


# The Impact of Branded Mobile Applications on Customer Loyalty



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**Abstract** This Study aims to investigate the impact of using branded mobile applications on customer loyalty. The population of the study consisted of all users of Pharmacy One's mobile application in Jordan. The researcher used the purposive

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sampling by taking 2035 active users of the on-line applications from 70,251 downloader; 500 questionnaires were distributed randomly. To achieve the objective of the study, and to test hypotheses, the researcher used statistical program of social studies (SPSS) & (AMOS). The study results revealed that there is a statistically effect of using branded mobile applications on customer loyalty, based on the study results the researcher recommends managers and decision makers to improving the system of customer services in order to improve their loyalty, by reviewing the system after receiving feedback from customers through mobile applications. Also enhancing the quality of system information by ensuring that the content is relevant to customer requirements. and improving the perceived quality of the customer by identifying the expectations of the customers and seeking to achieve these expectations, so that the gap between what they expect and what they actually get.

**Keywords** Branded mobile applications (BMA) · Customer loyalty (CL) · Healthcare technologies · Amman-Jordan

## 1 Introduction

After the booming of smart phones and tablets that helping people not only to contacting each other but doing their jobs and tasks through it, the on-line smart phones' applications take place as a service for the community starting from using applications for work and ending with gaming and socialization applications at home, in another word it's became a life style. This wide spread of the mobile devices is due to the extensive usage of the mobile phone's applications (Al Dmour et al., 2014; Alshurideh et al., 2019a, 2019b). Mobile applications are currently used by companies to help and serve their customer and clients without being on the spot. This action will save time and decrease the level of human contact within the services given (Akour et al., 2021; Alshurideh et al., 2021).

Medical sector and pharmacies are investing with the mobile applications to have a direct contact with patients and increase their compliance to medications. Also, is used as an informative reference for clients about health tips and drug-drug interactions and other related services. Chain of Pharmacies today are launching their own branded mobile applications to have a loyal customer and increase their sales through it.

Consumers' behavior has been observed during their usage of different mobile devices, results showed that consumers had positive emotion toward the responses they receive when visiting the mobile site which is considered as basic application of the pharmacies systems (Alshurideh et al., 2012a, 2012b; Al-Hamad et al., 2021).

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In pharmaceutical sector, there are many applications of mobile devices, there usage has led to useful changes in pharmacy practices, this refers to the fact that many of the pharmacy daily activities can be achieved by using the mobile devices, according to the vision statement issued by the American Association of the pharmacists of the Health system regarding the proposed role of information technology in practicing pharmacy. There are many features through which technology can participate in improving the pharmacy general performance (Aburayya et al., 2020a, 2020b; Taryam et al., 2020; Ghazal et al., 2021; Svoboda et al., 2021).

But there are advantages and disadvantages of using the mobile devices, applications with positive and tangible impact on the pharmaceutical products should be studied, this increasing trend towards using the mobile devices as instruments to manage the health information in a better way requires more education of the consumers (users), and in some cases might need placing some laws. The used mobile devices applications have been developed remarkably in the medical clinical practice with a number of applications for the clinical practitioners. Determining and selecting the reliable application from thousands of medical applications available on the internet or the applications stores a basic factor in assuring the effectiveness of these devices.

In summary, this research concerned itself with the impact of using branded mobile applications on customer loyalty in chain of pharmacies (a case study on Pharmacy One) in Jordan, Understanding customers responses to each of branded mobile applications sub variable (Service information quality, Service system quality, Awareness about mobile application and Perceived quality about mobile phone application) in order to help firm to measure the impact of this application and whether its' helpful and useful for their clients, and how important it is to invest in this online technology to formulate a new marketing plan and strategy to get the customer loyalty.

