (Davis et al., 1989; Kim et al., 2014; Kim et al., 2016). A Five-Point Likert Scale was used to measure them. Finally, the download intentions of the mobile apps were measured using "my general intention to download the mobile apps is high", "downloading this app is a good idea," and "likelihood of me downloading this app is high" (Chen et al., 2012; Hsu and Lin, 2016; Kim et al., 2014). The Five-Point Likert Scale was used to measure these items.

Explanation of Scenarios

Three variations of scenario-based questionnaires have been developed to get a deep understanding of the consumer's responses to the impact of reviews and ratings on their intention to download mobile apps. Each of the three variants of the questionaries had three unique scenarios, and each of them was regarding a similar mobile app, but with different reviews and ratings. The researcher used this method to study how users of mobile apps interpret and perceive different user reviews and ratings effectively. It also helped the researcher to conduct a study in a more practical approach as if it was more like a real-life scenario that the respondent was facing where he/she is exposed to reviews and ratings given by many other users on a mobile app they are considering downloading and using. Section two begins with an explanation of a hypothetical commercial bank in Sri Lanka and mentions that the respondent has recently opened an account with the bank. The respondent is considering using the mobile banking app (Quick Pay – Banking App) of the given bank (Lanka Bank) for their daily use. The first paragraph of the scenario was common to all three variants. The use of a hypothetical commercial bank ensures unbiased responses, as it is not directly associated with any existing banks. This allows respondents to focus solely on the scenario at hand.

Variant 1

This scenario had a hypothetical image of the app store interface for the Quick Pay app, with its overall numerical star rating clearly visible as 2.3, as seen in Figure 2.

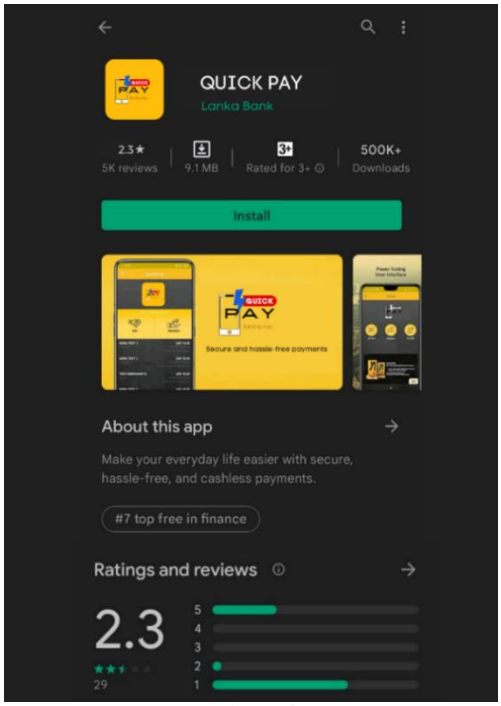

Figure 2. Variant 1 Ratings for Quick Pay App
Source. Research Survey Instrument

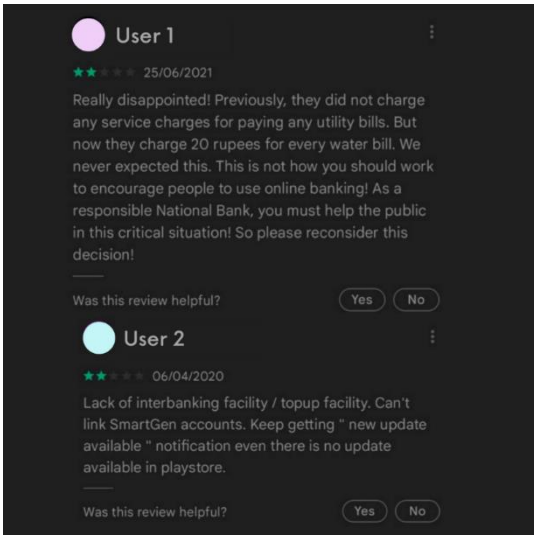

Figure 3. Variant 1 Reviews for Quick Pay App
Source. Research Survey Instrument

Next an image with two hypothetical user reviews (Figure 3) that were deemed more negative comments was included without any reference given to whether it's a good or bad rating.

