CHAPTER 3 Proposed Model and Hypothesis

Preview

This chapter discusses the proposed research model and the hypothesis associated with the constructs. The theoretical analysis of research articles does not offer a more comprehensive overview of the total effect of an exogenous variable on the endogenous variable. Hence, the focus in this chapter is to arrive at a better conclusion by using the learnings from the meta-analysis conducted in the previous chapter. Section 3.1.1 and section 3.1.2 are on hypothesis development with the help of meta-analysis. Section 3.1.3 mentions the proposed research model along with the justification for the selection of UTAUT2 as the base model and integration of TTF. To further improve the model, perceived security and government policy are also included.

3.1. Hypothesis Development

3.1.1. Exogenous Constructs

A model consists of exogenous and endogenous constructs. Endogenous constructs are the phenomenon that we are trying to explain while exogenous constructs (also known as independent variables) consist of variables that have an effect on the endogenous constructs (also known as dependent variables). This study has 12 exogenous variables.

- Effort Expectancy

To evaluate the overall relationship between effort expectancy and behavioural intention we will take the help of a forest plot. A forest plot is a graphical representation of individual effect and the overall effect is represented by the summary effect size (Olkin et al., 2012). Calculation of the overall effect size is already discussed in section 2.3.4.2. The analysis of 21 studies using

meta-analysis conforms to this notion and is presented as a forest plot in figure 3.1. Lee et al. (2020) found a positive relationship between design with good aesthetics and the perceived ease of use on the adoption of mobile payments. The overall effect size obtained from the meta-analysis is 0.533, which suggest the following hypothesis:

H1(a): Effort Expectancy will positively influence performance expectancy

H1(b): Effort expectancy will positively influence the behavioural intention to adopt mobile payment applications mediated by performance expectancy.

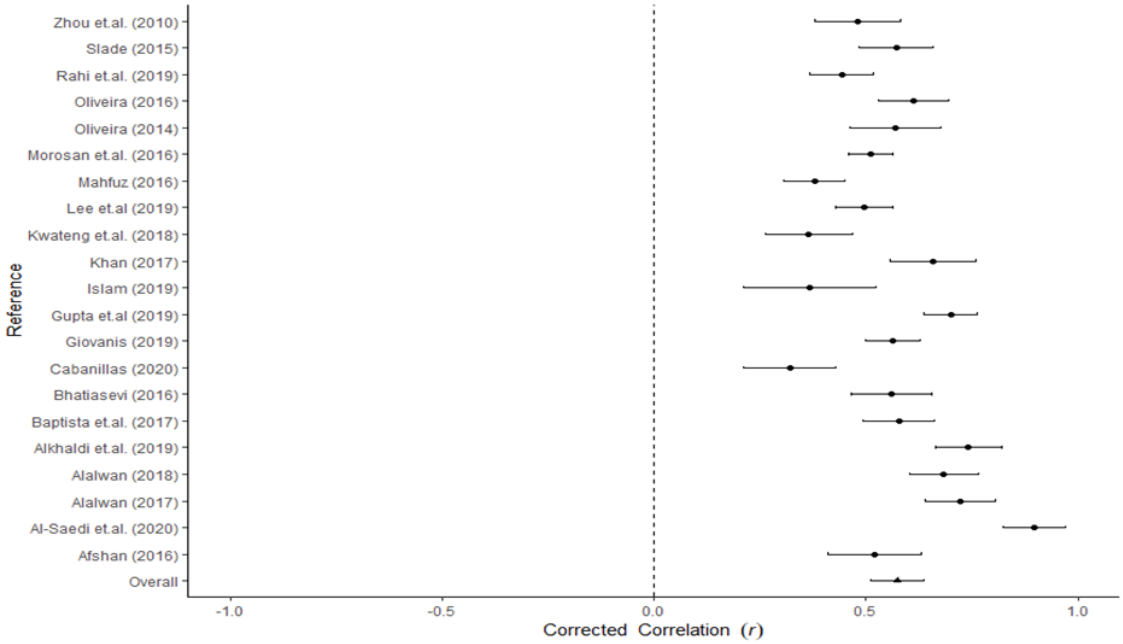


Figure 3.1 Forest plot of effort expectancy

- Performance Expectancy

Performance expectancy which is the perception of overall system performance has been found to be the most significant predictor of intention to use mobile payment (Morosan & DeFranco, 2016). The analysis of 21 studies using meta-analysis is presented as a forest plot in figure 3.2.

The effects measured in these studies are positive while only one study by Picoto et.al (2020) has a negative outcome. The authors have drawn samples from four different countries where the overall sample size is very small (208) and might suffer from low power. Nonetheless, similar problems are prevalent in almost all the studies using survey methodology. Many articles in information system research suffer from low statistical power (Baroudi & Orlikowsk, 1989). The overall effect size obtained from meta-analysis is 0.605, which helps in formulation the following hypothesis:

H2: Performance expectancy positively influences the behavioural intention to adopt mobile payment systems.