## **2 Theoretical Frame and Hypotheses Development**

### **2.1 The Brand**

The trade mark known to the customers makes them feel secure toward the use of the product, in a severe competing business environment, which contributes to high share to the brand, and placing high value to the product in the customer's mind (Hamadneh et al., 2021; Sweiss et al., 2021). The consumer distrust the brand if it quality changes, since the perceived quality is not the real product quality, it is the customer personal evaluation which shows the product's real quality, since quality represents the images established in the customer's mind, since he does not have enough information to evaluate the quality, the price is placed as a positive indicator with the perceived quality. Brand offers multiple benefits to the organization; these benefits include increased the likely hood to select the brand which leads to customers loyalty (Alwan & Alshurideh, 2022; Tariq et al., 2022). Also, brand expands to

products from other categories, increases the product/ service market value because customers are ready to pay high prices (Abu Zayyad et al., 2021; Aljumah et al., 2021).

## 2.2 *Branded Mobile Applications*

In 2008, Apple opened its iOS App Store that was the primary application distribution service. This set the quality for applications distribution services for alternative mobile firms. This led to shopper's exploitation their mobile devices as the way of connecting to the online. Consequently, mobile phones began to be referred to as smartphone because of their various capabilities. Mobile and software package developers accomplished that they might take mobile web site capabilities up with new applications named mobile applications. The applications would have identical functions and capabilities as websites designed for a desktop or laptop computer. The websites were scaled down so they'd work mobile devices. This led to an over plus of mobile applications being developed and enforced. In 2010, the word "app" was listed because the "word of the year" by the yank idiom Society (2011). Early applications for mobile apps were for email, calendars, contacts, the securities market, and weather data. High demand from users led to mobile applications being employed in mobile games, factory automation, banking, order-tracking, and price ticket purchases.

The mobile business has continuing to grow quickly, with a complete of 3.6 billion unique mobile subscribers at the top of 2014 associated an addition of one billion subscribers predicted by 2020 globally. Branded Mobile Applications may be defined as the software that is downloadable and available on online stores for mobile phones and tablets, carrying the name or the brand of an existing firm to deliver products and services through it. In the theoretical frame, the study has addressed and demonstrated both the independent and dependent variable, the independent variable (branded mobile application) with its dimension (service information quality, service system quality, perceived quality of the trade mark and awareness about the mobile phone trade mark). The study has benefited from some these previous studies mainly that have addressed these dimensions, like (Monica et al., 2017); (Francisquinho, 2013).

**Service System Quality:** The researcher defines quality of the system as a general performance statement of the system, which can be measured by the customer's point of view and the degree of ease of use in marketing and satisfaction with the system. Quality of service, customer satisfaction and customer loyalty are three key elements for business organizations to strive to focus on (Al-Dmour et al., 2021; Alshurideh, 2022). An organization that does not focus on quality is not successful in its business, so, quality is an important tool for strong competitive advantage market. (Tehrani & Jamshidi, 2015; Alzoubi et al., 2020).

**Service Information Quality:** If the provided information by the mobile phone applications are inaccurate, insufficient and without visibility, or uncompleted, this will contribute to reduction in customers satisfaction. The researcher sees that the

availability of high quality information brings and attract more customers because of their loyalty to the quality of the information provided by the different applications for the pharmaceutical sector. Service Information Quality may be defined as the quality level of processes and procedures provided through the service whether it is available at the time needed for and work smoothly or not.

**Awareness about the Mobile Phone Application:** Awareness about the brand is identified as “the prospected buyer’s ability to remember the brand in a product type”. (Chen & Ching, 2007). Also identified as “the customer’s ability to know the brand in the different conditions” while Ross identified it as “strength of the brand’s presence in the customers mind”.

The researcher sees that the consumer’s ability to remember and distinguish some components of the brand within different conditions and provisions is considered basic and important condition to create the awareness about the brand. Awareness about the Mobile Phone Application may be defined as the level of consumer concessions about the brand of the mobile phone application and to which extent they can recall or recognize it.

**The Perceived Quality about the Mobile Phone Application:** Perceived quality is identified as “the consumer perception of the total quality or superiority of the product or the service”. Swinker & Hines classify the perceived quality to four categories; essential, external, appearance and performance. Perceived quality and brand’s image are determinants of loyalty to the brand. Many studies have indicated at the positive influence of the perceived quality on buying intention. The Perceived Quality about the Mobile Phone Application may be defined as the customer’s judgment and perception about the total quality of the mobile phone application and its superiority to another.

