

ACCEPTANCE OF MOBILE APP “RACADI” AMONG SMALL RETAILERS: AN ACTION RESEARCH

Kanokkan Ketkaew^{1,*}, Wisanupong Potipiroon², and Suwit Srimai³

Abstract

Small retailers often find it challenging to cope with changes and competition in business. One of the primary problems that small retailers now face is their clinging to the old ways of doing business. In this study, we introduced a sales management mobile application called “Racadi” (which means “good-priced” in the Thai language) to help address this inherent concern. In particular, we employed an action research design to study why some small retailers choose to accept or reject this mobile application. Based on several technology acceptance models, our research was divided into three phases. Phase 1 involved learning the needs of small retailers and the design of Racadi, while Phase 2 involved identifying retailers’ difficulties in the use of Racadi, and Phase 3, sought to understand why some retailers maintain their use of Racadi. Data were primarily collected through in-depth interviews with 50 retailers over nine months. The findings show that the three prominent theories (TAM, UTAUT 2, and DIT) are not sufficient to explain the adoption of mobile applications among small retailers as not all critical factors involved are identified. New factors revealed by this study are 1) Entrepreneurial Spirit, 2) Ability to Use, and 3) Perceived Risk. Several important theoretical and practical implications have emerged from this present research.

Keywords: mobile app, technology acceptance, small retailers, action research

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1. INTRODUCTION

Smartphones are necessary devices in the modern world. In particular, mobile applications (herein referred to as "mobile apps") embedded in smartphones have become an essential part of our lives. Mobile apps can be understood as software applications developed especially for use on small, wireless computing devices (Rouse, 2013). At present, it is estimated that up to 3 million mobile apps are available for download on Google Play and Apple Stores (Statista, 2019). Both businesses and customers benefit from the advent of mobile apps, as they can access services and products faster, more conveniently, and at a lower cost (Islam, Islam, & Mazumder, 2010).

The focus of this study is on the use of mobile apps among small retailers. Small retailers are defined as those who sell merchandise in small stores or as service establishments located in traditional markets or residential areas (Runyan & Droge, 2008). Examples include mom and pop stores, small food kiosks, coffee shops, and service-related businesses such as beauty salons. Such retailers usually run their business on their own or employ 2–5 employees (Arbuthnot, Slama & Sisler, 1993). They often employ their family members. Although retailing may currently include non-store retailers (e.g., online sellers), the primary focus of this study is only on retailing that involves physical stores.

Retailing consists of all business

activities that involve the sale of goods and services to ultimate consumers. Traditionally, retailing has involved a retailer, a store, or a service establishment that deals with consumers who acquire goods and services for personal use rather than for resale (Grewal, Roggeveen, & Nordfalt, 2017). Today's customers are better connected and have higher demands. Therefore, retailers should demonstrate a high level of adaptability to evolving customer wants and preferences (Alford & Page, 2015). A similar factor is also applicable in the context of technology adoption and acceptance.

In terms of research, there has been a lack of scholarship in determining the reasons why small retailers may decide to accept or reject a particular technology (Grewal, Roggeveen, & Nordfalt, 2017). This study is thusly significant because small retailers are facing a major challenge in competing with modern forms of convenience stores that have far better IT infrastructures. Small retailers have long been an essential part of suburban and rural life. However, modern markets, in the form of convenience stores (e.g., 7-Eleven) and superstores (e.g., Big C and Tesco Lotus), have been increasing the number of critical roles in the routines of their people. It has been shown that small retailers lack internal capabilities such as inventory and record-keeping, and shortage of finance (Turner & Endres, 2017). Furthermore, most small retailers still operate their businesses in traditional ways. Given the lack of economy of

scale, most small and traditional retailers often fall behind in their inventory and sales management skills, which has hampered their potential to be successful in this fast-paced business environment. A question may arise as to how those small retailers survive in this modern world.

The present study proposes that the use of mobile applications may help to address some of these inherent small retail-business concerns. In particular, through an action research design, this study introduced a mobile app called “Racadi” to a group of small retailers located in large provinces in South Thailand. Racadi can be categorized as a sales management app explicitly designed to address the needs of small retailers. This action research, which involves ongoing interactions with small retailers and begins with their first trials, allows us to understand how and why some retailers ultimately choose to adopt or reject this promoting tool.

This study chose Racadi mobile apps because the program was created by developers and researchers in the field and collected data from small retailers that faced real problems. The apps were designed given users’ needs and presented in order to help manage sales. Creating a membership system to help increase sales comes directly from the needs of the target group. Small retailers also trialed the program. The presentation of data was then improved, following four stages of action research over three cycles. For this reason, Racadi mobile apps

were appropriate for use in this study.

The mobile app market is over-saturated today with 197 billion programs (Dogtiev, 2019). According to one survey, on average consumers installed thirty-two mobile apps, usually installing four more apps within a month, but using only one (Google, 2016). Moreover, Smartbear (2014) found that about fifty percent of consumers would remove mobile apps when they found a bug or an error while using them. Thus, developers have difficulty establishing consumer acceptance. For this reason, developers need to understand what factors affect user acceptance, and should design mobile apps to meet users’ needs (Chan-Olmsted & Zerba, 2013).