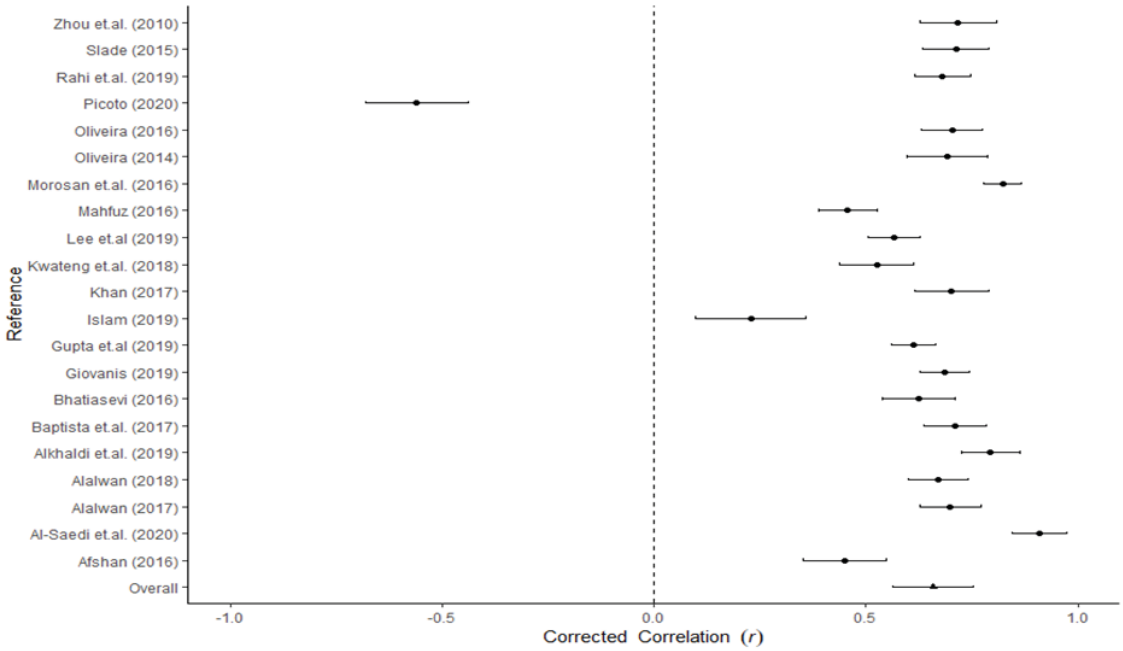


Figure 3.2 Forest plot of performance expectancy

- Social Influence

The summary of 23 studies is presented in the forest plot of figure 3.3. Social influence is a crucial factor to augment the adoption of mobile payments. A broad positive perception from the population is necessary but it is evident from the figure that the effect varies widely, and the confidence interval is pretty wide [0.34-0.59] where the overall effect size is 0.417. one study has found a negative effect which was attributed to the sensitive and personal nature of using mobile payment. The following hypothesis is in line with the available evidence:

H3: Social influence will positively influence the behavioural intention to adopt mobile payment systems.

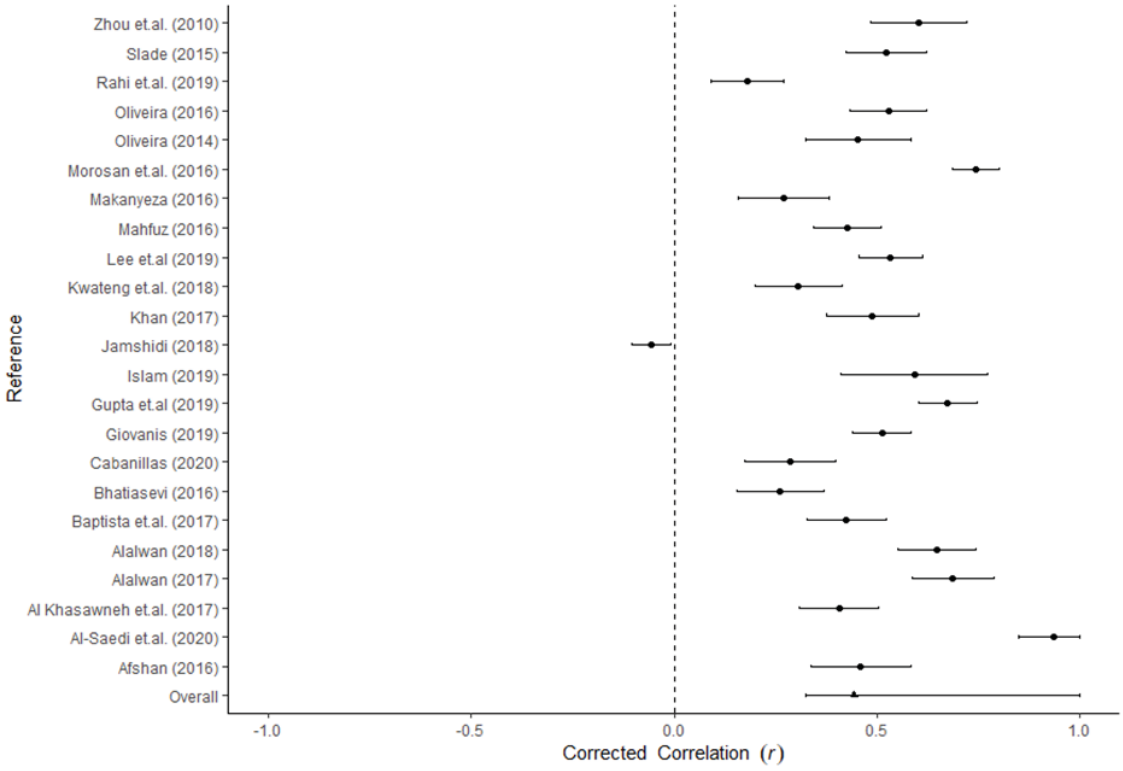


Figure 3.3 Forest plot of social influence

- Facilitating Condition

Facilitating condition is a combination of users' knowledge, ability and resources (Venkatesh et al., 2003). In the context of mobile payment knowledge is the basic understanding of the user to navigate the user interface, ability to connect to the internet and possessing a mobile phone or other digital devices with a basic knowledge of its operation. The summary of 21 studies is presented in figure 3.4, where the overall effect size is 0.469. Effect sizes have scattered the plot suggesting a wide range of possible values. The following hypothesis is proposed for facilitating conditions:

H4: Facilitating conditions will positively influence the behavioural intention to adopt mobile payment systems.

