**Factors Affecting Mobile App-based Shopping in Pakistan: An Implication of UTAUT2 Model with Deal Proneness**

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**ABSTRACT**

*Mobile shopping-apps (MS apps) are opening new horizons in mobile commerce. Wireless networks and the establishment of 3G and 4G mobile networks play a vital role in mobile shopping apps growth and development. MS apps provide convenience and flexibility to the customers, as customers do not need to be connected to fixed local area networks. Due to rapid growth in mobile apps adoption for shopping, it is also considered an emerging research area. The current study used the technology acceptance model "Unified Theory of Acceptance and the Use of Technology 2 (UTAUT2) model" to explore the factors which are considered essential to predict the BI and the UB regarding the use of app-based shopping with an additional factor of deal proneness. PLS-SEM is used to explain the adoption process on variables such as; PE, FC, EE, PV, SI, HB, and DP. The study results revealed that PE, FC, EE, and HI positively and significantly predict the consumer's BI.Furthermore, FC and HB proved to have a mediating relationship between BI and UB, whereas the HB direct effect is insignificant. The behavioural intention of consumers positively predicts UB. The study further revealed that DP has a significant direct and positive relationship with mobile shopping apps UB. The study is useful for the policymakers and mobile shopping app providers to devise the policies by considering the prominent factors which help increase their sales and attract potential consumers.*

**Keywords:** Mobile shopping-apps; User behaviour; Use intention; UTAUT2 model

**INTRODUCTION**

Mobile commerce is an addition to the world of E-Commerce. In mobile-commerce, a wireless environment is used to perform business activities (Bui et al., 2020). Mobile commerce is proliferating, with 34.5% of the world E-Commerce transaction is represented by mobile-commerce (Big-commerce). As per the statistics of the State Bank of Pakistan (SBP), it is expected that the size of the E-Commerce market reached over $600 million in 2017 and expected to grow to $1 billion by the year 2020. In Pakistan, Business to Consumer (B2C) is on the rise, which can be observed from the fact that about 1,094 local E-Commerce merchants

are currently attached to the online banking network to collect online payment compared to 571 in 2017. The annual turnover of local merchants is Rs. 9.8 billion as compared to Rs. 3.4 billion, while the international transactions carried out by the local consumer is about Rs. 20.7 billion.

The inclusion of internet power in the smartphone makes it indispensable and more useful in daily routine life. The growing number of smartphone users compel shopping website companies to develop and launch their compact mobile app that will provide the consumers with ready access to the website's contents. Pakistan is one of those countries where sharp growth in the e-commerce industry has been witnessed. Many MS apps like yayvo.com, daraz.pk and olx.com gained massive popularity quickly. Companies are making high investments in MS apps to overcome the navigation problems, make apps compatible with mobile devices, and add advanced payment features to enhance customer convenience. People use MS apps to purchase various things ranging from household products to clothes and electronic products. In this process, many people develop more online shopping behaviour than others. Furthermore, promotional deals through apps are another reason for which consumers opt app-based shopping.

Different models have been developed to check the technology acceptance among individual users; UTAUT2 is one of them (Venkatesh et al., 2012). UTAUT2 is considered a comprehensive model because it incorporates previous theories' constructs (Tamilmani et al., 2020). This study uses the UTAUT2 model to analyse the factors affecting BI and UB of consumers to use MS apps.

Deal-prone customers are defined as an indication to use promotional deals and generally look for promotional deals (Valentini et al., 2020). About half of Pakistani urban consumers are prone to save money. This propensity shows that deals play an essential role in online shopping and shopping through mobile apps. Therefore, the study has checked the effect of DP on MS apps' UB alongside other factors.

**Theoretical Background**

In this section, various types of MS apps currently used by consumers and significant mobile shopping theories are discussed. This section aims to introduce the theories that are directly dealing with the model of the study.

 Mobile shopping is more convenient than online shopping. In online shopping, consumers need to be connected to a fixed local area network while shopping through mobile-based apps; this constraint is not applied (Heinonen & Pura, 2006). Mobile applications are specifically designed applications for use on mobile phones. This application performs some specific tasks for consumers. For example, It helps the consumer is searching for different products without the use of browsers. Most online websites have currently developed their customised mobile apps installed on smartphones easily for free. A few examples include; Daraz.pk, OLX.pk, Ali Express, Metro Online, yayvo.com. The mobile app has its unique characteristics, and these features add additional benefits such as localisation, personalisation and convenience during shopping (Hubert et al., 2017).