This study initially focuses on three specific, prominent theories related to technology acceptance: the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989), the Unified Theory of Acceptance and Use of Technology2 (UTAUT 2) (Venkatesh, Thong, & Xu, 2012), and the Diffusion of Innovation Theory (DIT) (Rogers, 2003). Collectively, these theories reveal several important factors in the decision-making process of users.

This study has important implications for both theory and practice. Although many mobile apps are, indeed, freely available on app stores, few have been successful. About 50% of potential app users choose to delete their apps immediately after installing them (Smartbear, 2014). These users do not even attempt to learn the app’s

functions and their promising benefits. It is thus critical to study the factors that affect the decisions of users at each stage of technology adoption or acceptance. To date, there is a lack of research on understanding whether and why small retailers may choose to accept or reject a technology. More importantly, most research in this area has been passive. It is noted that researchers have indicated that more engaging research is needed to understand the technology acceptance process in detail (Choudrie & Dwivedi, 2005).

2. LITERATURE REVIEW

2.1 Technology Acceptance Model (TAM)

The technology acceptance model (TAM) has been perceived as an influential model of technology acceptance. Two essential factors determine an individual's choice to adopt new technology: perceived usefulness and perceived ease of use

(Hussein, 2017; Nikou & Economides, 2017; Lemay, Morin, Bazalais, & Doleck, 2018). The mentioned factors provide a relevant explanation for the rationale behind utilizing a particular technology. However, these factors are mediated by a series of external variables, such as individual differences, social relationships, peer influences, and system characteristics. Therefore, there is a strong element of prediction in analyzing users' perceptions of technology. Irrespective of the advantages of TAM, it might be challenging to implement the framework in various information technology settings. One limitation of the model is that it involves using subjective means to determine individuals' behavioral intentions (Verma, Bhattacharyya, & Kumar, 2018). Another weakness of the framework is that user behavior cannot be adequately quantified due to the subjective factors involved in the process.

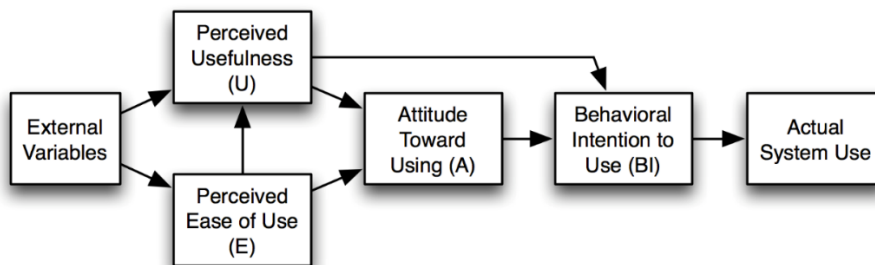


Figure 1: Technology Acceptance Model (TAM)
Source: Davis (1989)

2.2 Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2)

An appropriate theory that explains the acceptance of technology in the context of consumer use is the Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2). This theory has been extensively used to explore the adoption of products or services in various contexts. Different construct variables are included in UTAUT 2 to explain significant parameters of technology use (Venkatesh, Thong, & Su, 2012)

The significant components of UTAUT 2 are provided below:

- **Performance Expectancy:** Performance expectancy refers to the optimal performance of a mobile application in terms of how it might benefit users.
- **Effort Expectancy:** Effort expectancy indicates the level of ease associated with the use of a particular mobile application. In this context, it is essential to have a user-friendly design, which will facilitate use of the application.

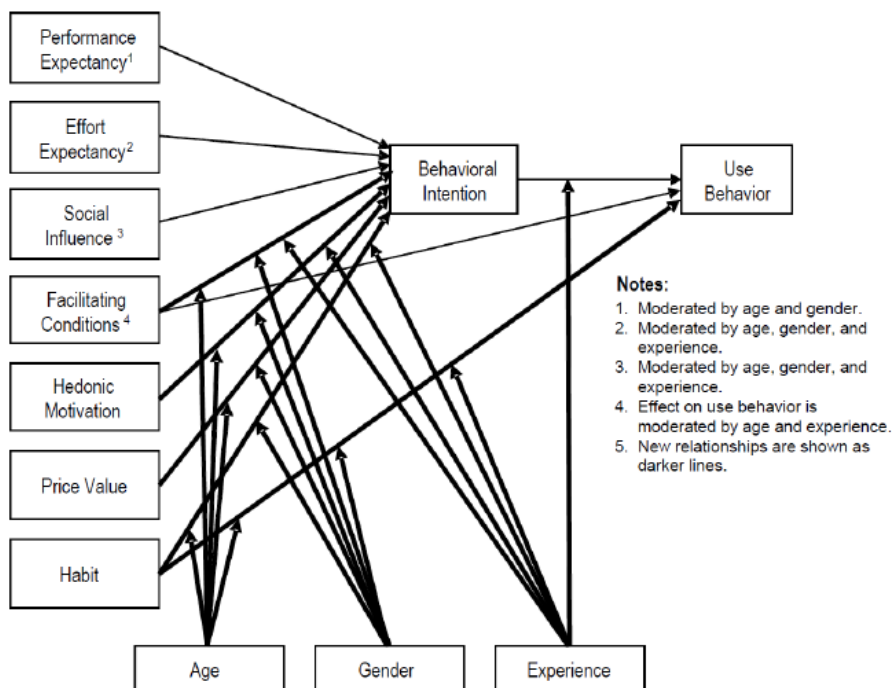


Figure 2: Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2)
Source: Venkatesh, Thong, & Su (2012)