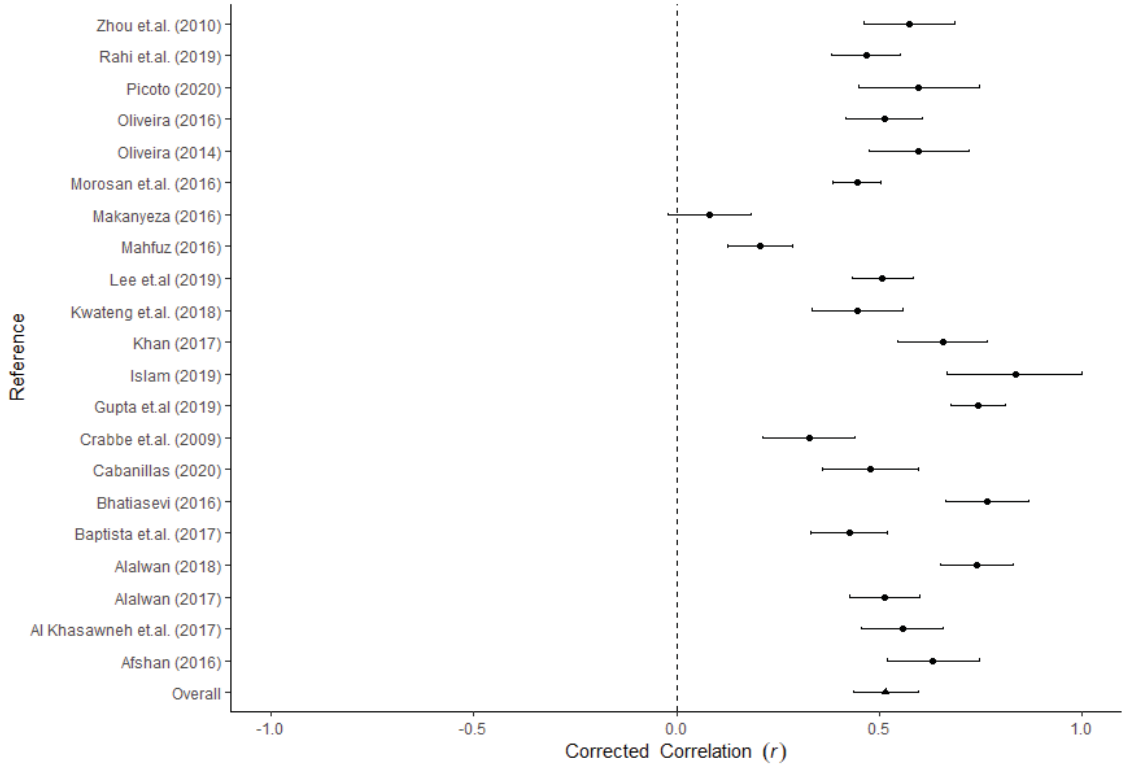


Figure 3.4 Forest plot of facilitating condition

- Hedonic Motivation

Flow is a term associated with the field of positive psychology where it means to have remained in a state where the user experience complete involvement due to a joyful experience (Csikszentmihalyi, 1991). The flow experience of using any technology can be derived from utilitarian as well as hedonic factors (Liébana-Cabanillas, Japutra, et al., 2020). Hence, the model on mobile payments must also include a component of enjoyment to help its adoption. The summary of 12 studies is presented as a forest plot in figure 3.5, where the overall effect size for hedonic motivation is 0. 475. The following hypothesis is proposed for hedonic motivation:

H5: Hedonic motivation will positively influence the behavioural intention to adopt mobile payment systems.

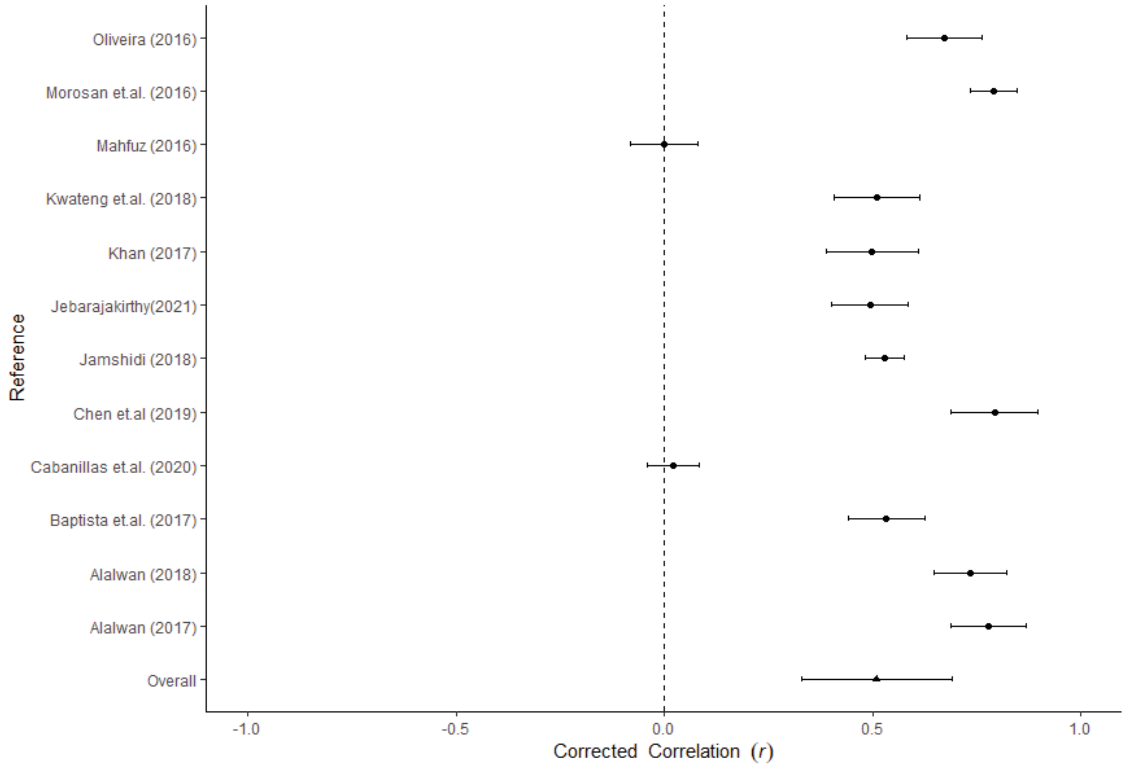


Figure 3.5 Forest plot of hedonic motivation

- Habit

There is a need to make a distinction between habit and behaviour, the habit just like flow is another state of mind where behaviour is an action undertaken by an individual (Limayem et al., 2007). Habit as an independent construct has rarely been studied and is evident from the 6 studies that are available when it comes to understanding the adoption behaviour for mobile payment. The summary of the 6 studies is presented as a forest plot in figure 3.6, where the overall effect size is 0.554. The following hypothesis is proposed to understand the effect of habit on intention to adopt mobile:

H6: Habit will positively influence the behavioural intention to adopt mobile payment systems.

