CHAPTER 3

METHODOLOGY

3.1 Introduction

Chapter 3 will explain the study's methodology, covering the research design and research method (Creswell & Creswell, 2018). The research design is the framework. While the procedures of collecting and analysing data are the research methods. These elements form the research methodology that will distinguish the study's findings.

First, the conceptual framework which was developed on Chapter 3 would be followed. All hypotheses would be tested to discover the answers for the research questions. Second, as a quantitative study, suitable research design would be applied to evaluate the Muslims' reaction towards using the digital payment for Zakat al-Fitr. Third, the government servants of Putrajaya became the sample and tested by using the survey questionnaire. Finally, analysing the data of the study using PLS-SEM would determine the finding of the research.

Applying the correct methodology of the study is essential to gain precision findings that create generalizability. Furthermore, the study follows rigorous processes of research design to improve the accuracy of finding in obtaining the factors influencing Muslims to adopt digital payment.

3.2 Research Approach and Design

In this research, five hypotheses were developed based on the modified UTAUT model. Four exogenous would determine the behavioural intention of Muslims on

paying *Zakat al-Fitr* via digital transaction. Meanwhile, similar procedures of the quantitative study had been followed due to generalizability.

First, similar to others quantitative scholars would seek the truth using scientific verification via logical or mathematical proof in the social world, this research would collect numerical data and process the phenomena via statistical and mathematical analysis (Sekaran & Bougie, 2017; Basias & Pollalis, 2018). Using quantitative methods exploring the users' perceptions on paying *Zakat al-Fitr* via digital transaction and contributing to understand of the determinant factors.

For instance, the source of knowledge for this study comes from *aqli* and *naqli.* The research itself by using a scientific method is an *aqli*, and the researcher needs to follow all the procedures, analyses it, and thinks about the finding. Contrary, a *naqli* is the knowledge retrieved from Devine Revelation (Choudhury, 2016). Hadith Sahih al-Bukhari numbers 1503 and 1511 clearly state that *Zakat al-Fitr* is compulsory for all Muslims and need to expedite the process within Ramadhan. The scientific method including adopting modified UTAUT model as the conceptual framework is permissible in Islam and has become a reliable knowledge inferred through senses that bring certainty (Mohamed et al., 2019).

Devine Revelation consists of Al-Quran and Hadith as the source of knowledge, and any truth-finding must work within the parameters (Choudhury, 2016). During the Golden Age, Muslim scholars like Al Farabi (873-950), Ibnu Sina (980-1037), Al-Ghazalî (1058-1111), Ibnu Taimiyah (1263-1328), and Ibnu Khaldun (1364-1442) performed many of researches, wrote much writing and developed vast of theories in various fields including the economy (Rama, 2017).

3.3 Location of the Study

This study was conducted in Putrajaya by targeting government servants. Previous studies related to Malaysian civil servants like Hassan (2020) and Ab Ghani (2018) choose Putrajaya as the location as most ministries are there. Indeed, as the federal center, Putrajaya has a significant number of government servants residing or working. Furthermore, Putrajaya has the best internet infrastructure in Malaysia. As proof, a study towards the implementation of online learning revealed that Putrajaya has the highest effectiveness among state and federal territories in Malaysia due to internet connectivity (Ismail et al., 2021). Moreover, in 2020, the *Zakat al-Fitr* payee in Putrajaya was strongly advised to pay digitally (Halim, 2021).

3.4 Population and Sampling

A group of communities with certain specifications, like geographical boundaries, is known as a population (Creswell & Creswell, 2018). In comparison, a sample is a small group picked from the population to participate in a study (Sekaran & Bougie, 2017). The sampling involves identifying the population; determining the sample frame, design and size and executing the sampling process (Sekaran & Bougie, 2017).

In 2022, it was recorded by Public Service Department (JPA) that 70,577 of 1.7 million government servants were working in Putrajaya (Ramli, 2022; Public Service Department, 2021).. JPA is the central agency responsible for overall matters on the human resources of government servants. As explained in earlier Chapter 1, government servants receive a monthly salary justifying as a payee of *Zakat al-Fitr* by earning income to celebrate *Eid al-Fitr*. They also enjoying positive working environment and understand well the policy of government like important to pay *Zakat al-Fitr* via formal

mechanism and digitalization. Then, to determine the sample need to undergo a sampling process.