- **Social Influence:** Social influence relates to the influence exerted by family members and friends in adopting a specific mobile application.
- **Facilitating Conditions:** Facilitating conditions emphasize the need to assist users in making an optimal decision. From this perspective, providing regular technical support to users enables them to adopt particular technologies with greater ease.
- **Hedonic Motivation:** Hedonic motivation refers to a high level of user satisfaction derived from the persistent use of a particular mobile application. As a result of the enjoyment an individual derives from their interaction with a specific technology, the chance that they will adopt the respective technology is higher.
- **Price Value:** Price value determines whether the price corresponds to the quality of a specific mobile application; an individual is most likely to engage in cost-benefit analysis of the technology.
- **Habit:** The construct of habit implies a high level of automation in manifesting specific behavioral patterns. In the context of adopting a particular mobile application,

the acceptance of using such technology should become a habit.

2.3 Diffusion of Innovation Theory (DIT)

Another theory that explains the adoption of new technology is the Diffusion of Innovation Theory (DIT). Innovation is at the core of this model, and it is expected to be communicated among the participants in a social system. The focus of the theory is to determine how and why new technologies develop. The theory provides relevant insights about people's readiness to accept certain innovative technologies (Rogers, 2003). The five components of the model are provided below:

- **Relative Advantage:** In terms of determining the relative advantage of a particular technology, an individual focus should be on assessing its effectiveness. If the mobile application is considered to have a significant relative advantage, such as being informative and facilitating user learning, there is a higher chance that the user will adopt this technology.
- **Complexity:** The technology adoption process might be complicated at times; any such complication will impede the adoption of a specific mobile application. The construct of complexity is related to the

construct of perceived ease of use, which is specified in TAM.

- **Compatibility:** The factor of compatibility indicates the consistency needed to adopt a particular technology. Individuals' values and personal experiences are taken into consideration to determine the level of compatibility of the mobile application with their needs and their expectations for quality.
- **Trialability:** This factor regards the opportunity to experiment with a particular mobile application. Through experimental testing, relevant insights can be obtained regarding the capacity and impact of the respective application.
- **Observability:** The factor of observability is associated with greater transparency and accountability in helping users make adequately informed decisions. It refers to determining the advantages pertinent to the adoption of a specific mobile technology.

3. METHODOLOGY

Although most technology acceptance research is conducted using a quantitative approach (Choudrie & Dwivedi, 2005), the present study seeks to understand the decision-making process of small

retailers through a more engaged approach. Therefore, 'action research' was chosen. Such research is defined as a collaboration between researchers and others to carry out a research process intended to improve their practice or solve problems (Lewin, 1946). The benefits of action research include gaining scientific knowledge that can be used to resolve problems and to change or improve organizational capabilities (Coghlan & Brannick, 2019, pp.20-21).

3.1 Participants

The initial participants for this study were a group of 50 small retailers. Data were mainly collected from the retailers' owners. Their businesses are located in Nakhon Sri Thammarat, Surat Thani, and Songkhla Province, which have the top three highest populations in the south of Thailand. This study used the snowball technique to gather participants. The retailers that participated in this study were divided into five categories, as shown in Table 1.

Preliminary studies in the field determined that these five categories of small retailers in the community were struggling with many problems. They all knew that they needed to adapt and improve themselves through the use of technology. However, they lacked opportunities and sufficient capital. Therefore, this study is the first study of the acceptance of mobile apps by small retailers.

Table 1: Participant Descriptions

No	Retailing Types	Number of Participating Retailers
1	Small food kiosks	11
2	Local restaurants	11
3	Coffee shops	9
4	Small specialty stores	10
5	Small service establishments	9
Total		50

Table 2: Three Phases of action research

Topic	Phase 1: Learning “design mobile app”	Phase 2: Installation “first trial within one week”	Phase 3: Acceptance “use after two weeks”
Goal	Identify the needs of small retailers	Allow the participating retailers to use the Racadi application	Seek to understand why some retailers continued using Racadi.
Number of Participants	50	40	10

3.2 Action Research Design

In particular, a mobile app called ‘Racadi’ was introduced to a group of small retailers. Racadi means ‘good-or reasonably-priced’ in the Thai language. This mobile app could be categorized as a sales management tool aimed at helping retailers to boost their business efficiency and productivity. As shown in Table 2, the research was divided into three critical phases.

Phase 1 aimed to identify the needs of small retailers for the mobile app, which was used as input for the app’s design. Direct input was sought

from customers in learning how they would use the mobile app. This is the most effective method of generating ideas for enhancements and innovations to the technical content supporting a product as well as to the product itself.

The operation began in February 2017. It took four months of field based study in Phase 1 to make the application available for trial. The information was important as it also helped to gain insight into the characteristics and needs of the potential users.