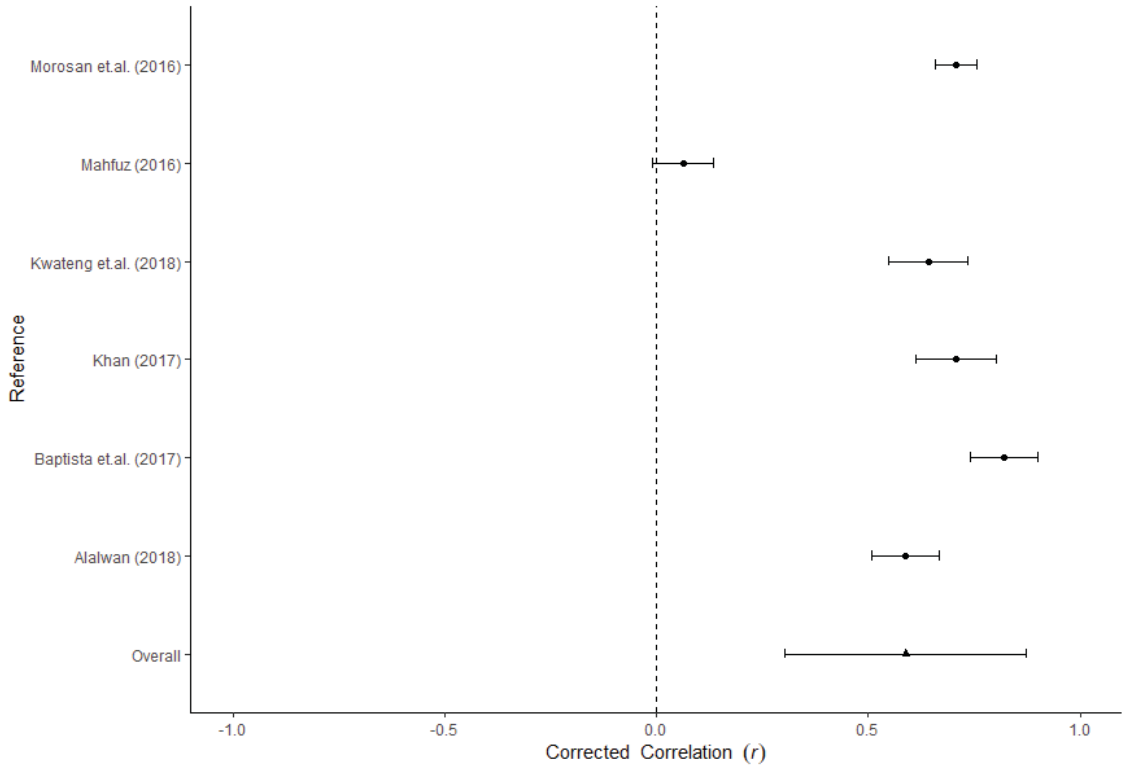


Figure 3.6 Forest plot of habit

- Perceived Security

Perceived security is a more comprehensive measure than risk and trust as it helps in the appraisal of the risky situation in a better way. Zhang et al. (2020) found that in the context of mobile payment, perceived security is positively influenced by the personality traits of extraversion and intellect. A summary of the various studies on perceived security is presented in figure 3.7. The overall effect size of perceived security is 0.543 and is obtained from 11 studies. The following hypothesis is proposed to test perceived security and its effect on the intention to adopt mobile payment:

H7: Perceived technology security will positively influence the behavioural intention to adopt mobile payment systems.