## UTAUT Model

UTAUT is a technology acceptance model developed by Venkatesh et al. (2003) in response to the confusion regarding alternative models of technology acceptance that existed in the literature to study the use behaviour of end-users. The UTAUT is a comprehensive model which includes the alternative views of different theories of technology acceptance. The main variables on which UTAUT theory is developed includes PE, EE, SI and FC.

## UTAUT2 Model

The first UTAUT model was initially developed to analyse employees' acceptance of technology. After the emergence of consumer technologies, it was realised that the model should be more consumer-centric. Habit, hedonic-motivation, and price-value were added in UTAUT2 model as additional factors to make the model more consumer-centric. Hedonic motivation is also a determinant of technology acceptance, as it includes emotion such as fun and pleasure (Kulviwat et al., 2009). The study of Paden and Stell (2010) reported that hedonically inspired customers to seek general information, while utilitarian inspired customers to seek specific information. Consumer attitude towards a hedonic product is determined by the past internet experience of the consumer. The consumer may develop a personal habit of shopping on apps with their experience. Some previous studies have pointed out the extensive use of the internet by consumers for shopping and other activities; see, for example, King and Delfabbro (2014) and Yee (2006). The price value can also be a critical factor of acceptance of technology in the context of mobile-app shopping. As most of the shopping-apps provide "app-only discount"; so, the app-based shopping may attract value-driven customers. Although shopping-apps are considered as a utility, these are important to understand the hedonic-motivation, price-value and consumers' habitual motivations for acceptance of mobile-apps.

## Literature Review

In the recent global trend, mobile applications are becoming necessary gadgets to cope with updated lifestyles. It is expected that the total number of mobile applications are going to exceed the total world population (McLean et al., 2018). Keith et al. (2103) provided that mobile phones, especially smartphones, are useful for entertainment, but with the recent trends, it is becoming one of the most successful business tools in the world. Mobile-apps are defined as software mainly designed to perform specialised tasks for mobile phones (Tang, 2019).

The shopping trends have been changed now; in the past, consumers had to carry hard cash with them for shopping; whereas, now consumers have options to use electronic cards and mobile apps to order the desired product in seconds. These facilities are not only beneficial for the consumers in terms of time-saving, cost-saving, and customised products but are also a source of an increase in business for the business. E-shopping is facilitated with e-vehicles, which are different mobile apps and features to provide convenience for consumers. This remarkable shift in the consumer's behaviour has been observed worldwide (Nielsen, 2016).

There are different mobile apps available for the users; for example, calendar, notes, flashlights, shopping-apps, games and music players, to name a few (Bomhold, 2013). Similarly, business organisations perform different functions through mobile apps such as; mobile advertising, mobile payments, and mobile TV. Therefore, mobile apps are considered a new form of m-commerce application. Several other studies have focused on mobile app usage in different contexts; for example, on mobile advertising (Rafieian & Yoganarasimhan, 2021), mobile payment (Cao et al., 2018), mobile TV apps (Wong et al., 2014).

In psychology and sociology, many theoretical models have been presented, and research studies have been conducted from time to time to check and explain consumers' behaviour regarding technology acceptance and usage. The focus of technology adoption, usage and acceptance has been studied from two main perspectives. One of them is from the perspective of Innovation Diffusion Theory (IDT); whereas, the other perspective is the intention-based model, which encompasses TRA (Theory of reasoned action), TPB (Theory of planned behaviour), and TAM (Technology acceptance model).

Venkatesh et al. (2003) has compared eight theories of technology use. These theories and models are; TRA, TAM, MPCU, MM, IDT, TPB, ECT and SCT. Based on this comparison, they proposed a new model of technology called the "Unified Theory of Acceptance and Use of Technology (UTAUT)". In this model, four fundamental concepts of technology use have been identified as key determinants, which are EE, PE, FC, and SI. This model was initially tested in the organisational context to check the employees' acceptance of technology. Later on, this model was updated in the consumer context by Venkatesh et al. (2012), and the new model was called UTAUT2. Later on, Kang et al. (2015) checked the applicability of mobile-apps usage intention and provided results in favour of the UTAUT model and theory of gratification.