In Phase 2, all 50 participating retailers were invited to use the

Racadi application. Of the 50 Phase 1 participants, 40 retailers (80%) agreed to install the Racadi application, while ten retailers declined the invitation and did not install the app. Eight of these stated that their smartphones were not compatible with the app, while two retailers were uncontactable.

At this stage, retailers were provided with information about the mobile app so that they could decide to install it. A follow-up was then conducted in the next 3-5 days to determine whether the app had indeed been installed. During this part of the research most questions asked of the participants involved the problems that the retailers experienced during installation. Those who did not install the application were asked to provide reasons why they did not do so. Those who had installed but did not use it were also asked to provide reasons why they did not commence their usage.

Phase 3 sought to understand why some retailers continued using the Racadi application, while others did not. Questions in this stage focused on the benefits that led to continued use of the app for more than two weeks. In this phase, the retailers from 10 shops were expected to list the benefits and problems they discovered when using the application. Participants were also expected to list the functions and experiences of the app that required improvement or change.

In all three phases, in-depth interviews and non-participatory observations were used to collect data. This is crucial to see whether it was possible to draw conclusions from the results and come up with a general list of factors that affected the acceptance of innovation and technology. Such data could then be used to come up with ways to improve the rate at which participants accepted the use of new technology.

4. RESULTS AND DISCUSSION

4.1 Phase 1

The first cycle aimed to assess the feasibility of the project. It was noted that participants had many concerns. Some of the findings were:

- Sales had reduced by a significant margin, and clients were worried about this trend.
- Small retailers thought that their customers were shifting to modern business. They wanted technology that could help to improve the performance of their stores. On mobile applications, they showed a positive attitude and were also willing to try new mobile applications, expecting that it could help to improve their businesses.

Participants identified the features they need in the mobile app, as shown in total in Table 3.

Table 3: Needed Features

Features	Number of respondents
1. Able to record hourly, daily, monthly sales	50
2. Able to create a loyalty program	40
3. Able to record customer information	45
4. Able to set promotions	40
5. Able to manage inventory	40

The factors that affected the decision-making process of participants during Phase 1 are as follows.

4.1.1 Perceived Usefulness, Relative Advantage, and Performance Expectancy

Small local businesses often lack internal capabilities such as inventory, record-keeping, and financing. As they want to improve their situation, perceived usefulness is the factor that makes retailers more interested in installing a particular mobile app. Ten small specialty stores did not see the usefulness of the Racadi application as they believe that the main reason for the drop in sales and customers is the enlargement of online stores and modern trade, not their poor operations. However, 40 participants were willing to use Racadi since they were informed that the app would be developed according to their needs. This evidence showed that the project was feasible.

Performance expectancy refers to how well the activity or job is done. It is similar to perceived usefulness (TAM) and relative advantage (DOI). Small retailers have performance expectancies, such as effectiveness

increases and time savings. We found that their interest in using sales management apps was because they want to improve inventory management and set promotions to attract more customers. This result is in line with UTAUT 2, which predicts that participants will accept technology if they expect that the adopted technology will help them to perform better.

4.1.2 Attitude

Small retailers with positive attitudes were willing to take a risk and try the application. The 10 participants who were not interested in installing Racadi cited the following reasons for not doing so:

- They are too old to learn new technology.
- Some of them also reported that they were not good at using technology. The owners of small specialty stores would rather stick to the “old way” of doing things rather than try a new method that could end up confusing them.
- The use of the application would inconvenience them.