The sampling process is a method of selecting several respondents from a population. Sampling falls into two types, probability sampling, where all the population members have equaled change becoming sample subjects. In contrast, when the member does not have a known to be selected is known as non-probability sampling. This study applied simple random sampling to select the respondents from the population of civil servants who work in Putrajaya. Hassan (2020) and Ab Ghani (2018) also selected government servants in Putrajaya as their samples and applied random sampling to allow a randomly chosen population with equal possibility.

Simple random sampling allows unbiased selection within the heterogeneous group (Sekaran & Bougie, 2017). The sample frame of this study was 11 government organizations consists of Ministry, Department and school in Putrajaya. The 11 organizations were the Ministry of Energy and Natural Resources (KETSA), Ministry of Entrepreneur Development and Cooperatives (KUSKOP), Ministry of Youth and Sports (KBS), JAWHAR, National Solid Waste Management Department (JPSPN), Sekolah Kebangsaan Putrajaya Presint 9 (2) (SKPP 9(2)), Hadiah Latihan Persekutuan (HLP) recipients who were under Jabatan Perkhidmatan Awam (JPA), Ministry of Domestic Trade and Consumer Affairs (KPDNHEP), Ministry of Transport (MOT), Ministry of Tourism, Arts and Culture (MOTAC) and Community Development Department (KEMAS).

The sample size indicates the number of respondents in a population that are needed to participate based on a suitable level of confidence and accuracy (Sekaran & Bougie, 2017). Krejcie & Morgan (1970) help to calculate and tabulate the sample size according to the range of the population. According to the graph, when the population

is exceeding 40,000, the sample size is almost saturated at 380, up to 381 for the population between 50,000 to 75,000. Since there were 70,577 civil servants, this research was targeting more than 381 samples, considering any potential of missing data (Ramli, 2022). However, when the population is 1 million and above, the sample size is 384 (Krejcie & Morgan, 1970). Following Table 3.2 is the Table of Krejcie and Morgan.

Table 3.1: Krejcie and Morgan Sampling Table

N	***S***	***N***	***S***	***N***	***S***
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

3.5 Research Instruments

The research instrument is in English. A personnel informant's requirement will be located at the beginning of the questionnaire to motivate the respondents to commit

and complete the survey (Sekaran & Bougie, 2017). All the items will cover the background, dependent variables and independent variables. Liu et al. (2019) and Al Mansoori (2017) applied the five-point Likert scale to articulate the accord statement as the measurement.

Using a five-point Likert scale will determine the related factors contributing Muslims to adopting FinTech. The past scholars, Liu et al. (2019), Wan Zulkiffli et al. (2019) and Al Mansoori (2017), constructed the survey questionnaire based on the model of UTAUT, which would adopt to this study. Table 3.3 shows the total of 21 questions which segregate into five variables, four independent variables: performance expectancy, effort expectancy, social influence, facilitating conditions and, behavioural intention is the only dependent variable. Although the pilot test (explain in the next section) revealed that C11, "My community encourage me to pay *zakat fitrah* via FinTech" is invalid, the item with a little alteration is still being used in the questionnaire as the sample of the pilot project was too small.

Table 3.2: List of Questions According to Variables

No.	Question	Factor To Test	Reference
	A. Effort Expectancy		
1	I think the procedures of using FinTech in paying the *zakat fitrah* is easy to learn.	Effort Expectancy	Al Mansoori (2017)
2	I think the instruction on how to use FinTech in paying the *zakat fitrah* is easy to follow.	Effort Expectancy	Al Mansoori (2017), Liu et al. (2019) and Wan Zulkiffli et al. (2019)
3	I think I can quickly master using FinTech in paying the *zakat fitrah*.	Effort Expectancy	Liu et al. (2019)
4	I think paying zakat fitrah using FinTech is easy.	Effort Expectancy	Al Mansoori (2017)