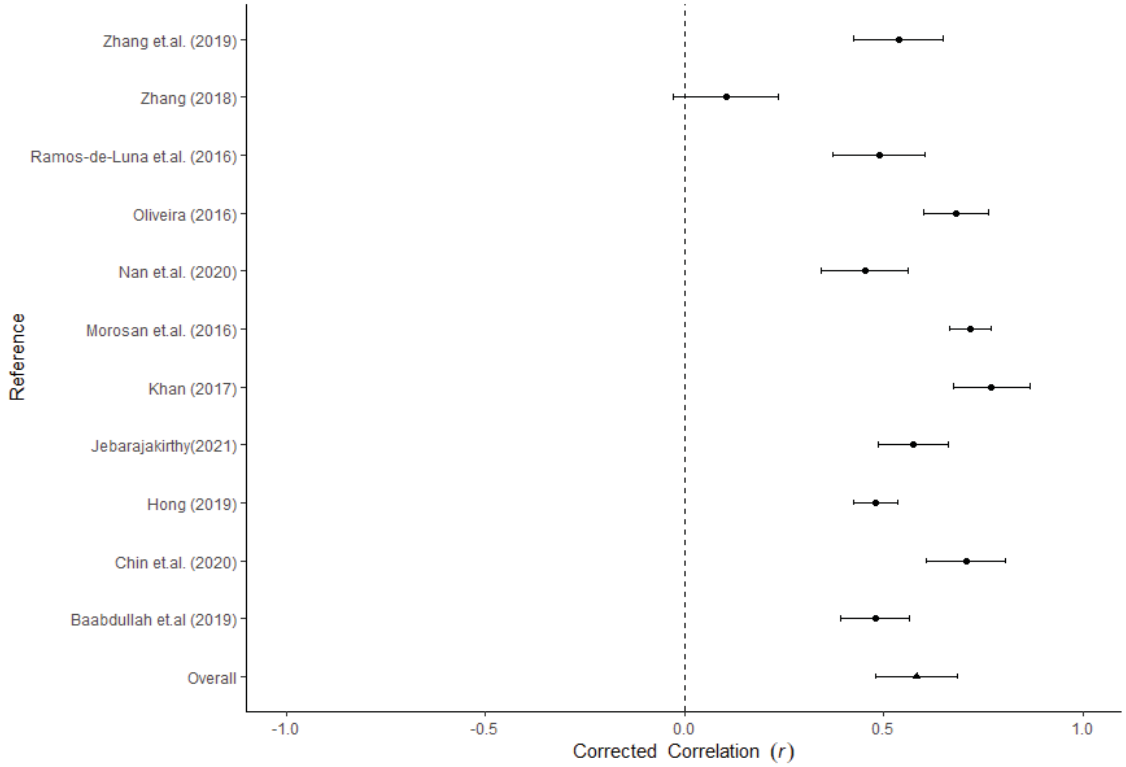


Figure 3.7 Forest plot of perceived security

- Price Value

The price value is the evaluation of the perceived utilities derived over the financial cost incurred from the adoption of a technology (Venkatesh et al., 2012a). Hence a higher perception of price value will have a positive influence on adoption. The summary of 9 studies is presented in figure 3.8 as a forest plot. The overall effect size is 0.394 with a fairly wide confidence interval [0.22-0.67], suggesting that it has a low effect on adoption. The following hypothesis is proposed:

H8: Price Value will positively influence the behavioural intention to adopt mobile payment systems.

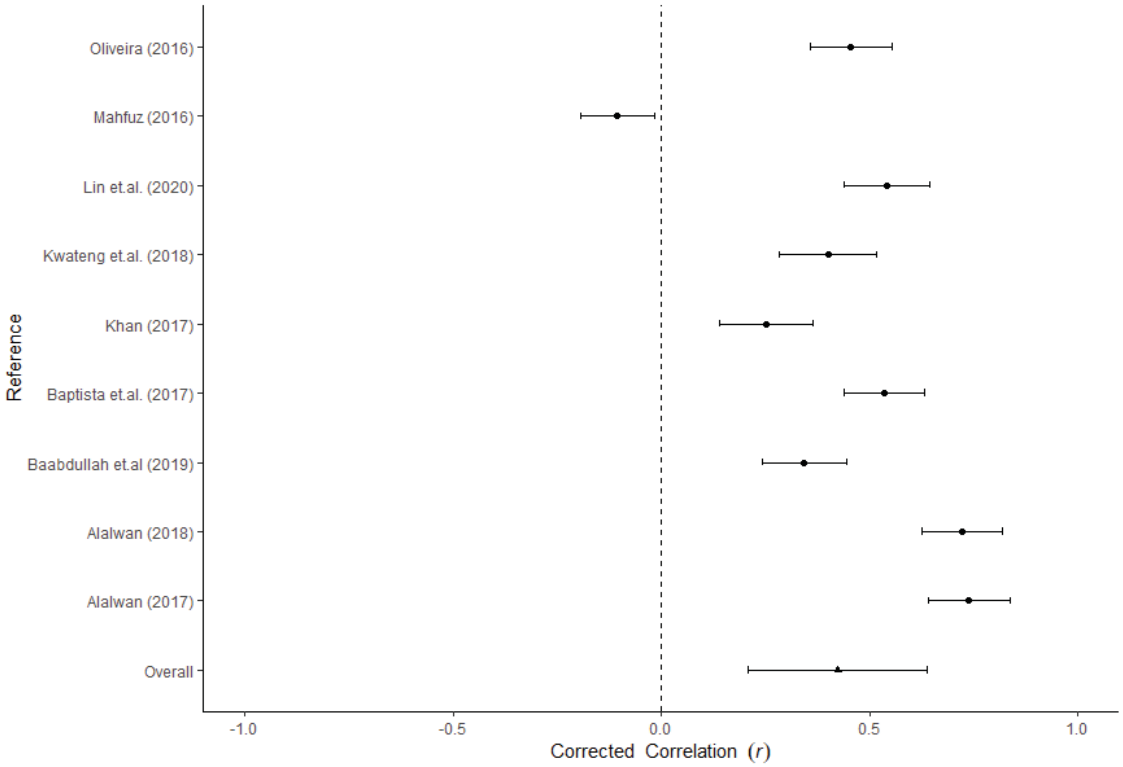


Figure 3.8 Forest plot of price value

- Task Characteristics

Task characteristics measure the feasibility of the technology in carrying out the task at hand. It sets the necessary conditions when the desired use of technology is to aid in the successful execution of the task rather than seeking any pleasure out of it. The primary use of mobile payment is to carry out financial transactions (Oliveira et al., 2014b). Very few studies have included task characteristics to understand the adoption of mobile payments. The forest plot of the individual and summary effect size is presented in figure 3.9. The summary effect size of these 5 studies is 0.286, where one study reported a negative outcome with a very wide confidence interval [-0.10-0.76]. The following hypotheses are proposed:

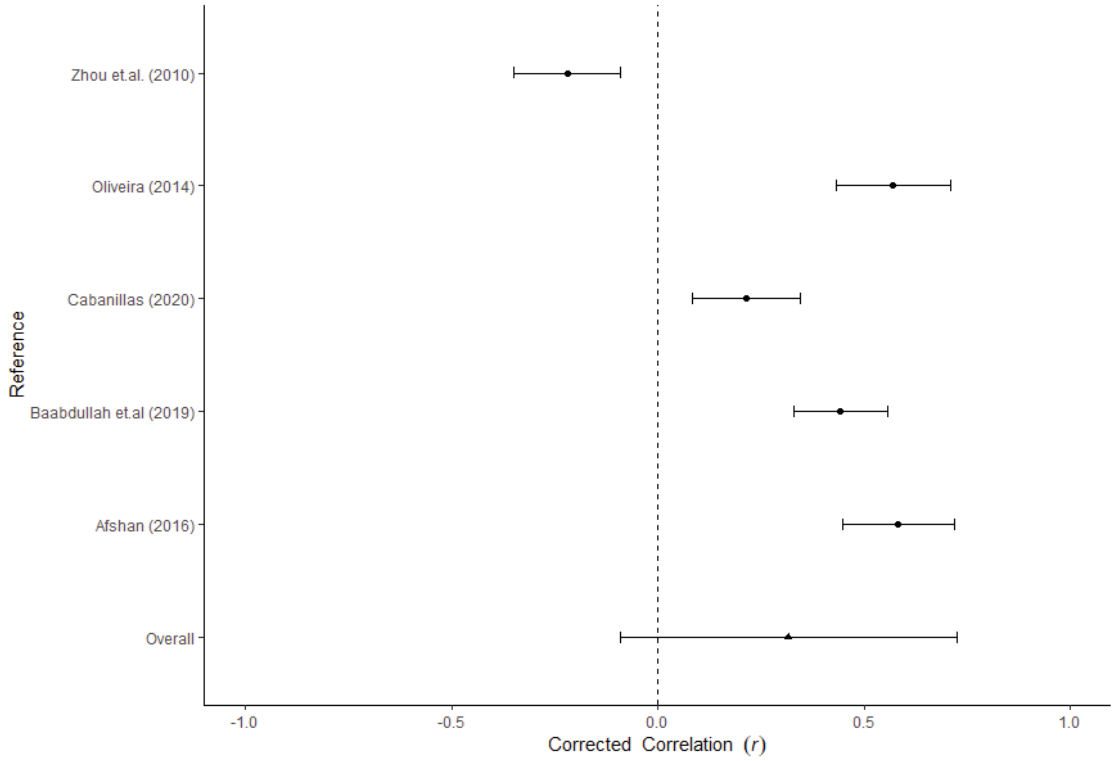


Figure 3.9 Forest plot of task characteristics

H9(a): Task characteristics will positively influence the task technology fit

H9(b): Task characteristics will positively influence performance expectancy mediated by task technology fit

H9(c): Task characteristics will positively influence the behavioural intention to adopt mobile payment applications mediated by task technology fit and performance expectancy

- Technology Characteristics

Apart from the task characteristics, technology plays a crucial role in helping the user achieve the tasks. Better technology characteristics help in the smooth execution and to improve the performance of the user. It further aids in lowering the cost of completing the task (C. Lee et al., 2007). The summary of 5 studies on technology characteristics is presented as a forest plot in figure 3.10 with an overall effect size of 0.438. The following hypotheses are proposed:

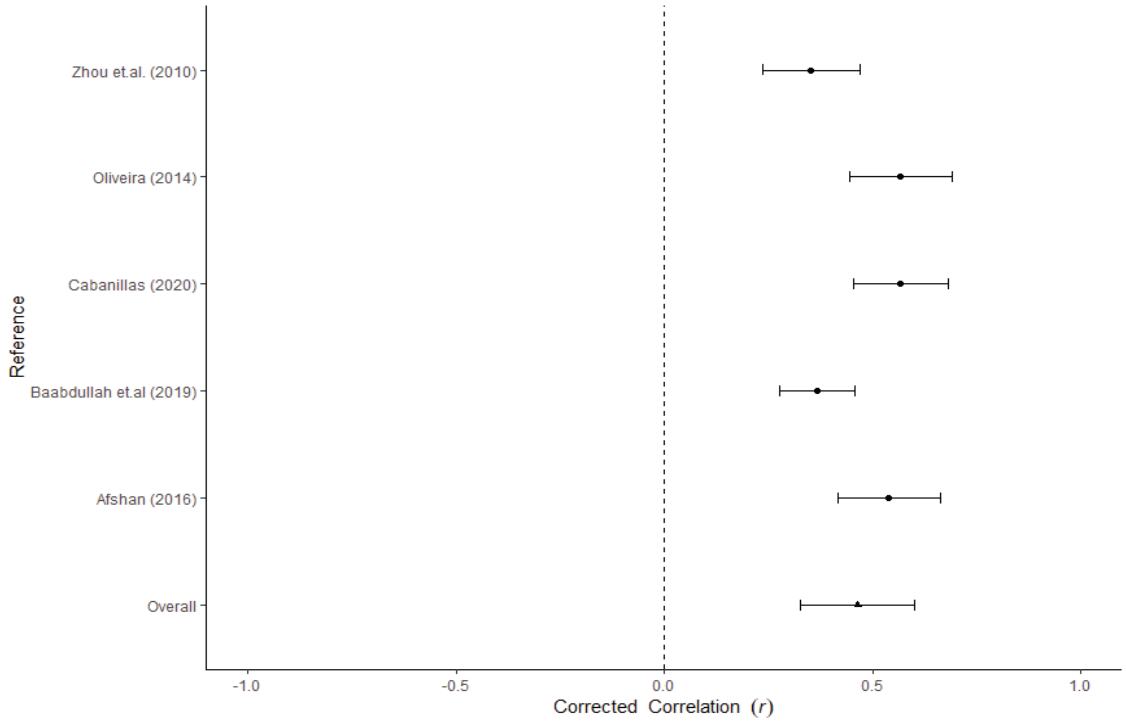


Figure 3.10 Forest plot of technology characteristics

H10(a): Technology characteristics will positively influence the task technology fit

H10(b): Technology characteristics will positively influence performance expectancy mediated by task technology fit.