Variant 2

Similar to Variant 1, Variant 2 scenario had a hypothetical image of the app store interface with an overall numerical star rating with 3.8 as seen in Figure 4. An image with two hypothetical user reviews as in Figure 5 were presented next and was worded as "Given below are some of the user reviews for QUICK PAY mobile app".

Variant 3

The scenario of Variant 3 had a hypothetical image of the app store interface had a overall numerical star rating of 4.5. Similar to the other two variants hypothetical textual reviews of two users were given in this scenario as well. Figure 7 shows the image included in the survey.

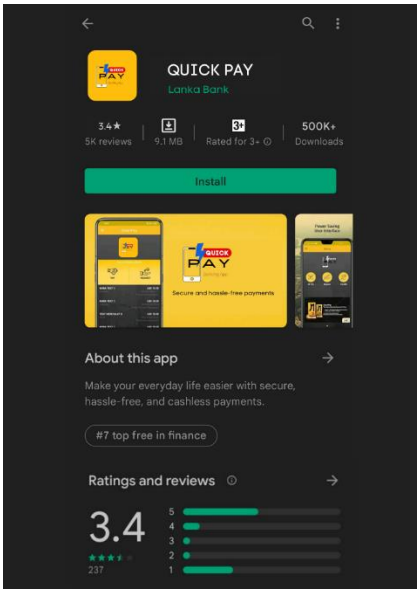

Figure 4. Variant 2 Ratings for Quick Pay App
Source. Research Survey Instrument

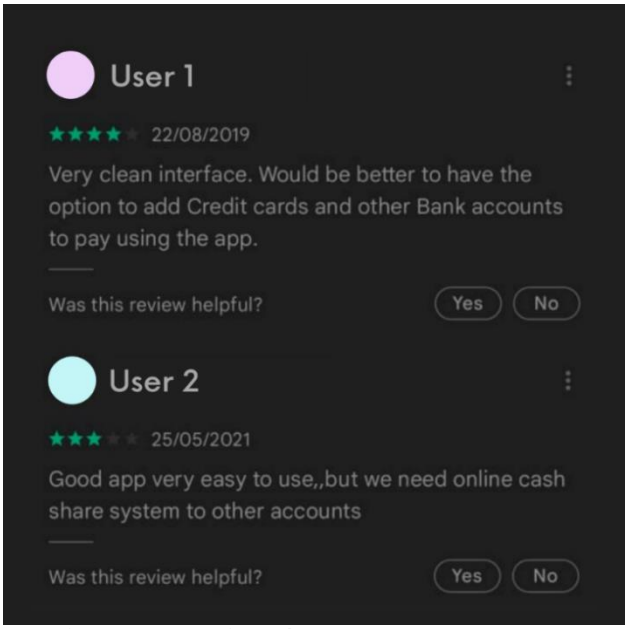

Figure 5. Variant 2 Reviews for Quick Pay App
Source. Research Survey Instrument

The Implementation of the Scenario-Based Survey

The three scenario-based surveys had an introduction to the study, the researcher and the purpose of the data collection. Clear guidelines and instructions for responding to the questionnaire were all given at the beginning of each of the questionnaires. The respondents were asked to answer the questions after referring to the scenarios that they were given, which were either variant 1, variant 2, or variant 3. Each of the survey variants had eight question items under each scenario, and instructions clearly stated that the respondents should respond to those questions as if they were currently experiencing the scenario. It consisted of 2 questions related to the independent variable, 3 questions related to the moderating variable, and 3 questions testing the dependent variable. On a five-point Likert scale ranging from strongly disagree to strongly agree, respondents were asked to rate their level of agreement with each statement that tested the three variables. The final section of the survey was to seek general information about the respondents' geographic, demographic, and social characteristics, such as gender, age, etc.