### **2.3 Brand Loyalty**

Loyalty to the brand is considered one of the important factors in the success of the commercial businesses since studying the client’s loyalty through his behavior and the attitudes are basic methods in building the client’s loyalty. Attitudes about loyalty were identified as the degree of the behavioral commitment regarding the unique correlations regarding their kind with the brand’s value (Suhartanto & Noor, 2013: 65). Several researches believe that loyalty in the attitudes affecting the clients purchase repetition of the brand. Brand Loyalty may be defined as Deep commitment of customer to a product or service despite situational influences and marketing efforts having the potential to cause switching to another product or service.

**Attitudinal Brand Loyalty:** Attitudinal method issued in order to measure the clients’ loyalty to the brand and increasing the number of the new clients. The clients’ perspective method about the client’s loyalty and the intention to re-buy the product or recommending it (Kandampully & Hu, 2007). So, the researcher sees that many studies use this kind of instruments to perform the customer’s loyalty to the brand but measuring the loyalty to the brand with one instrument is an effective measure to

loyalty compared to customer satisfaction on level of retaining them. Also, attitudinal method issued in order to measure the clients' loyalty to the brand and increasing the number of the new clients. The clients' perspective method about the client's loyalty and the intention to re-buy the product or recommending it (Kandampully & Hu, 2007). So, the researcher sees that many studies use this kind of instruments to perform the customers loyalty to the brand but measuring the loyalty to the brand with one instrument is an effective measure to loyalty compared to customer satisfaction on level of retaining them.

**Behavioral Brand Loyalty:** From an analytical study conducted by (Glasman & Albarracin, 2006), the study indicated that the attitude greatly predicts the future behavior and understanding loyalty by the client is basic factor for the businesses because it helps marketing directors in designing programs to modify the clients' behavior in the future, especially changing the behavior from one specific brand to another. To find the motive for buying behavior, directors need understanding the clients' cognitive mechanisms which are considered important part of these attitude (Back, 2005).

Rewards programs issued by the companies to promote the client's loyalty to its brands increase the client's loyalty to that brand, because the client might depend on his loyalty to the brand on specific and desired behaviors and provide him with comfort. If the customer attitude to the brand is positive, the percentage of his loyalty to the brand will be higher because his attitude will contribute to be as an advertisement and promotion to the brand, also, those attitudes in loyalty will contribute to creating long-term loyalty relationship between the brand and the client (Meyer-Waarden, 2015). The researcher sees that, in order to achieve specific behavior from the client, there should be process to control the clients' behaviors in the relationship between the brand and the client, by including the client's psychological factor and his attitude. So, the researcher sees that, one group of behavioral intentions can be design as positive behavioral intentions. one of this is loyalty, and certain behaviors signal that customer are forging bond with a company, and when customer praise the firm, express preference for the company over other, recommend the company of service to other.

## ***2.4 Branded Mobile Applications and Loyalty***

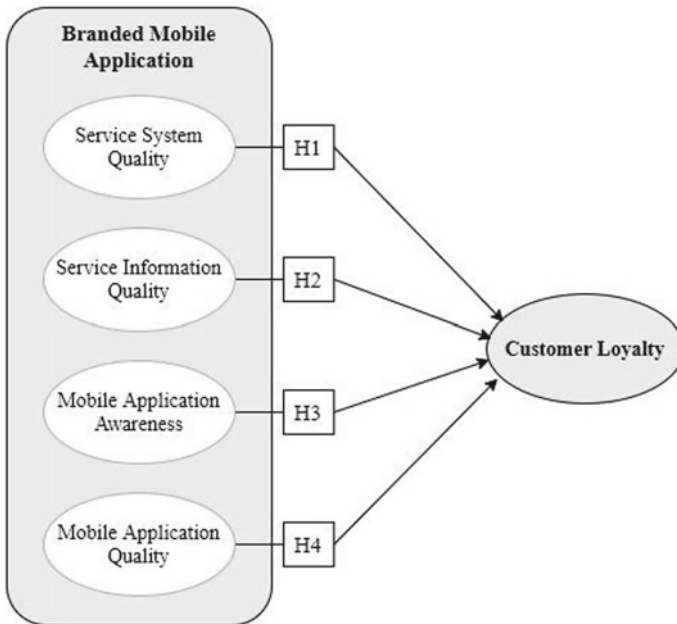
Bellman et al. (2011) have investigated the effect of branded mobile applications, including information and experimental applications related to attitudes toward the brand, and buying intention, results from their study showed that brand applications had positive impact of the attitude towards the brand, but less impact on the buying intention, also, found that the branded applications are new form of interaction information means, such as the websites, but differ from the advertisements thorough the internet because of the applications that characterizes by high level of the customers participation. Yu has investigated the influences of the mobile advertisement messages in building positive attitudes toward the band and the customer's