Table 3.3, continued

No.	Question	Factor To Test	Reference
	B. Performance Expectancy		
1	I think FinTech helps to pay *zakat fitrah* everywhere.	Performance Expectancy	Dwirahma (2018)
2	I think FinTech helps to pay *zakat fitrah* throughout 24 hours per day.	Performance Expectancy	Nik Azman et al. (2020)
3	I can use FinTech to pay *zakat fitrah* during pandemic of COVID-19.	Performance Expectancy	S. Ismail et al. (2020)
4	I can use FinTech to pay zakat fitrah post-phase of the COVID-19 pandemic (phase of endemic onward).	Performance Expectancy	R. S. Johar & D. Suhartanto (2019)
	C. Social Influence		
1	The government of Malaysia encourages paying zakat fitrah via FinTech.	Social Influence	Al Mansoori (2017)
2	The institution of zakat encourages paying zakat fitrah via FinTech.	Social Influence	Wan Zulkiffli et al. (2019), Dwirahma (2018)
3	My community encourage paying zakat fitrah via FinTech.	Social Influence	R. S. Johar & D. Suhartanto (2019)
4	My community encourage paying zakat fitrah via FinTech.	Social Influence	R. S. Johar & D. Suhartanto (2019)
5	My family members encourage me paying zakat fitrah via FinTech.	Social Influence	R. S. Johar & D. Suhartanto (2019)
	D. Facilitating Conditions		
1	The operators provide sufficient knowledge to use FinTech to pay zakat fitrah.	Facilitating Conditions	Al Mansoori (2017), Wan Zulkiffli et al. (2019)
2	The operators provide sufficient instruction on navigating FinTech to pay zakat fitrah.	Facilitating Conditions	R. S. Johar & D. Suhartanto (2019)
3	The operators provide a helpdesk to assist with using FinTech to pay zakat fitrah.	Facilitating Conditions	R. S. Johar & D. Suhartanto (2019)

Table 3.3, continued

No.	Question	Factor To Test	Reference
4	The operators provide FinTech, which is compatible with the device I use.	Facilitating Conditions	Al Mansoori (2017)
	E. Behavioural Intention		
2	I have the intention to pay zakat fitrah.	Behavioural Intention	Dwirahma (2018)
3	I have the intention to pay zakat fitrah via FinTech.	Behavioural Intention	Al Mansoori (2017)
4	I have the intention to pay zakat fitrah via FinTech over the conventional method.	Behavioural Intention	Dwirahma (2018)
5	I have the intention to pay zakat fitrah via FinTech beyond the phase of the COVID-19 pandemic (phase of endemic onward).	Behavioural Intention	Al Mansoori (2017)

3.6 Data Collection and Procedure

Using Google Forms for survey questionnaire preparation and dissemination is a common practice in research due to its convenience and efficiency. Engku Abdullah et al., (2018) and Karim et al. (2020) have utilized this method, showcasing its effectiveness in reaching out to samples through formal email invitations. Google Forms provides researchers with an online data collection system that can analyze data in multiple formats, as noted by formats (Hsu & Wang, 2017). This feature streamlines the data analysis process and saves time by automatically processing responses, as highlighted by (Sekaran & Bougie, 2017). Therefore, this research was applying online survey questionnaire to enhance the generalizability of the study findings by facilitating wider sample participation and simplifying data analysis procedures.

The data collection was conducted between 15 August 2022 to 20 September 2022. Each chosen organization had an officer in charge of distributing the online questionnaires to all government servants who work under the organization. In the

government office, outsiders are not allowed to send similar emails to all members of the office including government officers. Furthermore, as the quantitative scholar who is keeping a distance from the sample, the officer in charge was given free rein and not interfered with during the process of data collection. As a result, 444 participants took part in this survey. After going through the process of data cleaning, only 403 feedback were accepted. All 41 were rejected either incomplete or missing answering any question (Hair Jr. et al., 2017). The case wise deletion can be done as the omitted respondents were scattered to different organizations which not represent a certain group in common and the acceptable feedback are exceeding the minimum 381 sample size preventing the low number of observations in the data set (Hair Jr. et al., 2017). Then, the data was analysed and presented in Chapter 4.