**Hypotheses formulation**

**Performance expectancy** (PE) is related to a specific technology benefit to the consumer during tasks performance (Venkatesh et al., 2012). It also includes the acceptability of specific technology increases if the end-user finds it easy to learn and use (Talukder et al., 2019). Previous literature identified the positive and significant relationship between performance expectancy and behavioural intention to use mobile-apps (Chopdar and Sivakumar, 2019). Mobile apps are a useful tool to provide different functions for mobile users and to facilitate shopping.

$H_1$: PE is positively associated with BI of MS apps.

**Effort expectancy (EE)** basically represents the ease of use associated with any technology. The EE construct is a major construct of TAM model (Pynoo et al., 2011), and previous literature prove empirical evidence that EE is a major determinant of BI. (Chong, 2013; Murillo-Zegarra et al., 2020). The touch mobile phones have a large screen which provides an environment for the users to use mobile shopping apps with ease, and on the other hand, the operational efficiency of mobiles shopping apps also increases the EE.

H2: EE is positively related to BI to use MS apps.

**Social influence** (SI): As per Venkatesh et al. (2012), SI is related to the perception of the user in which in believe that this specific technology should also be used by his social circles like family, friends and colleagues. Tsu Wei et al. (2009) have studied social influence in two dimensions. Ft dimension is mass media which includes magazines, the internet, radio, television, academic journals, and newspapers, and the second dimension is the interpersonal influence which includes social influence from superiors, friends and peers. Singh, Sinha & Liébana-Cabanillas (2020), Chong (2013), and Leong et al. (2013) stated that SI is an essential factor of BI.

H3. SI has a positive association with BI to use MS apps.

**Habit (HB)** is described as "the extent to which people tend to perform behaviours automatically because of learning" and can be considered as a "perceptual construct that reflects the results of prior experiences" (Venkatesh et al., 2012). Previous experiences of consumers also influence them to use technology apps to prove to be a critical determinant to predict the behaviour for the use of technology apps (Crabbe et al., 2009). Nikou et al. (2014), Soror et al. (2021) also claimed that habit influences consumers' BI to use social networking websites. Reliance on computer technologies in our daily lives and habits are positively influencing the BI to use MS apps.

H4. HB is positively associated to use of MS apps.

H4a: HB mediates the relationship of BI to use and the use of MS apps

**Price value (PV)**: A favourable price value is used to positively impact consumers' BI (Hanafizadeh et al., 2014). According to Zeithaml (1988), price value is the complete process through which the evaluation and comparison of the perception of relative rewards and associated costs can be made. If perceived advantages carry more value over the intention to use IT apps, this will positively impact the use of technology (Deng et al., 2014).

H5. PV is positively associated with BI to use MS apps.

**Facilitating conditions (FC):** According to Lewis et al. (2013) and Chong (2013), FC has an imperative role in technology adoption. They further stated that if FC is insufficient, it will hamper the intention to use new applications. Internet adoption in mobile phones is also considered an important factor. Internet connections, online help and support, and m-devices are considered as FC. These results are supported by Crabbe et al. (2009) and Venkatesh et al. (2012).

H6. FC is positively associated with the use of MS apps.

H6a: FC mediates the relationship of BI to use and use of MS apps

**Deal proneness (DP):** All price discounts given in the form of percentage discounts positively influence consumers' buying intentions (Martins et al., 2014). Customers are more inclined to attractive price discounts (Kim and Kramer, 2006). Stern (1962) identified some factors that are positively affecting consumers' impulse buying behaviour, such as; mass distribution, mass advertising, dominant store

displays, low price strategies, self-service, short product life, easy to store, and marginal need of the item. Sales promotions are used to influence the buying behaviour of customers positively (Rao, 2009).

H7: DP is positively associated with BI to use MS apps

## Research Methodology

### Instrument of Data Collection

The structured questionnaire has been used to test developed hypothesis. The questionnaire items related to PE, FC, EE, SI, PV, HB, BI, UB have been adopted from Venkatesh et al. (2012), while the DP items are adopted from Lichtenstein, Netemeyer and Burton (1990).

### Data Collection

The MS apps users are the population of the study. Due to the non-availability of the sampling framework, the non-probability snowball sampling method is adopted for this study. While applying the snowball sampling, first, the researcher has to identify the potential subjects from the population and get the help of these subjects to recruit other participants (Johnson, 2014). Out of 230 responses, 214 responses were treated as valid for analysis. The data has been collected during the month of May 2022.