buying intentions. Results of his study showed that the mobile phone advertisements with interactive features have led to positive attitudes toward the brand and the buying intentions. Hoogendoorn study has proved the extent of the impact of the mobile applications with brand on the brand’s cognitive and emotional shares and found that the interaction with branded applications has resulted in an increase in the positive aspects of the brand. Also, the results of that study showed that the interaction in the mobile applications with brand improved the brand’s cognitive share.

Xie et al. study found that design of the mobile devices such as the screen’s size, advertisement size and ease of uses influence the customers’ emotional response to the mobile advertisements that might generate the positive emotions and increasing the customers buying intention. Kumar and Mukherjee have explained the attitudes of the mobile phone users in the shopping and purchase intention through the devices and found that the mobile phone does not always push the users to buy. Based on the above literature the study hypotheses can be formulated as:

**H01: There is a significant impact of branded mobile applications) on customer loyalty of Pharmacy One**

### 3 Research Model



## 4 Methodology

### 4.1 Population and Sample Selection

The sample of the study is defined as part of the sample that contains appropriate information about the study population. The study population was 70,251 downloaders of the mobile application. In order to obtain the appropriate information owned by some members of the population, the best technique to select the sample is the purposive sampling. According to Sekaran and Bougie (2016), a purposive sample is the one that contains individuals who are able to provide the desired information. Since the current study seeks to collect data from online users of the application, a purposive sample consisted of 2035 real active users of the mobile application, 500 users were randomly selected. Out of them, 423 users were accepted since they download and activate the intended application and answers the questionnaire form link.

### 4.2 Measurement Instrument

A self-reported questionnaire that consists of two main sections along with a section regarding control variables was used as the measurement instrument. Control variables considered as categorical measures were composed of gender, age group, educational level, and experience. The two main sections were dealt with a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). The first section contained (19) items to measure branded mobile applications based on (Abbad & Al-Hawary, 2011; Abu Qaud et al., 2011; Al-Hawary, 2012; Al-Hawary & Al-Fassed, 2021; Al-Hawary & Al-Menhaly, 2016; Al-Hawary & Al-Smeran, 2017; Al-Hawary & Hussien, 2017; Al-Hawary & Metabis, 2012; Al-Hawary et al., 2011, 2012; Alolayyan et al., 2018; Metabis & Al-Hawary, 2013). These questions were distributed into dimensions as follows: five items dedicated for measuring service system quality, five items dedicated for measuring service information quality, four items dedicated for measuring Mobile Application Awareness, and five items dedicated for measuring Mobile Application Quality. Whereas the second section included nine items developed to measure customer loyalty according to what was pointed by (Monica et al., 2017; Francisquinho, 2013).



## 5 Findings

### 5.1 Measurement Model Evaluation

This study was conducted structural equation modeling (SEM) to test hypotheses, which represents a contemporary statistical technique for testing and estimating the relationship between factors and variables (Wang & Rhemtulla, 2021). Accordingly, the reliability and validity of the constructs were tested using confirmatory factor analysis (CFA) through the statistical program AMOSv24. Table 1 summarizes the results of convergent and discriminant validity, as well the indicators of reliability.