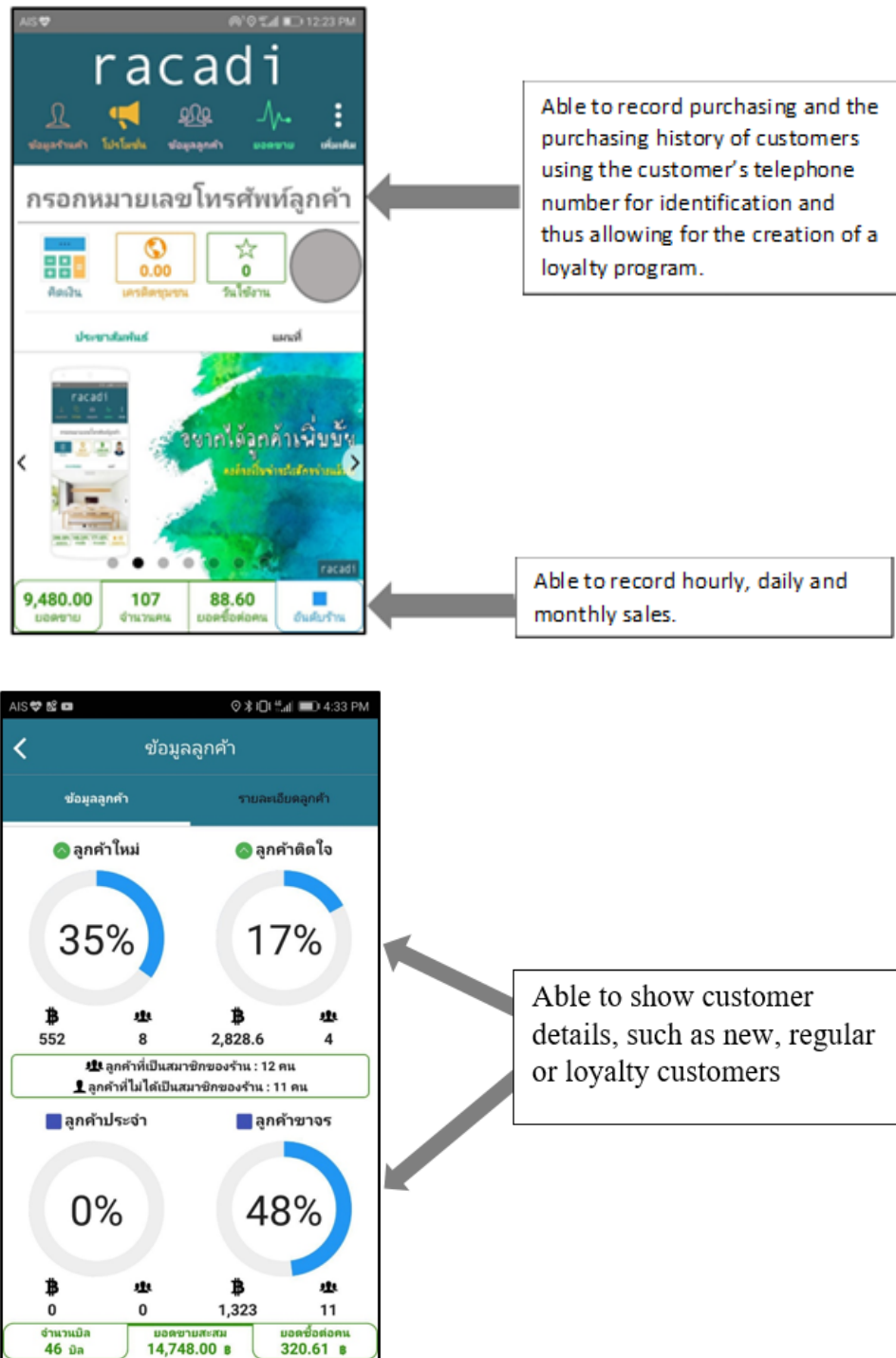


Figure 3: Features of the Racadi Mobile Application

- They felt that some of their clients did not like them using smartphones while serving them.
- They felt that such applications could mainly help big businesses but would not offer much to small businesses.
- Some local restaurant owners said it was a waste time to use as it would take longer to serve customers.
- Others answered that they did not have a smartphone and still did not want to change to a modern device.

4.1.3 Entrepreneurial Spirit

We found that small retailers who rejected the installation of the mobile app lacked essential aspects of entrepreneurial spirit (Pierce, 2008), namely positive thinking, adaptability, ambition, courage, and passion. It is assumed that the absence of these defining characteristics is one reason why their businesses are not as successful as they might have expected.

4.1.4 Perceived Risk

Some of the small specialty stores worry about the security of data relating to their business' operations, especially in regard to government organizations. They were afraid that when they put their data into Racadi, the tax organization would have direct access to their sales and income. So, they were not willing to be part of a

system that would make them lose more money in the process. This study reveals the factor of perception of risk when business owners accept a sales management mobile app.

During Phase 1, two critical factors were found which were not listed in any of the three prominent theories (TAM, UTAUT 2, and DIT) and which affected the rate of rejection of the Racadi app. These were entrepreneurial spirit and perceived risk. However, about 80% of participants agreed to use the app, so the project was able to continue on to Phase 2.

4.2 Phase 2

The factors that affected the decision-making process of users in Phase 2 are as follows:

4.2.1 Perceived Usefulness/Relative Advantage/Performance Expectancy

Retailers showed a willingness to try because they realized that Racadi could help them to achieve more effective sales management than previously. Small retailers look to the benefits of using an application. After small retailers tried Racadi, they had some time to develop experience with using the app before comparing their experiences with their expectations from prior to using it. If lower performance occurred when using the app than when not using, the participants stopped using Racadi within one week.

4.2.2 Perceived Ease of Use/Complexity/Effort Expectancy

Small retailers experienced use of the app through trying Racadi. Those who used the application for a short period of one week and then stopped use, reported that they felt Racadi brought more complexity to their operations. They found it difficult to operate their respective businesses while using Racadi.

Moreover, in this study, we found that perceived ease of use or complexity factors depended on age. Younger retailers gave positive feedback after trying the mobile app; it was easy to use. On the other hand, older retailers said that Racadi was too complicated for them.

4.2.3 Age

Young people are interested in mobile apps more than older generation as they are more familiar with technology generally and can learn to use a new app faster than those who are older. This study revealed that 30 participants older than 45 years old were not proficient in the use of a smartphone. Some had problems with their eyesight, especially when dealing with the small pad on a smartphone.

4.2.4 Facilitating Conditions

A facilitating condition is essential in this stage. In this study, many small participating retailers were 45 years or older. They did not find it easy to install the program by themselves. However, when the researcher guided them on installation, they felt more

comfortable with installing it and had a faster start in using it.