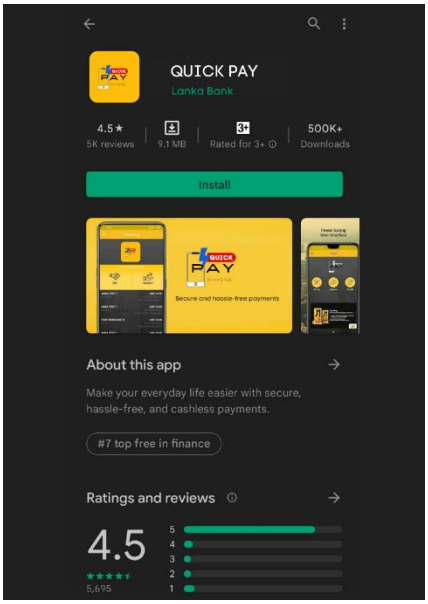

Figure 6. Variant 3 Ratings for Quick Pay app
Source. Research Survey Instrument

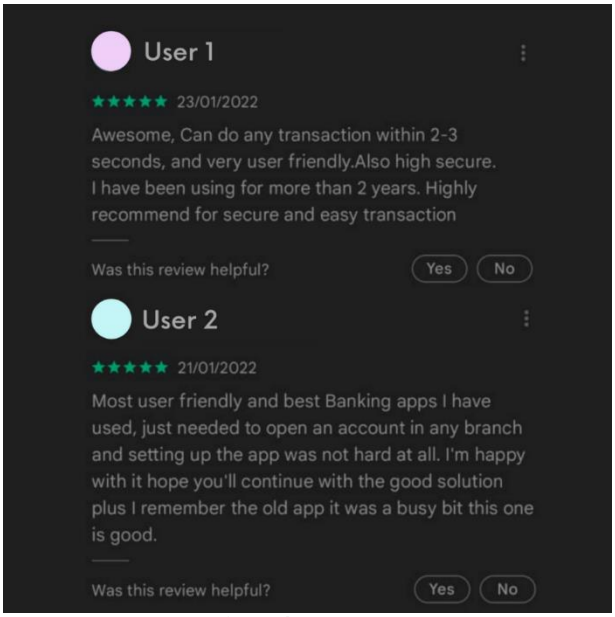

Figure 7. Variant 3 Reviews for Quick Pay
Source. Research Survey Instrument

Data Analysis

This study's analysis was streamlined using the Statistical Package for Social Sciences (SPSS 22.0 Version) and Microsoft Office Excel 2020. Prior to data analysis, the data collected from target respondents via questionnaires was validated for missing values using missing value analysis. After that, the data's normality, reliability, and validity were checked. After being filtered and cleaned, the data were then subjected to the proper analysis methods for this investigation. Descriptive statistics, regression analysis, and moderated multiple regression analysis were used as main data analysis techniques.

The researchers initially distributed 450 questionnaires among university students nationwide to ensure unbiased and voluntary participation. 340 questionnaires were returned. Out of 340 respondents, 322 were between the ages of 20-30. After addressing missing data, unengaged responses, and imputation, 304 survey responses from all three variants of the questionnaires were deemed useful for data analysis. 57.2% of the respondents were female, while 42.8% were male. Among the respondents, 76.6% were in the 20 to 25 age category, with only 23.4% in the 26 to 30 age category. Most of the respondents, accounting for 60.9%, were from the Western Province. The Central Province represented the second highest at 6.9%. The North Central Province had the lowest representation, with only 2.3% of the respondents hailing from there. The independent and dependent variables of the study both have Cronbach's Alpha Coefficient values higher than 0. 8. This conceptual model's moderating variable has a CAC value greater than 0.9, indicating strong dependability. According to these findings, all of the dimensions can be utilized to operationalize the relevant variables without sacrificing any of the variables' high internal consistency. Thus, it can be said that all

information acquired for this research is considered to be reliable (Tavakol and Dennick, 2011). Further, the survey instrument has been developed following the previously established measures (Lackermair et al., 2013, p.1; Davis et al., 1989; Kim et al., 2014; Kim et al., 2016; Chen et al., 2012; Hsu and Lin, 2016) and pilot study was conducted to ensure the validity of the questionnaire.

Hypothesis Testing

In this sub-section, the researcher will present the regression model used to analyze the study's independent variable and its effect on the dependent variable.