3.7 Pilot Study

The study has a pilot study conducted in December 2021, and the online data was collected from 10 to 15 December 2021. It studied Putrajaya's civil servants' acceptance level to use FinTech as *zakat fitrah*'s payment mode. The research is a quantitative study. The pilot study applied convenience sampling and snowballing due to the restriction of the pandemic COVID-19. The instrument is a survey questionnaire that contains five variables, 12 background items, and 21 measurement items.

A total of 38 respondents gave feedback. The majority of the respondents are male, 31 years old onward, and had experience using FinTech. This study used SmartPLS 3.3.3, to analyze the data collection.

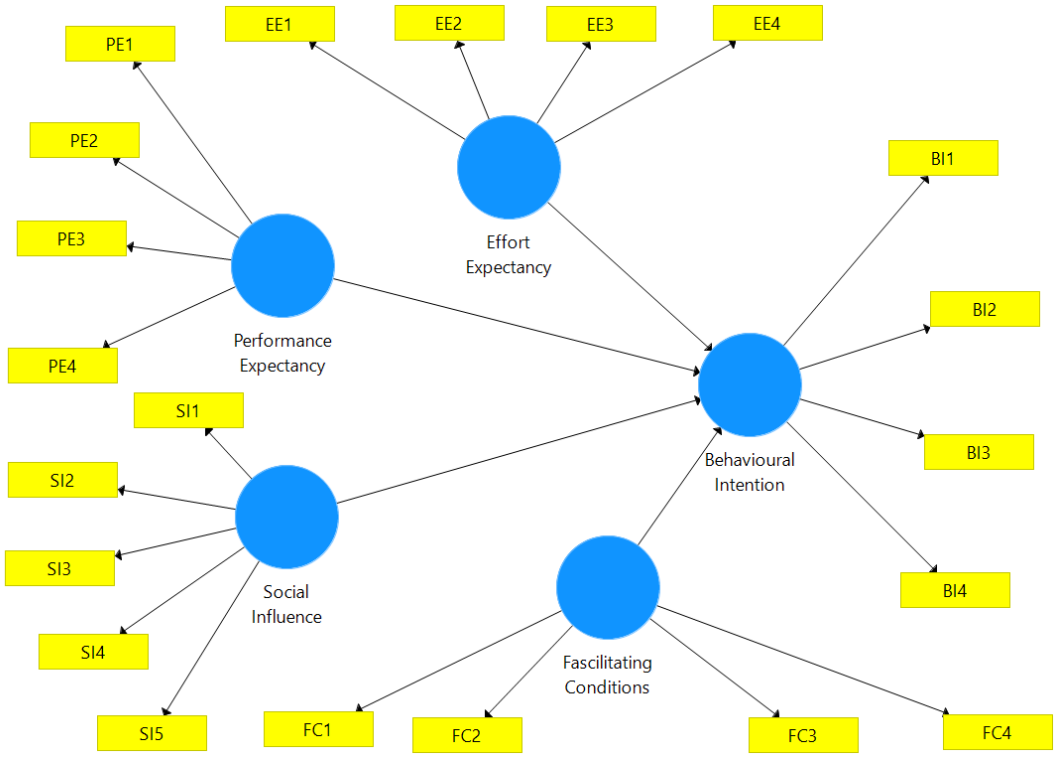

Figure 3.1: Path Model

The variables are correlated based on convergent validity results where values of loadings, composite reliabilities and average variance extracted are more than 0.7.