## Results and Interpretations

### Reliability and Validity

Cronbach's alpha is used to determine the consistency of the questionnaire. As a rule of thumb, the range lies between 0-1. According to Cronbach's Alpha results, it is evident that all items' values are greater than 0.7 (Nunnally, 1978), which confirmed the consistency of the items with the original concept.

**Table 1:**_Cronbach's alpha_

|  | CA |
| --- | --- |
| BI | 0.869 |
| DP | 0.832 |
| EE | 0.844 |
| FC | 0.836 |
| HB | 0.797 |
| PE | 0.812 |
| PV | 0.888 |
| SI | 0.723 |
| UB | 0.887 |

### Composite reliability

In composite reliability, the coefficient is generally obtained by combining the variance and covariance of the total score is a composite of indicator variables

relating to a particular construct. Then this value of the coefficient is divided by total variance in the composite. The general rule for both reliability measures is that the more the factor loading fluctuates among items, the more discrepancy will be found in composite and Cronbach's Alpha values. The values of the current study are more than 0.7, which are acceptable for the analysis (Lewis et al., 2005).

**Table 2**

*Composite Reliability*

|     | CR    |
| --- | ----- |
| **BI** | 0.911 |
| **DP** | 0.899 |
| **EE** | 0.878 |
| **FC** | 0.901 |
| **HB** | 0.880 |
| **PE** | 0.888 |
| **PV** | 0.930 |
| **SI** | 0.830 |
| **UB** | 0.922 |

## Convergent validity

Validity can be explained as "the extent to which a scale or set of measures accurately represents the concept of interest". AVE is used to measure the convergent validity. The AVE value for all latent constructs is ranged above 0.5 (cut off value), which means a high level of convergent validity among variables (Lewis et al., 2005).

**Table 3:** Convergent Validity

|     | AVE   |
| --- | ----- |
| **BI** | 0.719 |
| **DP** | 0.748 |
| **EE** | 0.707 |
| **FC** | 0.752 |
| **HB** | 0.709 |
| **PE** | 0.727 |
| **PV** | 0.816 |
| **SI** | 0.623 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **UB** | | | | | 0.748 | | | |

## Discriminant Validity

DV is measured with the help of correlation among measures. The results of Fornell-Larcker criterion are given in Table 4,. For discriminant validity, cross-loadings are checked, and it satisfied the basic standards.

*Table 4:*

*Fornell-Larcker Criterion*

| | BI | DP | EE | FC | HABIT | PE | PV | SI | UB |
|---|---|---|---|---|---|---|---|---|---|
| **BI** | 0.848 | | | | | | | | |
| **DP** | 0.305 | 0.865 | | | | | | | |
| **EE** | 0.305 | 0.005 | 0.841 | | | | | | |
| **FC** | 0.514 | 0.331 | 0.069 | 0.867 | | | | | |
| **HB** | 0.498 | 0.313 | 0.229 | 0.312 | 0.842 | | | | |
| **PE** | 0.419 | 0.451 | 0.065 | 0.405 | 0.321 | 0.852 | | | |
| **PV** | 0.285 | 0.008 | 0.792 | 0.121 | 0.204 | 0.112 | 0.903 | | |
| **SI** | 0.368 | 0.260 | 0.204 | 0.304 | 0.380 | 0.307 | 0.187 | 0.789 | |
| **UB** | 0.483 | 0.475 | 0.088 | 0.498 | 0.296 | 0.747 | 0.123 | 0.324 | 0.865 |

The values of Heterotrait-Monotrait Ratio (HTMT) are checked to confirm the Fornell-Larcker Criterion results. The benchmark for the ratio is that the value should be less than 0.9, and from the results, it is evident that all constructs confirm the DV.

**Table 5:** Heterotrait-Monotrait Ratio (HTMT)

| | BI | DP | EE | FC | HABIT | PE | PV | SI | UB |
|---|---|---|---|---|---|---|---|---|---|
| **BI** | | | | | | | | | |
| **DP** | 0.348 | | | | | | | | |
| **EE** | 0.264 | 0.040 | | | | | | | |
| **FC** | 0.591 | 0.396 | 0.074 | | | | | | |
| **HB** | 0.590 | 0.382 | 0.263 | 0.369 | | | | | |
| **PE** | 0.496 | 0.546 | 0.072 | 0.486 | 0.396 | | | | |
| **PV** | 0.315 | 0.050 | 0.877 | 0.133 | 0.242 | 0.132 | | | |
| **SI** | 0.415 | 0.330 | 0.199 | 0.401 | 0.447 | 0.407 | 0.199 | | |
| **UB** | 0.539 | 0.549 | 0.093 | 0.577 | 0.342 | 0.879 | 0.139 | 0.429 | |