Table 1 shows that the standard loading values for the individual items were within the domain (0.624–0.872), these values greater than the minimum retention of the elements based on their standard loads (Al-Lozi et al., 2018; Sung et al., 2019). Average variance extracted (AVE) is a summary indicator of the convergent validity of constructs that must be above 0.50 (Howard, 2018). The results indicate that the AVE values were greater than 0.50 for all constructs, thus the used measurement model has an appropriate convergent validity. Rimkeviciene et al. (2017) suggested the comparison approach as a way to deal with discriminant validity assessment in covariance-based SEM. This approach is based on comparing the values of maximum shared variance (MSV) with the values of AVE, as well as comparing the values of

**Table 1** Results of validity and reliability tests

Constructs	1	2	3	4	5
Service system quality	<b>0.755</b>				
Service information quality	0.564	<b>0.760</b>			
Mobile application Awareness	0.612	0.538	<b>0.762</b>		
Mobile application quality	0.488	0.542	0.493	<b>0.722</b>	
Customer loyalty	0.692	0.689	0.665	0.677	<b>0.748</b>
VIF	5	5	4	5	9
Loadings range	0.622–0.822	0.638–0.854	0.624–0.866	0.682–0.766	0.631–0.872
AVE	0.570	0.577	0.580	0.521	0.559
MSV	0.511	0.502	0.488	0.469	0.509
Internal consistency	0.866	0.868	0.841	0.840	0.915
Composite reliability	0.868	0.871	0.845	0.844	0.918

*Note* VIF: variance inflation factor, AVE: average variance extracted, MSV: maximum shared variance, Bold numbers refer to  $\sqrt{AVE}$

square root of AVE ( $\sqrt{AVE}$ ) with the correlation between the rest of the structures. The results show that the values of MSV were smaller than the values of AVE, and that the values of  $\sqrt{AVE}$  were higher than the correlation values among the rest of the constructs. Therefore, the measurement model used is characterized by discriminative validity. The internal consistency measured through Cronbach's Alpha coefficient ( $\alpha$ ) and compound reliability by McDonald's Omega coefficient ( $\omega$ ) was conducted as indicators to evaluate measurement model. The results listed in Table 1 demonstrated that both values of Cronbach's Alpha coefficient and McDonald's Omega coefficient were greater than 0.70, which is the lowest limit for judging on measurement reliability (De Leeuw et al., 2019).

### 5.2 Structural Model

The structural model illustrated no multicollinearity issue among predictor constructs because variance inflation factor (VIF) values are below the threshold of 5, as shown in Table 1 (Hair et al., 2017). This result is supported by the values of model fit indices shown in Fig. 1.