Table 1
Impact of user reviews and ratings on download intention

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.748	.129		13.589	.000
Review and Rating	.501	.037	.610	13.389	.000

Source. Survey Data

According to the statistical results demonstrated in Table I, perceived user reviews and ratings significantly impact app download intention, as indicated by a P-value of 0.000 and a beta value of 0.610, leading to the acceptance of hypothesis H1.

Data analysis for moderation impact summarized in Table II. According to the moderated multiple regression model, P-value of the independent variable is 0.000 and beta value is 0.602. It indicates that it is significant at 5%, therefore, the first hypothesis (H1) is accepted. However, the moderating variable which was tested by this regression analysis in order to prove H2 carries a P-value of 0.239 with a beta value of -0.054 that it is insignificant at 5% even though the negative values of the results show that more positive the perceived usefulness of an app, the weaker the impact of user reviews and ratings on the app users download intention

Table 2
Impact of user reviews and ratings on download intention moderated by perceived usefulness

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.804	.137		13.158	.000
Review and Rating	.494	.038	.602	13.067	.000
Moderator	-.053	.045	-.054	-1.180	.239

Source. Survey Data

Discussion of Findings

The researchers performed a multiple linear regression analysis to assess the impact of perceived mobile app store user reviews and ratings on potential mobile app users'

download intentions and the moderating effect of the perceived usefulness of the mobile app. As a result, the model summary of this study states that 37.5% of the potential app users' download intention is impacted by the app store user ratings and reviews.

Particularly, objective 1 of the study identifying the impact of perceived mobile app user ratings and reviews towards potential app users' download intention of the mobile app was achieved by testing hypothesis 1 (H1), which examined the impact of perceived mobile app user ratings and reviews towards potential app users' download intention in a Sri Lankan context, as well as the relationship between them. These findings emphasize that reviews and ratings have a positive impact on Sri Lankan consumers' mobile app download intentions. That means when there are more positive reviews on the mobile app along with a high star rating, consumers' intention to download the mobile app will be increased. It has been proposed and confirmed based on previous research application users read app reviews and star ratings before installing applications (Harris et al., 2016; Zia, 2020), and it is used as a mechanism by previous or current app users to avoid installing non-functional or defective apps (Rogerson, 2019). According to Kim et al, (2016), positive user reviews for mobile apps that appear within have a direct positive impact on app download and usage intentions. Users prefer to associate general positive feedback with more specific positive feedback, or they associate general positive feedback with the fact that a specific feature of the app under consideration works (Lacob et al., 2013).

In order to test the achievement of objective 2 of the study, which was developed to identify the impact of the perceived usefulness of the mobile app on the relationship between perceived mobile app user reviews and ratings and potential app users' download intention of the mobile app, H2 was tested. The researchers curated a moderator variable using SPSS for the analysis purpose out of Z. score values of the perceived user reviews and ratings and the Z. score values of perceived usefulness of the mobile app. A descriptive statistics analysis and a regression analysis were then conducted using the data obtained via the data collection process to test the validity of H2 and identify whether perceived usefulness can moderate the direct relationship between the dependent and independent variables of this study.

To measure the perceived usefulness variable, the researcher used three question items each in the three scenario-based questionnaires, and a mean value of 3.3531 and standard deviation of 1.02139 were obtained from the descriptive statistics analysis conducted. These results indicate that the majority of the respondents "Neither agree nor disagree" with the perceived usefulness of the given mobile app in the scenarios that impact their download intention. The results from the regression analysis were further clarifying these outcomes. As it contains a P-value of 0.239 which is greater than the expected 5%, the moderating variable has no significance in impacting the download intentions. However, the beta value of a negative -0.054, shows that the moderator has a negative relationship towards the direct relationship of the independent and dependent variable