## Common method bias

According to Kock (2015), the common method biases can be detected with the full collinearity approach in PLS-SEM. VIF should be less than 10, which is a threshold (Hair Jr et al., 2017). The results of VIF test of inner values are as follows

**Table 6:** Inner VIF Values

|      | BI    | DP | EE | FC | HT | PE | PV | SI | UB    |
|------|-------|----|----|----|----|----|----|----|-------|
| BI   |       |    |    |    |    |    |    |    | 1.652 |
| DP   |       |    |    |    |    |    |    |    | 1.196 |
| EE   | 2.767 |    |    |    |    |    |    |    |       |
| FC   | 1.289 |    |    |    |    |    |    |    | 1.426 |
| HB   | 1.306 |    |    |    |    |    |    |    | 1.385 |
| PE   | 1.296 |    |    |    |    |    |    |    |       |
| PV   | 2.729 |    |    |    |    |    |    |    |       |
| SI   | **1.276** |    |    |    |    |    |    |    |       |
| UB   |       |    |    |    |    |    |    |    |       |

Similar to inner VIF values, outer VIF values show that the whole model is free from CMB and collinearity.

**Table 7:** Outer VIF Values

|                      |     | VIF   |                          |     | VIF   |                        |     | VIF   |
|----------------------|-----|-------|--------------------------|-----|-------|------------------------|-----|-------|
|                      | BI1 | 2.195 |                          | FC1 | 1.877 |                        | PE1 | 1.581 |
|                      | BI2 | 1.705 | **Facilitating**         | FC2 | 2.016 | **Performance**        | PE2 | 1.988 |
|                      | BI3 | 2.583 | **Conditions**           | FC3 | 1.957 | **Expectancy**         | PE3 | 1.934 |
| **BI**               | BI4 | 2.442 |                          | HB1 | 1.622 |                        | PV1 | 2.162 |
|                      | DP1 | 1.918 |                          | HB2 | 1.677 |                        | PV2 | 3.151 |
| **Deal**             | DP2 | 1.962 | **Habit**                | HB3 | 1.833 | **Price Value**        | PV3 | 2.899 |
| **Proneness**        | DP3 | 1.868 |                          | UB1 | 1.991 |                        | SI1 | 1.446 |
|                      | EE1 | 3.763 |                          | UB2 | 2.42  | **Social**             | SI2 | 1.578 |
|                      | EE2 | 3.94  |                          | UB3 | 2.526 | **Influence**          | SI3 | 1.332 |
| **Effort**           | EE3 | 1.457 | **Use Behavior**         | UB4 | 2.586 |                        |     |       |
| **Expectancy**       |     |       |                          |     |       |                        |     |       |

**Measurement Model**

The principal component analysis is performed to check the psychometric properties of the measures(Raoof et al., 2021; Abdulmuhsin et al., 2021; Basheer et al., 2021; Yan et al., 2020; Nuseir et al., 2020; Asada et al., 2020). As per table 8, each item is loaded against its factors and fulfilled convergent and discriminant validity conditions.

**Table 8:** Principal Component Analysis

| | BI | DP | EE | FC | HABIT | PE | PV | SI | UB |
|---|---|---|---|---|---|---|---|---|---|
| **BI1** | 0.854 | | | | | | | | |
| **BI2** | 0.772 | | | | | | | | |
| **BI3** | 0.877 | | | | | | | | |
| **BI4** | 0.884 | | | | | | | | |
| **DP1** | | 0.868 | | | | | | | |
| **DP2** | | 0.883 | | | | | | | |
| **DP3** | | 0.842 | | | | | | | |
| **EE1** | | | 0.776 | | | | | | |
| **EE2** | | | 0.808 | | | | | | |
| **EE3** | | | 0.930 | | | | | | |
| **FC1** | | | | 0.877 | | | | | |
| **FC2** | | | | 0.866 | | | | | |
| **FC3** | | | | 0.859 | | | | | |
| **HB1** | | | | | 0.825 | | | | |
| **HB2** | | | | | 0.864 | | | | |
| **HB3** | | | | | 0.836 | | | | |
| **PE1** | | | | | | 0.815 | | | |
| **PE2** | | | | | | 0.869 | | | |
| **PE3** | | | | | | 0.872 | | | |
| **PV1** | | | | | | | 0.886 | | |
| **PV2** | | | | | | | 0.930 | | |
| **PV3** | | | | | | | 0.893 | | |
| **SI1** | | | | | | | | 0.683 | |
| **SI2** | | | | | | | | 0.789 | |
| **SI3** | | | | | | | | 0.882 | |
| **UB1** | | | | | | | | | 0.834 |