Table 3.3: Convergent Validity

Constructs	Items	Loading	Composite Reliability	Average Variance Extracted
Effort Expectancy	EE1	0.986	0.991	0.966
	EE2	0.995		
	EE3	0.978		
	EE4	0.973		
Performance Expectancy	PE1	0.964	0.984	0.939
	PE2	0.963		
	PE3	0.975		
	PE4	0.974		
Social Influence	SI1	0.919	0.958	0.821
	SI2	0.91		
	SI3	0.821		
	SI4	0.942		
	SI5	0.931		
Facilitating Conditions	FC1	0.981	0.981	0.93
	FC2	0.974		
	FC3	0.943		
	FC4	0.958		
Behavioural Intention	BI1	0.787	0.927	0.762
	BI2	0.918		
	BI3	0.858		
	BI4	0.923		

Table 3.4: Discriminant Validity: Cross Loading

Items	Behavioural Intention	Effort Expectancy	Facilitating Conditions	Performance Expectation	Social Influence
BI1	0.787	0.673	0.515	0.738	0.475
BI2	0.918	0.83	0.737	0.783	0.702
BI3	0.858	0.541	0.573	0.574	0.434
BI4	0.923	0.699	0.613	0.661	0.524
EE1	0.777	0.986	0.734	0.811	0.775
EE2	0.759	0.995	0.752	0.833	0.808
EE3	0.786	0.978	0.769	0.833	0.816
EE4	0.798	0.973	0.743	0.867	0.787
FC1	0.715	0.749	0.981	0.738	0.911
FC2	0.699	0.7	0.974	0.702	0.856
FC3	0.64	0.762	0.943	0.699	0.908
FC4	0.654	0.732	0.958	0.677	0.872
PE1	0.68	0.792	0.667	0.964	0.764
PE2	0.692	0.781	0.665	0.963	0.757
PE3	0.828	0.835	0.728	0.975	0.752
PE4	0.853	0.877	0.757	0.974	0.77
SI1	0.618	0.78	0.853	0.753	0.919
SI2	0.608	0.772	0.833	0.77	0.91
SI3	0.472	0.609	0.729	0.618	0.821
SI4	0.552	0.741	0.888	0.72	0.942
SI5	0.534	0.748	0.851	0.673	0.931

Table 3.5: Discriminant Validity: Fornell-Larcker Criterion

	Behavioural Intention	Effort Expectancy	Facilitating Conditions	Performance Expectation	Social Influence
Behavioural Intention	0.873				
Effort Expectancy	0.794	0.983			
Facilitating Conditions	0.703	0.762	0.964		
Performance Expectation	0.795	0.851	0.730	0.969	
Social Influence	0.619	0.81	**0.919**	0.785	0.906

The discriminant validity test shows a construct is genuinely distinct from other constructs as items load more strongly on their constructs. However, Fornell-Larcker Criterion shows that most variable correlations extracted by the corresponding construct are greater than the correlation between the construct and any other construct except

between social influence and facilitating conditions (0.919 > 0.906). So then, it is vital to test each instrument under the social influence and the facilitating conditions by deleting them one by one to validate. As a result, the technique identified the SI3 is invalid. Therefore, the SI3, "My community encourage me to pay zakat fitrah via FinTech", will be excluded from the questionnaire.