H10(c): Technology characteristics will positively influence the behavioural intention to adopt mobile payment applications mediated by task technology fit and performance expectancy

H10(d): Technology Characteristics will positively influence Effort Expectancy

- Task Technology Fit

Task technology fit owes its origin to cognitive fit, where it proposes a cognitive fit between the technological tools and tasks used to solve the problem by reducing complexity and improving the effectiveness (Vessey, 1991). Task technology fit is primarily used to study the performance improvements achieved by the adoption of technology, but it also affects the factors precursor to behavioural intention. The extant literature has very few studies on integrating task technology fit with models of adoption behaviour and is evident from the meta-analysis where 5 studies were identified. The summary of task technology fit is presented as a forest plot in figure 3.11 with the overall effect size of 0.554. The following hypotheses are proposed:

H11 (a): Task technology fit will positively influence performance expectancy

H11(b): Task technology fit will positively influence behavioural intention to adopt mobile payment systems mediated by performance expectancy

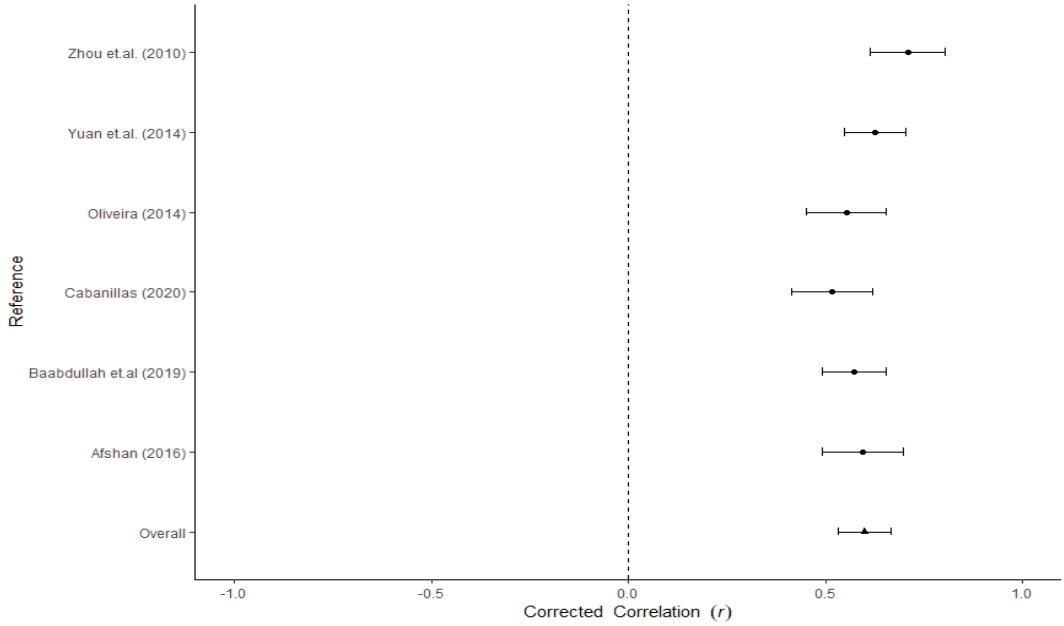


Figure 3.11 Forest plot of task technology fit

3.1.2. Moderating Constructs

Moderating constructs measure the strength of the relationship between an independent and dependent variable in a model, this effect is also known as the interaction effect (Fassott & Henseler, 2010). Gender and Government policy are the two moderating constructs used in this study. These two constructs differ in nature as gender is a categorical variable while government policy is a continuous variable.

- Gender

Three theories that explain the difference in behaviour due to gender are evolutionary theory, cognitive social learning theory and sociocultural theory (Hyde, 2014). The evolutionary theory proposes that the differences in gender behaviour are due to the evolutionary selection based upon the assumption that males and females adapt to different behaviors naturally (Buss &

Schmitt, 1993). Cognitive social learning theory explains gender differences due to internalised standards and self-regulation (Bussey, K. & Bandura, 1999). Sociocultural theory suggests that differences exist due to society's division of labour by gender (Eagly & Wood, 1999; Wood & Eagly, 2012). The following hypotheses are proposed on how gender will moderate adoption behaviour:

H12(a): Gender will moderate the effect of task characteristics on task technology fit

H12(b): Gender will moderate the effect of technology characteristics on task technology fit

H12(c): Gender will moderate the effect of task technology fit on performance expectancy

H12(d): Gender will moderate the effect of effort expectancy on performance expectancy

H12(e): Gender will moderate the effect of performance expectancy on behavioural intention to adopt mobile payment systems.

H12(f): Gender will moderate the effect of social influence on behavioural intention to adopt mobile payment systems.

H12(g): Gender will moderate the effect of facilitating conditions on behavioral intention to adopt mobile payment systems.

H12(h): Gender will moderate the effect of hedonic motivation on behavioural intention to adopt mobile payment systems.

H12(i): Gender will moderate the effect of price value on behavioural intention to adopt mobile payment systems.

H12(j): Gender will moderate the effect of habit on behavioural intention to adopt mobile payment systems.

H12(k): Gender will moderate the effect of perceived security on behavioural intention to adopt mobile payment systems.

- Government Policy

Institutional Isomorphic theory has been a crucial theoretical basis to study institutional change due to regulatory compliance, competition from other sectoral payers and new technology adoption or process changes (Currie, 2012). Regulatory compliance is mandated by the government institutions to bring significant changes and is termed coercive pressure (DiMaggio & Powell, 1983).

Brown and Thomson identified four factors (i.e., technical, financial, social, and managerial) in the context of e-government which can foster its adoption in both government and private institutions. Government policy is crucial for their study found the use of selective intervention through technical and financial by the government of Jamaica for increasing the adoption of e-government (D. H. Brown & Thompson, 2011). Information and communication technologies can act as an inclusive tool for society. Government and private institutions in India have established telecentres to make the farmers improve their economic and technical capabilities. (Pick et al., 2014) conducted a survey of 280 farmers to understand their usage patterns for telecentres in India. Their study measured the usage pattern using the combination of innovation diffusion theory and technology adoption model and found that TAM factors, ease of use and perceived usefulness are better predictors than the factors associated with IDT.

Studies are also have been conducted to study the effect of government policy on technology adoption behavior in the healthcare sector (Ahmadi et al., 2015; Chang et al., 2007).

Hence, the new proposition is that government policy not only influences the institutional change but also the adoption of technology used in the consumer context by moderating technical, financial, and social factors. Government policy measures the awareness, requirement, and evaluation of the effectiveness of the various incentives offered by the authorities to help in the adoption of mobile payment technology. The following hypotheses are proposed for government policy:

H13(a): Government policy will have a direct effect on behavioural intention to adopt mobile payment systems.