| | |
|---|---|
| **UB2** | 0.868 |
| **UB3** | 0.870 |
| **UB4** | 0.885 |

## Structural Equation Modeling Analysis

Table 9 provides the value of R-Square and Adjusted R-Square. The value of R Square helps to check how much the model has been explained by the regressors and regressand variables. According to the results, the regressors variables are explaining 44% variations in the regressand variable.

**Table 9:**

*Model Summary*

| | R Square | R Square Adjusted |
|---|---|---|
| **BI** | 0.459 | 0.443 |
| **UB** | 0.401 | 0.390 |

## Path Analysis Results

The proposed model and relevant hypotheses have been tested by using PLS Method (Smart-PLS). Figure 1 presents the results of the structural model of the study. As per path analysis, the majority of the paths of the conceptual model were supported significantly. With the help of UTAUT2, behavioral intention was accurately predicted by the following factors: PE ($\beta=0.164$, $\rho<0.05$), EE ($\beta=0.187$, $\rho<0.05$), FC ($\beta=0.327$, $\rho<0.05$), and HB ($\beta=0.270$, $\rho<0.05$). On the other hand, PV ($\beta=0.010$, $\rho>0.05$) and SI ($\beta=0.075$, $\rho>0.05$) not proved significant with BI.

**Table 10:** *Path Coefficient*

| | OS | SM | SD | T Statistics | P-Values |
|---|---|---|---|---|---|
| BI -> UB | 0.256 | 0.253 | 0.077 | 3.348 | **0.001\*\*\*** |
| DP -> UB | 0.312 | 0.310 | 0.082 | 3.787 | **0.000\*\*\*** |
| EE -> BI | 0.187 | 0.187 | 0.090 | 2.065 | **0.039\*\*** |
| FC -> BI | 0.327 | 0.321 | 0.065 | 5.046 | **0.000\*\*\*** |
| FC -> UB | 0.267 | 0.263 | 0.072 | 3.689 | **0.000\*\*\*** |
| HB -> BI | 0.270 | 0.272 | 0.064 | 4.244 | **0.000\*\*\*** |
| HB -> UB | -0.013 | -0.010 | 0.065 | 0.194 | **0.846** |
| PE -> BI | 0.164 | 0.159 | 0.065 | 2.498 | **0.013\*** |
| PV -> BI | 0.010 | 0.011 | 0.094 | 0.102 | **0.919** |
| SI -> BI | 0.075 | 0.087 | 0.062 | 1.215 | **0.255** |