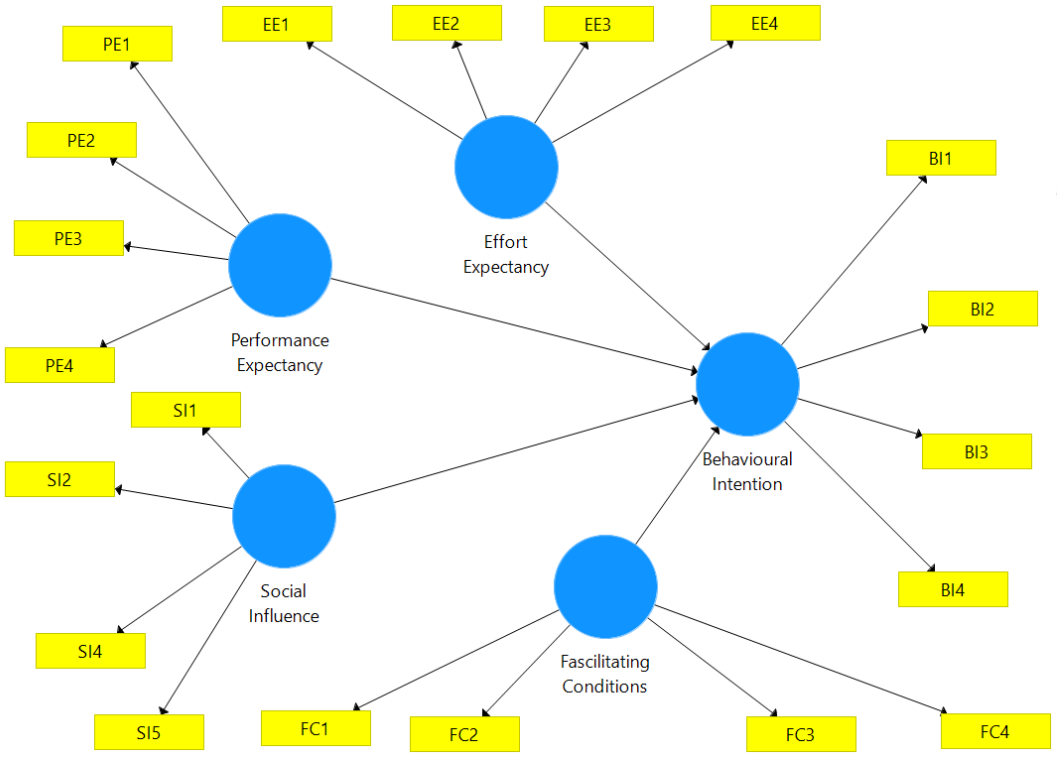

Figure 3.2: Path Model (Correction)

Table 3.6: Discriminant Validity: Fornell-Larcker Criterion (Correction)

	Behavioural Intention	Effort Expectancy	Facilitating Conditions	Performance Expectation	Social Influence
Behavioural Intention	0.873				
Effort Expectancy	0.794	0.983			
Facilitating Conditions	0.703	0.762	0.964		
Performance Expectation	0.795	0.851	0.730	0.969	
Social Influence	0.622	0.816	0.917	0.784	0.933

Based on the Coefficient of Determination (R2), the model has a high level of predictive accuracy, which is 78.9%. Furthermore, a positive and significant correlation exists between effort expectancy, performance expectancy, and facilitating conditions toward behavioural intention. However, social influence has a negative influence on behavioural intention.

The pilot study shows that Muslims accept using FinTech to pay their zakat fitrah due to effort expectancy, performance expectancy, and facilitating conditions. However, related parties like zakat authorities and FinTech providers are encouraged to promote FinTech in Islamic finance due to the negative influence of social influence.

3.8 PLS-SEM

Structural Equation Modeling (SEM) is a method of building and measuring a complex model on the relationship between independent and dependent variables (Hair et al., 2022). Earlier, covariance-based structural equation modelling (CB-SEM) was a popular method of SEM among scholars, but recently, the number of journal articles in social science using partial least squares structural equation modelling (PLS-SEM) been increasing (Hair Jr. et al., 2019).

CB-SEM applies to a covariance matrix with parameter oriented confirming any theory, while PLS-SEM focuses on describing the variance of the dependent variable in a model for prediction (Hanafiah, 2020). PLS-SEM is preferable among social scientists because it can be used in small sample sizes or projected complex models with many indicators and model relationships (Hair Jr et al., 2017). Furthermore, the scholars who want to predict are advised to use PLS-SEM in examining the theoretical framework like testing the UTAUT model in the context of Islamic FinTech (Hair Jr. et al., 2019).

As a result, this research is applying PLS-SEM by using SmartPLS version 4 (Ringle et al., 2022) as the statistical tool. Under PLS-SEM, the structural model is only can be tested after the measurement proved to be reliable and valid (Hair et al., 2022). The path model is shown in Figure 3.3.