4.2.5 Trialability

In this stage, trialability is an essential factor making retailers more likely to try or install mobile apps. If they are required to pay a fee upfront, they are more likely to take time to consider other options, and will most likely go with another app if it offers a free trial. Racadi offers free trial. When retailers receive their first experiences of the app, they are better able to make a decision as to whether the application will help them to improve the performance of their business or not. However, among several free apps to choose from, trialability would not be the sole factor distinguishing Racadi from other apps.

4.2.6 Compatibility

Some small retailers felt that Racadi was not compatible with their daily activities. They could not attend to their clients in the best way when they used Racadi.

4.2.7 Entrepreneurial Spirit

Small retailers should observe trends in order to adapt to the modern era. If they continue to use only traditional methods, it may not be possible for them to compete effectively with other businesses. However, it was found that some retailers did not have the ambition to use mobile apps. They perceived that Racadi would be suitable for big businesses, but it would not offer much guidance for small businesses.

4.2.8 Ability to Use the Technology

Some participants had smartphones that were not compatible with Racadi as they were too old. Some did not have an internet package or Wi-Fi to connect to the internet when needed. The root of this problem is finance. These retailers are not willing to invest as they are not so sure that there will be a return on investment. Some retailers could not provide a smartphone able to use Racadi, and moreover were unable to buy a new device as they had limited income for investing in improving their business.

Furthermore, some small retailers reported that they were not good at using technology. They would rather keep to the old ways of doing things, than try a new method which could end up confusing them. Many retailers could not install Racadi by themselves. Also, some may not be competent enough to interpret information provided as graphs or charts. This problem is in line with the TAM and DIT theories, which state that ease of use is one of the critical factors for adoption.

80% (40) of participants agreed to install the app. However, only 20% (10) of these used Racadi continuously. Phase 3 consisted of follow up study, to determine why some retailers used Racadi for more than two weeks while 80% (40) of participants stopped using Racadi.

The results in Phase 2 indicated that there were two additional factors that affected the use of applications which were not listed in any of the three prominent theories (TAM,

UTAUT 2, and DIT). These missing factors were Entrepreneurial Spirit and Ability to Use.

4.3 Phase 3

The factors that impacted the decision-making process in Phase 3 were as follows:

4.3.1 Perceived Usefulness/Relative Advantage/Performance Expectancy

During the last cycle, the shops (20%) that would continue using Racadi were identified. Participants continued using Racadi for more than two weeks as they recognized its usefulness. They also reported that it helped them to save time. Before starting to use it, the owner of a local restaurant spent a great deal of time collecting bills at the end of the day. After the use of Racadi, however, she saved time and knew daily income in real time.

In addition, participants earned a higher income and attracted more new and loyal customers. For example, a coffee shop owner gave a client points every time they made a purchase, thereby promoting his business. Ten points could be redeemed to get one free cup of coffee. Furthermore, their inventory management benefits as they can check the rank of useful sales items through Racadi.

4.3.2 Perceived Ease of Use, Complexity, and Effort Expectancy

According to DIT theory, a "complex" product is considered relatively difficult to understand and

use. Users want an app that is easy to use. Most retailers do not want apps that require them to undergo training before they can start to enjoy the benefits. In this study, after retailers tried Racadi for one week, more than 50% stopped using it and did not want to try again as they felt it was too complex to use. Moreover, for the same reason, some small retail stores stopped using Racadi after using it for about two weeks. They reported that some functions were not easy to use. For example, they had issues with a function called “miniPOS,” which requires them to input data for each selling item, even though it is a normal step of setting up the app. However, participants who used Racadi for more than two weeks reported that the app was easy to use. It should be noted that this group of participants is in the age range of 18-35 years old, a group that is generally more familiar with this kind of new technology. This leads to the conclusion that age is a significant factor in acceptance of technology.

4.3.3 Compatibility

This study revealed that compatibility was a factor affecting decision-making regarding the use of Racadi by small retailers, as is the ability to integrate the app into their daily lives. Many retailers would not adopt mobile apps because they were inconvenienced by them while they were serving customers, and this caused them to take more time to do their job. Some small food kiosk owners felt that it would waste a lot of their time as they would be required to

input data into the app as clients arrived. Since they were operating food stores, it would not be easy to serve many clients well.,

Even though the participants perceived the usefulness of Racadi, they felt the app was not compatible with their lifestyles and current business operations. Some felt the app made operations slower than before, as it added an additional step to business operations. Some, especially small food kiosks and local restaurants with only one employee in operations going from the kitchen to the table, felt that they did not have sufficient time to deal with the app. Their hands might be dirty from the kitchen while they were using the smartphone with customers. For this reason, they stopped using Racadi after two weeks of use.

4.3.4 Observability

Small retailers adopted Racadi as they could see clear results when they compared business from before and after use. They discovered that sales-management apps can increase sales volume, customers, and improve customer loyalty. Due to this, they decided to use Racadi continuously. They also reported that they loved to check sales at any time, even when they closed their shops. They followed this on Racadi very quickly and easily. It reduced the workload required after work.