Figure 1: Structural Model
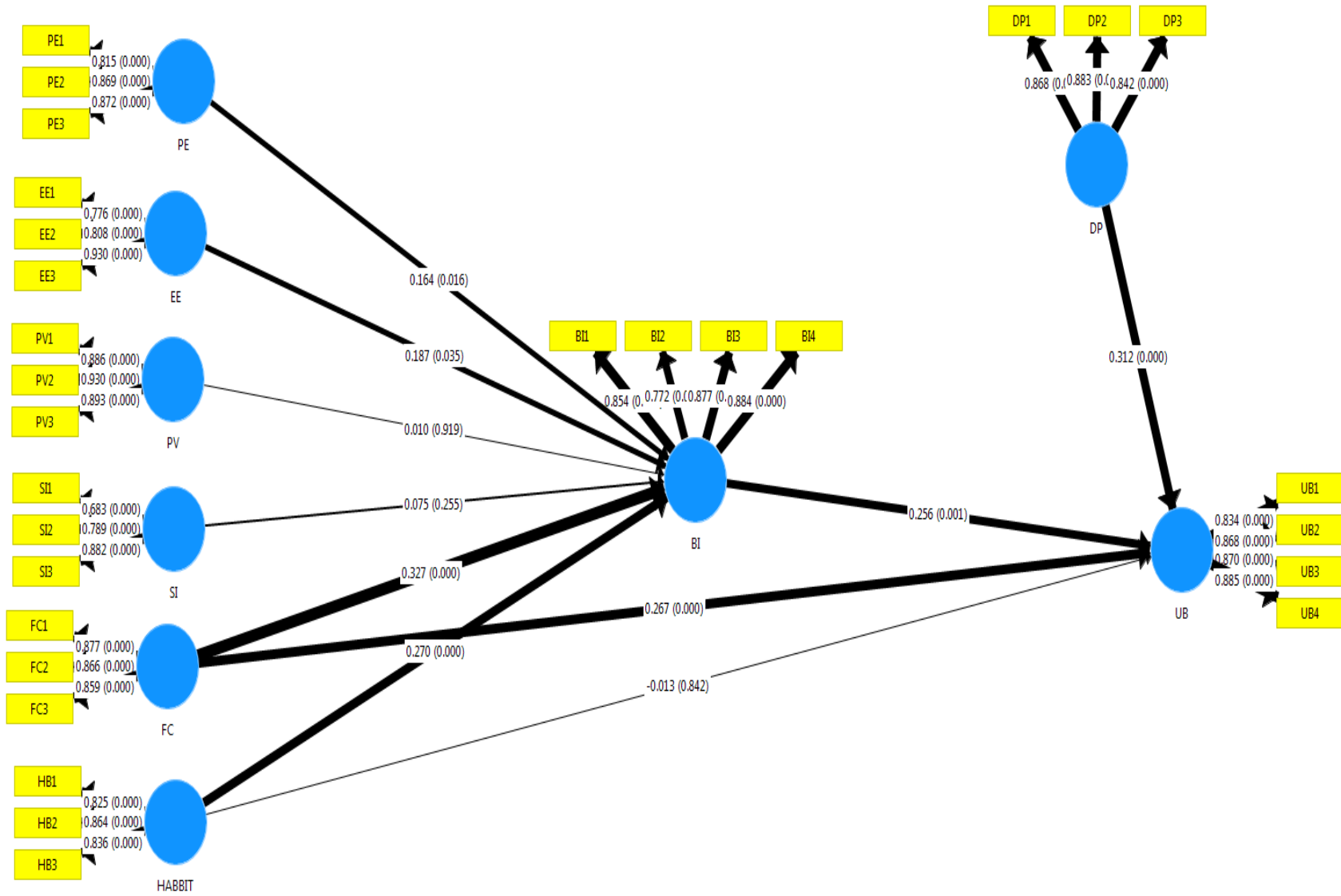
In indirect path analysis, FC and Habit have a mediating relationship with BI and UB as the beta value of FC is (0.267) and its corresponding p-value is less the 0.05. Simultaneously, the habit has beta value 0.270, and its corresponding p-value is less the 0.05. Habit is found to be statistically insignificant with the UB ($\beta$= -0.13, $\rho$ >0.05). User adoption of mobile technology is also significantly predicted by BI ($\beta$=0.256, $\rho$ <0.05) and DP ($\beta$=0.312, $\rho$ <0.05). According to results, H1, H2, H5a, H5b, H6a, and H8 hypotheses are confirmed, whereas the study results did not support H3, H4, H6b, H7.

The model of the study is acceptable in context of predictive power of all endogenous variables; BI (26%), PE (16%), EE (19%), DP (31%) and FC (33%). With the inclusion of the DP in the UTAUT2 model, the model predictability (adjusted R-Square) is 44%, which supported that the DP is a critical determinant of the customers' mobile shopping app UB. The value of R-square is observed as a suitable level that exceeded the benchmark figures.

The path analysis shows that FC is the most significant variable to predict customers' intention to use m-apps with coefficient of 0.327. FC is also proved to have a significant relation with consumers' UB with the coefficient value of 0.267. It infers the critical role of FC to shape BI for mobile apps usage and to motivate to build intention to use more of such technology-based apps. The results of the study are consistent with the prior studies of Hew et al. (2015) and Alalwan et al. (2017).

The relationship between BI and PE is also significant in path analysis, and the coefficient value is 0.164. It implies that different aspects relating to PE (functional benefits) also carry importance while shaping consumers' BI to use mobile-based shopping-apps. This result is also consistent with Alalwan et al. (2014), Martins et al. (2014), Yu (2012).