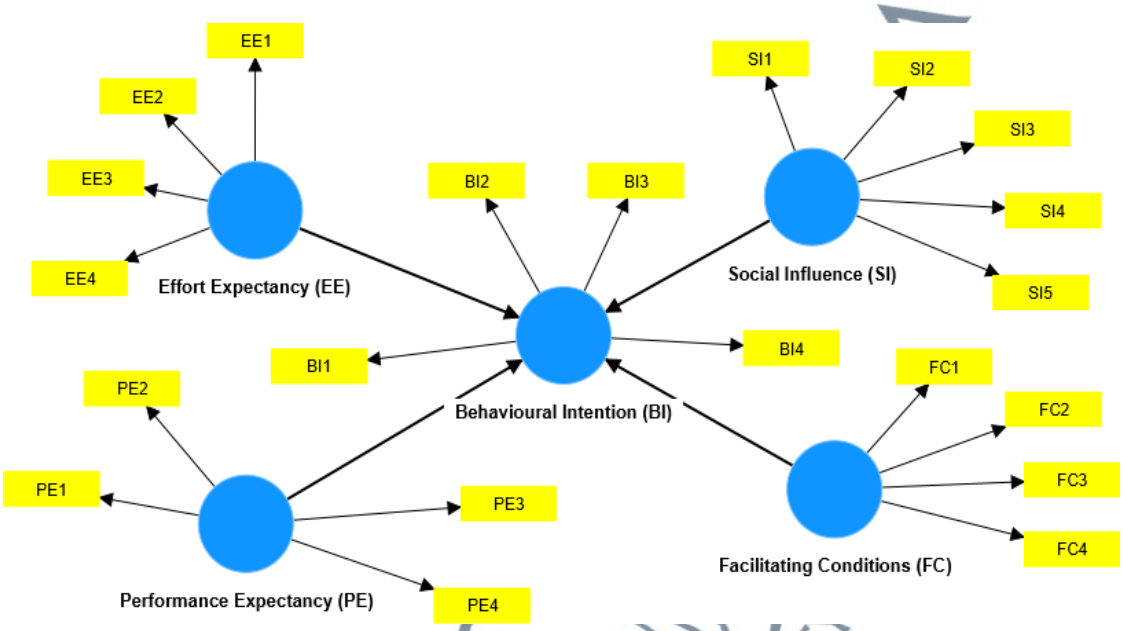

Figure 3.3: Path Model (Correction)

3.9 Assessment of Measurement Model by PLS-SEM

The path model under PLS-SEM is made up of a measurement model and a structural model (Hair Jr. et al., 2017). The measurement model is the outer model that shows the correlation between the constructs and the indicator variables that can be either reflective or formative (Hair et al., 2022).

The reflective measurement model shows that the construct causes the measurement that reflects the indicator variables, while, the formative indicates a causal (predictive) relationship between the indicator variables to the construct (Singer, 2019). All measurement items need to have a high level of correlation in the reflective measurement model, but not essential in the formative (Hanafiah, 2020). As correlational research measures the strong relationship among constructs based on the

items that become the indicator, this study applies the reflective measurement model (Hair Jr. et al., 2017). This model needs to be within the threshold of parameters for internal consistency reliability, item or indicator reliability, convergent validity, and discriminant validity (Hanafiah, 2020).

Firstly, the indicator loadings must be higher than 0.708 to fulfil the item reliability (Hair Jr. et al., 2019; Hanafiah, 2020). Next, when the composite reliability (CR) is higher than 0.7 (Hair Jr. et al., 2017), and Cronbach's alpha (α) is higher than 0.7 (Taber, 2018), the model has achieved internal consistency reliability (Hair Jr. et al., 2017)

Then, the data will test through convergent validity to endorse the correlation between a construct with other variables or other measurements within the construct (Krabbe, 2017). The convergent validity is justified when the loading is higher than 0.7 and the average variance extracted (AVE) is more than 0.5 (Hair Jr. et al., 2017).