4.3.5 Age

Many young people are interested in technology more than older generations. It was found that

people who used the application continuously were all in the age range of 18–40 years of age. Younger small retailers could install and learn how to use a mobile app by themselves, while older retailers take a longer time to learn, feel that using mobile apps is complex, and do not intend to use them.

4.3.6 Entrepreneurial Spirit

If small retailers do not adapt to or seek any solutions, it will cause a regression in their business. The result of the present study is that those who still use Racadi do so because they have a passion for improving their business.

4.3.7 Ability to Use

This factor plays a significant role in the adoption process. The small retailers that are able to use smartphones and technology perceive

the usefulness and ease of use of Racadi. Adoption of new technology also involves education. It was found that continuous users were bachelor graduates. This study indicates that education is one of the factors determining whether retailers are likely to use or not use the application. Besides this, participating retailers with technology experience could learn to use mobile apps faster than others. Some of the small retailers who did not have experience in using smartphones felt uncomfortable using Racadi.

In summary, many factors affected the small retailers' decision-making process in phases one to three. Especially in the current research, new factors were found that affected the adoption of mobile apps by small retailers, with the results shown in Table 4 and Figure 4 below:

Table 4: Comparing Factors of TAM, UTAUT 2, and DIT

Factors/Theory	TAM	UTAUT 2	DIT
1. Perceived Usefulness	Yes	Yes	Yes
2. (Relative Advantage)			
3. (Performance Expectancy)			
4. Perceived Ease of Use	Yes	Yes	Yes
5. (Complexity)			
6. (Effort Expectancy)			
7. Attitude	Yes	No	No
8. Trialability	No	No	Yes
9. Compatibility	No	No	Yes
10. Observability	No	Yes	Yes
11. Facilitating Conditions	No	Yes	No
12. Age	No	Yes	No
13. Entrepreneurial Spirit	No	No	No
14. Ability to Use	No	No	No
15. Perceived Risk	No	No	No

All three factors revealed by this study, Entrepreneurial Spirit, Ability to Use, and Perceived Risk, affected the adoption of the Racadi application in small retailers, demonstrated through action research in three cycles. Each cycle consisted of four stages: (1) plan, (2) action, (3) observation, and (4) reflections (Crane and O'Regan, 2010). These three variables have never been identified before in any of the three predominant theories: TAM, UTAUT 2, and DIT. However, a study with different participants or different

mobile apps may make different conclusions or discover different factors that affect the adoption of mobile apps.

This study explains that many factors affected the small retailer's decision-making process in Phases 1-3. The current research also discovered new factors affecting the adoption of mobile apps by small retailers. The factors that were not pointed out in the existing prominent theories of TAM, UTAUT 2, and DIT are 1) Entrepreneurial Spirit, 2) Ability to Use, and 3) Perceived Risk.

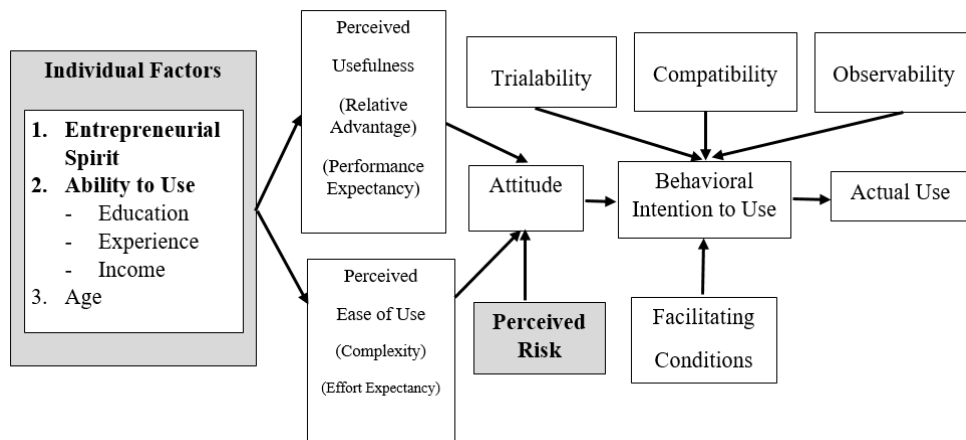


Figure 4: Sales Management of Mobile Application Adoption by Small Retailers

5. CONCLUSION AND RECOMMENDATIONS

In this study, participants had problems with their number of sales, which was gradually declining, and they required technology that could be used to improve the situation. According to them, they felt that

modern technology could be used to increase sales. In subsequent cycles, it was noted that the number of users declined as a result of many factors as people came to actually using the app. Before participants even looked at the features of the app, perceived usefulness, attitude, entrepreneurial spirit, and perceived risk were factors

taken into consideration. They also wanted to know whether the app had facilitating conditions, or complexity, and that it could fit into their daily activities. It was determined that the adoption of mobile apps is dependent on individual factors such as age, entrepreneurial spirit, and the ability to use. Technology takes time before it is finally accepted, but at least some people will be persistent enough to gain the benefits of the app. In this case, many people were initially willing to install and use the app. Moving on to later cycles, it was noticed that the number of active participants dropped; finally, there was a small number of people (20%) who were willing to use the application for more than two weeks. In each cycle different ways of improving the performance of the app were noticed. Different factors affect the performance of an application at different stages of the decision-making process.