According to results, there is positive and significant relation between BI to use MS apps and EE; the value of the coefficient is 0.187. The results are parallel to previous studies such as Gu et al. (2009); and Riquelme and Rios (2010). The results imply that Pakistani consumers are concerned about the ease and simplicity factor while using MS apps.

For SI and BI, the results are different from previous studies. The results show that SI is insignificant and cannot bring any change in the BI for the use of MS apps. It means that consumers in Pakistan are not interested in the suggestions and recommendations of their respective reference groups to shape their behaviour. The results are consistent with studies of Alalwan et al. (2017) and Riffai et al. (2012).

As per results, it is evident that PV has no relationship to shape the BI of mobile shopping app customers. The results suggest that consumers in Pakistan do not consider the price factor while using mobile shopping app, and it does not motivate to use mobile apps. The coefficient value is 0.010 and p = 0.919. These results are in line with Chopdar et al. (2018).

The study finds a significant relation between BI and Habit as the value of coefficient 0.270 and p = 0.000, which is indirectly associated with the UB. The results of the study are consistent with Venkatesh et al. (2012), Barnes (2011), Liao et al. (2006), Gefen (2003).

The value of coefficient is of DP and UB of MS apps is 0.312 at p = 0.000 and it proved significant relation. It means that consumer's value shopping facilities on mobile apps if

brands offer deals Lynn (2011) also supported that deals always motivate people to try new products, and such deals directly affect consumers' UB.

**Mediation Results**

The model shows that there is significant relation between Habit and BI to use MS apps. At the same time, it has an insignificant direct relationship with the use of MS apps. It means that habit is an essential determinant to shape customers' behaviour to use MS apps, although it has no direct relationship with the use of MS apps. Customers use mobile apps due to many other factors such as deals, discount offers, social influence but not for the reason of habit. Results also proved that there is full mediation inhabit and use of MS apps. Both paths of habit in mediation show that the coefficient value with BI is 0.27, which turned in to 0.256 in mediation. The results are in line with the study of Yang (2013).

Results relating to the role of FC are significant and prove strong mediating effects. The indirect and direct effect are significant. The coefficients of indirect path are 0.327 (p=0.000) and 0.256 (p = 0.001) whereas; the coefficient value of direct path is 0.267 with p= 0.000. The results show that facilitating conditions support mediation, and there is partial mediating role of FC between BI and UB of MS apps.

**Table 11**

*Mediation Results*

| | OS | SM | SD | T-Statistics | P-Values | Mediation (full or partial) | Hypotheses supported or not. |
|---|---|---|---|---|---|---|---|
| FC -> BI -> UB | 0.084 | 0.082 | 0.032 | 2.655 | 0.008*** | Partial | Supported |
| HB -> BI -> UB | 0.069 | 0.068 | 0.024 | 2.849 | 0.005*** | Full | Supported |

**Model fit**

As per table 12, the required values of fit index are in desired range. The acceptable range of SRMR is less than 0.10. In the model, the value is less than 0.10, which is acceptable.

**Table 12:** *Model Fit*

| | SM | EM |
|---|---|---|
| SRMR | 0.065 | 0.082 |
| d_ULS | 1.833 | 2.891 |
| d_G | 0.862 | 0.982 |
| Chi-Square | 1,088.702 | 1,176.262 |
| NFI | 0.721 | 0.699 |

NFI is defined as 1 - Chi² of proposed model / Chi² values of null model. The NFI value range is 0-1. As per the results of our model, the value is reasonably above 0.6, indicating that the model fit is good.

## Conclusion and Future Research Directions

This study identifies the critical factor that influences the Behavioral Intention and the UB of the consumer regarding MS apps. The current study utilises the UTAUT2 model to understand the consumers' BI and UB regarding mobile app-based shopping with an additional dimension of Deal Proneness.

As per results, facilitating conditions are the most significant factor that predicts not only the BI to use MS apps but also the UB of customers. The PE, EE and Habit are also proved to be the predicting factors. However, the study did not find a significant relation among SI, PV and BI in Pakistan. The Deal Proneness is a significant factor to predicts the UB.

The study did not incorporate moderating effect of different demographical features, such as; age, experience gender, and marital status. Furthermore, this study has incorporated the cross sectional data collected at a specific time point to predict consumers' behaviour. However, a longitudinal study will be more useful in knowing the adoption behaviour over time (Potgieter, 2015).

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