such that the more positive the perceived usefulness of an app, the weaker the impact of user reviews and ratings. Nevertheless, H2 was rejected in this study as the data collected in relation to this study does not approve the hypothesis generated to validate the conceptual model of the study. This means that the presence of negative ratings and reviews can deter consumers from downloading a mobile app, even if they perceive it as highly useful. This is particularly noticeable among Generation Z Sri Lankan consumers, as previous research has shown that reviews, ratings, and referrals substantially impact e-commerce engagement compared to the influence on perceived usefulness (Dilshani et al. 2022). Similarly, in some other studies that looked upon the moderating effect of perceived usefulness, there were instances that the research findings were similar to this study. For instance, a study by Mensah (2019) revealed that perceived usefulness was not significant in the relationship between trust in the government and the relationship between trust in the internet and the intention to use e-government services. Therefore, they discovered that perceived usefulness does not improve the ability to predict whether or not a person will use e-government services. If these e-government services were promoted using mobile apps, it would bear similar results as this study.

Furthermore, in a study conducted to comprehend SNS addiction and the factors that contribute to it, the moderating effect of the perceived usefulness of those factors was analyzed. The findings demonstrate the moderating impact of perceived usefulness exists on the relationship between perceived ease of use and psychological dependence, but the moderating impact of perceived usefulness on the association between perceived ease of use and habit, however, is negligible (Pitafi, 2020). Similarly, in most of the studies that were conducted to identify the moderating impact of perceived usefulness with multiple direct relationships, some of them proved that perceived usefulness did moderate the relationships, and, in some instances, it didn't. Idris and Bakar, (2020) investigated the perceived usefulness of business coaching on the relationship between entrepreneurial competencies and business success, and the findings were for the relationships of strategic competency, commitment competency, conceptual competency, and relationship competency towards the success of women microentrepreneurs' businesses; perceived usefulness of business coaching does in fact play a moderating role; however, the same study disapproved the perceived usefulness of business coaching. Therefore, it is evident that not every aspect of human behavior is influenced by perceived usefulness.

Implications of the Study

The use of mobile phones has increased over the past decade, and the technology has expanded significantly as a result of the technology's quick development. Learning, working, shopping, banking, and many other daily activities have been moved online due to the COVID-19 pandemic and the global adjustment to the new normal. The development of these technologies has led to their incorporation into mobile devices like tablets and smartphones, among others. Studies based on mobile technology are widely conducted globally, but there are very few in a local setting. It is crucial that Sri Lankan

academics produce knowledge on such understudied fields of academic study in order to comprehend new human behavioral changes and how they affect businesses operating and interacting with customers via mobile technology.

The majority of the aforementioned services can be accessed through smartphones by downloading mobile applications from various app stores, which are available to device owners. Users of smartphones will download mobile applications to their devices through the Apple App Store, Google Play Store, etc. These platforms allow numerical and textual comments that are visible to anyone using the app store, allowing them to make decisions. This study was carried out to demonstrate the significance of app store user reviews and ratings in influencing the choice of mobile app users or app consumers. As a result, this research add fresh insights about the country's mobile application users to the body of knowledge already in existence.

Given that the use of smartphones and application downloads is growing within the Sri Lankan community currently, this study will also hold valuable strategic and operational implications for local and international mobile application developers. This study may inspire mobile app developers and owners in Sri Lanka to pay close attention to what users say about their products. This can help them improve the app even more so that it meets user expectations and receives favorable ratings and reviews in app stores. Some possible strategies are giving some incentives in the form of discounts when reaching different milestones by leaving reviews and also simplifying the review process. Then it would motivate users to leave reviews.

Limitations and Future Research

The study had limitations as it only included Sri Lankan citizens aged 20-30 who use smartphones. This could exclude some people familiar with app stores. The survey was distributed online, which may have caused misunderstandings. Also, the study was cross-sectional and couldn't show how consumer attitudes can change over time. While future researchers can address the above limitations, the specific other directions for future studies are to explore more factors such as, app description and features and visual appeals that impact users' intention to download mobile apps, as the review and ratings cover only 37% of variations on download intention. Further, future studies can break down user ratings and reviews as separate variables for more accurate analysis. The perceived usefulness of an app doesn't outweigh the influence of user feedback. Future research can investigate aspects of perceived usefulness to see if they have a moderating impact on reviews and ratings.

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