Finally, discriminant validity exists when:

1. Assessment of cross-loading shows that the measurement item strongly correlates with the associated theoretical construct but weekly connects with others (Henseler et al., 2015).
2. Fornell-Larcker criterion shows that most variable correlations are extracted by the corresponding construct (Hair Jr. et al., 2017).
3. Heterotrait-monotrait (HTMT) threshold value is 0.9 if some of the constructs are almost similar (Henseler, Ringle, & Sarstedt, 2015; Hair Jr. et al., 2017; Hair Jr. et al., 2019). The problem can be treated by either discarding or replacing items that have low correlations with other items in the same construct (Henseler et al., 2015). As proof, value 1 must not be within HTMT ratios (lower to upper

bound confidence interval), which is reported in confidence intervals bias-corrected (Hair Jr. et al., 2017).

However, Henseler, Ringle, and Sarstedt (2015) revealed that the HTMT ratio is the best assessment since the cross-loadings and the Fornell-Larcker criterion fail to confirm existing of discriminant validity in certain circumstances (Hair Jr. et al., 2017).

3.10 Assessment of Structural Model by PLS-SEM

Hair Jr. et al., (2017) and Hair Jr. et al. (2019) explained the steps to assess the structural model as followed:

3.10.1 Step 1: Collinearity (VIF) Assessment

Collinearity Assessment assesses any biasing on the path coefficient by using the latent variable to measure the collinearity (VIF) values with a threshold value of five but is advisable to score three and below. VIF values above five indicate collinearity issues among the predictor constructs that need further treatment.

3.10.2 Step 2: Structural Model Path Coefficients

Structural Model shows the relationship of the hypothesis among the constructs. The test produces several measurements, which are:

1. The path coefficients represent the strength of the relationship between the joined constructs. The relationship is strong and positive if the value is closer to +1, weak if closer to 0 and vice versa for negative values.
2. The significant coefficient can be determined by comparing it with p-values or t-values which were retrieved after bootstrapping standard error. The

coefficient is significant if the t-values are larger than the critical value or p-values lower than the significance level.

3.10.3 Step 3: Coefficient of Determination (R^2 Value)

The coefficient represents the exogenous latent variables' combined effects on the endogenous latent variable used to measure the model's predictive power. A higher value of R^2 shows higher levels of predictive accuracy as 0.75, 0.50 and 0.25 are considered substantial, moderate and weak, while it is overfitting if 0.90 and higher.

3.10.4 Step 4: Effect Size f^2

The f^2 effect size measures the substantive impact towards omitted particular constructs on the endogenous constructs. The effect varies as below:

1. A value less than 0.02 indicates no effect;
2. A value of equal and higher than 0.02 indicates a small effect;
3. A value of equal and higher than 0.15 indicates medium effect; and
4. A value of equal and higher than 0.35 gives a large effect.

3.10.5 Step 5: Predictive Relevance Q^2

Predictive relevance Q^2 is a high-accuracy predictor that was identified by blindfolding the data points that were taken from the structural model. Even slight differences between the predicted and the original values can be detected. The path model has predictive relevance for a selected reflective endogenous construct if the Q2 value is positive, higher than 0, 0.25 and 0.50 implying small, medium and large predictive accuracy.

3.10.6 Step 6: PLSpredict

PLSpredict procedure generates a holdout sample, by evaluating predictive performance on data of the model. The calculation is based on the amount of prediction error like mean absolute error (MAE). The MAE of the PLS-SEM will be compared with the MAE of the linear regression model (LM) as:

1. high predictor power if all MAE of LM is higher than the model,
2. medium predictive power if the same amount of MAE with higher to another or more amount of MAE on LM is higher than the model,
3. low predictive power if more amount of MAE on the model is higher than LM, or
4. no predictive power if all MAE of the model is higher than LM.

3.11 Conclusion

A rigorous study was done by conducting proper research methods and preparing a detailed report.

The research was a quantitative study applying the survey questionnaire. The population is the civil servant in Putrajaya and simple random sampling was used by randomly selecting eleven government organisations. Members of respective organizations were randomly chosen as the sample. The instrument contains five variables and was disseminated to the samples using Google Forms.

The earlier pilot project proved that the proposed path model is reliable and validated. Therefore, the conceptual framework and the instruments are justified to be used in this research.

Although 444 participants were involved in this study, only 403 respondents were counted. 41 feedback were rejected due to missing answers or incomplete. The data had been analyzed and presented in the next chapter.