This study provides insightful information for marketers and app developers, including knowing their target market. However, the main contribution of this paper is the proposed model to represent the factors that influence the mobile app's adoption by small retailers. The findings show that the three theories (TAM, UTAUT 2, and DIT) are not sufficient to explain the adoption of mobile applications in the setting of small retailers, as all critical factors are not listed. New factors that affect mobile app adoption were identified, namely entrepreneurial spirit, ability to use, and perceived risk.

REFERENCES

- Arbuthnot, J. J., Slama, M., & Sisler, G. (1993). Selection criteria and information sources in the purchase decisions of apparel buyers of small retailing firms. *Journal of Small Business Management*, 31(2), 12.
- Alford, P., & Page, S. J. (2015). Marketing technology for adoption by small business. *The Service Industries Journal*, 35, 655-669.
- Chan-Olmsted, S., Rim, H., & Zerba, A. (2013). Mobile news adoption among young adults: examining the roles of perceptions, news consumption, and media usage. *Journalism & Mass Communication Quarterly*, 90(1), 126-147.
- Choudrie, J., & Dwivedi, Y. K. (2005). Investigating the research approaches for examining technology adoption issues. *Journal of Research Practice*, 1(1), 1.
- Coghlan, D. (2019). *Doing action research in your own organization*. SAGE Publications Limited.
- Crane, P., & O'Regan, M. (2010). *On PAR: Using participatory action research to improve early intervention*. Department of Families, Housing, Community Services and Indigenous Affairs, Australian Government.
- Davis, F., Bagozzi, R. P., & Warshaw, P. R. (1989). Davis, F. D.; Bagozzi, R. P.; Warshaw, P. R. (1989). User acceptance of

- computer technology: A comparison of two theoretical models. *Management Science*, 35, 982–1003.
- Dogtiev, A. (2019). *App download and usage statistics (2018)*. Retrieved 2018, March 5, from <http://www.businessofapps.com/data/app-statistics/>
- Google. (2016). *How people use their phones for finance activities*. Retrieved 2018, September 2, from <https://www.thinkwithgoogle.com/advertising-channels/apps/app-marketing-mobile-banking/>
- Grewal, D., Roggeveen, A. L., & Nordfalt, J. (2017). The future of retailing. *Journal of Retailing*, 93, 1-6.
- Hussein, Z. (2017). Leading to intention: The role of attitude in relation to Technology Acceptance Model in e-Learning. *Procedia Computer Science*, 105, 159-164
- Islam, R., Islam, R., & Mazumder, T. (2010). Mobile application and its global impact. *International Journal of Engineering & Technology (IJEST)*, 10(6), 72-78.
- Islam, R., Islam, R., & Mazumder, T. (2010). Mobile application and its global impact. *International Journal of Engineering & Technology (IJEST)*, 10(6), 72-78.
- Lemay, D. J., Morin, M. M., Bazelaïs, P., & Doleck, T. (2018). Modeling students' perceptions of simulation-based learning using the Technology Acceptance Model. *Clinical Simulation in Nursing*, 20, 28-37.
- Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues*, 34-47.
- Mugo, D. G., Njagi, K., Chemwei, B., & Motanya, J. O. (2017). The Technology Acceptance Model (TAM) and its application to the utilization of mobile learning technologies. *British Journal of Mathematics & Computer Science*, 20(4), 1-8.
- Nikou, S. A., & Economides, A. A. (2017). Mobile-based assessment: Integrating acceptance and motivational factors into a combined model of self-determination theory and technology acceptance. *Computers in Human Behavior*, 68, 83-95.
- Pierce, S. (2008). "Spirit of the Entrepreneur". Retrieved October 15, 2019, from <https://www.entrepreneur.com/article/190986>
- Runyan, R. C., & Droge, C. (2008). A categorization of small retailer research streams: what does it portend for future research?. *Journal of Retailing*, 84(1), 77-94.
- Rogers, E. (2003). *The diffusion of innovations* (5th ed.). New York: The Free Press.
- Rouse, M. (2013). *Mobile app*. Retrieved 2019, October 6, from <https://whatis.techtarget.com/definition/mobile-app>
- Smartbear. (2014). *Nearly 50% of consumers will delete a mobile*

- app if they encounter a single bug, reveals survey by smartBear. Retrieved 2019, March 12, from <https://smartbear.com/news/new-s-releases/the-state-of-mobile-testing-2014.aspx/>
- Statista. (2019). *Number of apps available in leading app stores as of 2nd quarter*. Retrieved 2019, October 6, from <https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/>
- Turner, S., & Endres, A. (2017). Strategies for enhancing small business owners' success rates. *International Journal of Applied Management and Technology*, 16(1), 3.
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology *MIS Quarterly*, 36(1), 157-178.
- Verma, S., Bhattacharyya, S. S., & Kumar, S. (2018). An extension of the Technology Acceptance Model in the big data analytics system implementation environment. *Information Processing & Management*, 54(5), 791-806.