H13(b): Government Policy will moderate the effect of task technology fit on behavioural intention to adopt mobile payment systems through the mediation of performance expectancy.

H13(c): Government Policy will moderate the effect of social influence on behavioural intention to adopt mobile payment systems.

H13(d): Government Policy will moderate the effect of price value on behavioural intention to adopt mobile payment systems.

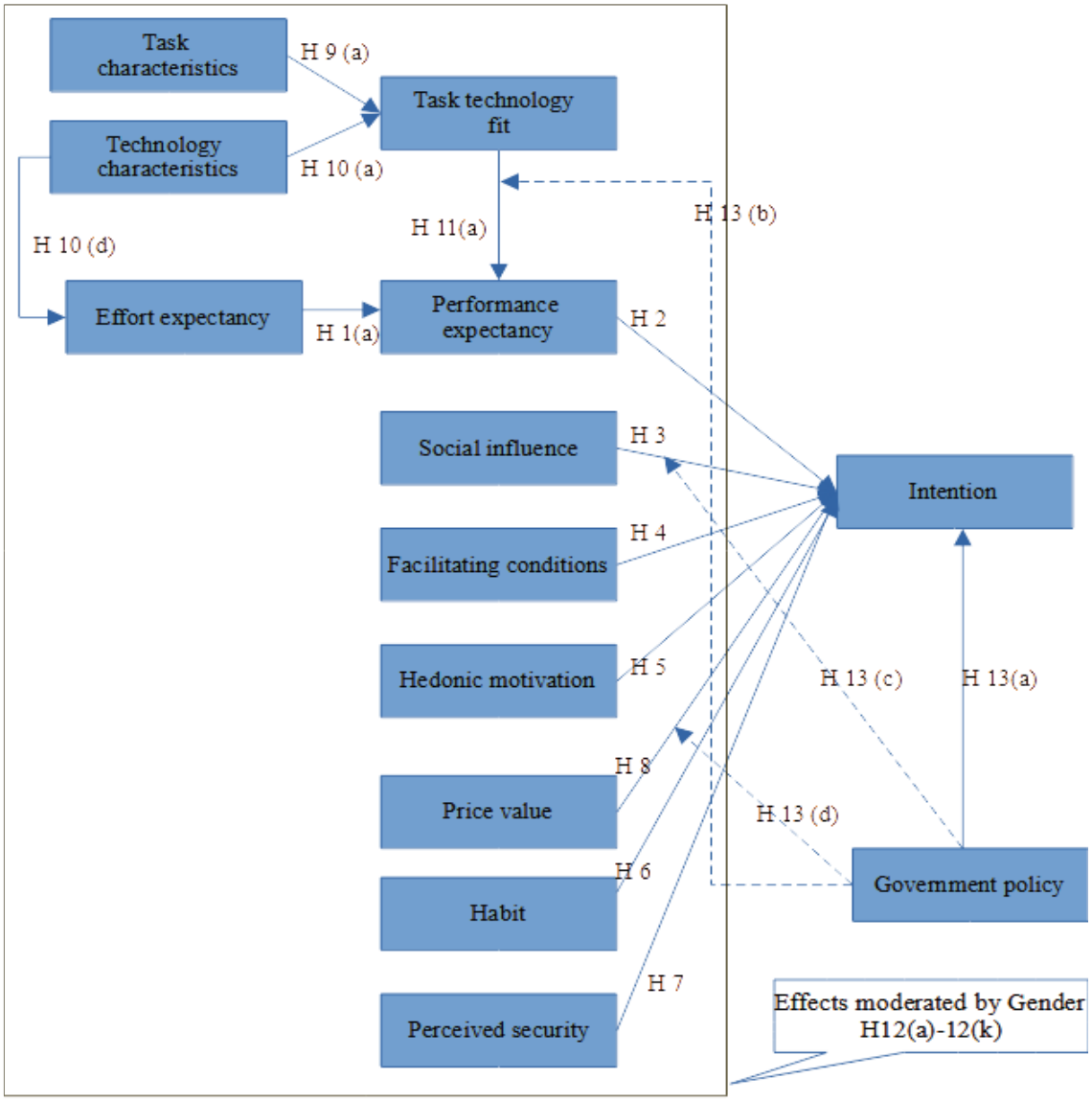
3.1.3. Proposed Model

The proposed model is a syncretic combination of two broad views (adoption and utilisation) of information system research. Integration of two theories can provide significant explanatory power and enhance our understanding of the technology adoption phenomenon. (Dishaw & Strong, 1999) mentioned the implicit use of the construct usefulness in TAM to account for the

task but the explicit use of task characteristics can provide for a better model for utilisation of IT use and utilisation. Taking a cue from their research we have included TTF along with UTAUT2 for the better explanatory power of the proposed model. TTF is primarily applied in an organizational context (Dishaw & Strong, 1999, p. 11) with the exception of a few studies which considered the individual effect on adoption by including the effect of TTF in their model (C. Lee et al., 2007; Oliveira et al., 2014a; Tam & Oliveira, 2016; Zhou et al., 2010).

The proposed model can also be viewed as an extension based on UTAUT2 and includes the addition of two exogenous constructs to explain the behavioural intention for the adoption of mobile payment technology In India. Perceived security and government policy are the two additional constructs identified from the theoretical gaps and are added to the model for a more comprehensive view of the adoption behaviour. The proposed research model is presented in figure 3.12.

This chapter dealt with the various hypothesis consisting of different variables which can affect users' intention to adopt mobile payment. These hypotheses helped in the formulation of the proposed model. The next step is to test these hypotheses using empirical methods and collecting user-level data. The next chapter explains in detail which method was used to collect data and offers an overview of the statistical methods that can be used to analyze it.



H 1(b): Total effect of EE on BI
H 9(b): Total effect of TC on PE
H 9(c): Total effect of TC on BI
H 10 (b): Total effect of TECC on PE
H 10 (c): Total effect of TECC on BI
H 11 (b): Total effect of TTF on BI

Figure 3.12 Proposed nomological network