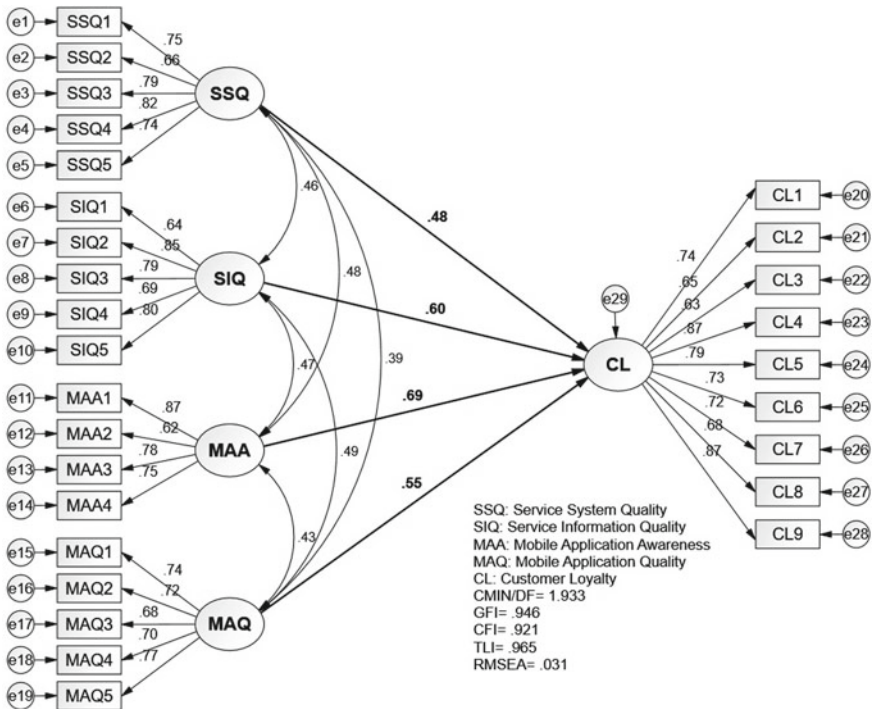


Fig. 1 SEM results of the branded mobile application effect on customer loyalty

**Table 2** Hypothesis testing

Hyp	Relation			Standard beta	t value	p value
H1	Service system quality	→	Customer Loyalty	0.483	20.04*	0.03
H2	Service information quality	→	Customer Loyalty	0.609	27.83**	0.002
H3	Mobile application awareness	→	Customer Loyalty	0.692	30.72***	0.000
H4	Mobile application quality	→	Customer Loyalty	0.550	25.37**	0.005

Note \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The results in Fig. 1 indicated that the chi-square to degrees of freedom (CMIN/DF) was 1.933, which is less than 3 the upper limit of this indicator. The values of the goodness of fit index (GFI), the comparative fit index (CFI), and the Tucker-Lewis index (TLI) were upper than the minimum accepted threshold of 0.90. Moreover, the result of root mean square error of approximation (RMSEA) indicated to value 0.031, this value is a reasonable error of approximation because it is less than the higher limit of 0.08. Consequently, the structural model used in this study was recognized as a fit model for predicting the DEP and generalization of its result (Ahmad et al., 2016; Shi et al., 2019). To verify the results of testing the study hypotheses, structural equation modeling (SEM) was used, the results of which are listed in Table 2.

The results demonstrated in Table 2 show that mobile application awareness has the greatest positive impact on customer loyalty ( $\beta = 0.692, t = 30.72, p = 0.000$ ), followed by service information quality ( $\beta = 0.609, t = 27.83, p = 0.002$ ), then mobile application quality ( $\beta = 0.550, t = 25.37, p = 0.005$ ), and finally the lowest impact was for service system quality ( $\beta = 0.483, t = 20.04, p = 0.03$ ). Thus, all the minor hypotheses of the study were supported based on these results.

## 6 Discussion

The main hypothesis presumed that there is a significant and positive effect of the branded mobile applications on customer loyalty. This hypothesis was tested based on the data collected from the respondents. The branded mobile application was measured using the items (1–19) of the questionnaire, while customer loyalty was measured by the items (20–28) of the questionnaire. Since the independent variable, the branded mobile applications consisted of four dimensions in the current study, which were the dimensions used in the sub-hypotheses, the discussion of the main hypothesis was combined with the discussion of the sub-hypotheses.

However, numerous studies have been accepted the hypothesis that there is a significant and positive impact of branded mobile applications on customer; loyalty.

Lin and Wang examined the determinants of customer loyalty in mobile commerce contexts and found an impact of perceived value of mobile applications on customer loyalty. Aydin and Özer analyzed the antecedents of customer loyalty in mobile telecommunication in Turkey and revealed a significant effect of perceived service quality on customer loyalty. One of the most pivotal intangible advantages of mobile applications is the improved customer service.

## 7 Recommendations

In light of its findings, the researchers recommend managers and decision makers to improve the system of customer services in order to improve their loyalty, by reviewing the system after receiving feedback from customers, and enhancing the quality of system information by ensuring that the content is relevant to customer requirements, the timing of the information and its practical usefulness to customers. Also Raising customer awareness by focusing on advertising, promoting and benefiting from the applications provided and encouraging customers to download and use them. The service provider can use the rewards to achieve this goal. Finally Improving the perceived quality of the customer by identifying the expectations of the customers and seeking to achieve these expectations, so that the gap between what they expect and what they actually get.

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