3.1. Theory on Adoption of Technology & Mobile Payment Services and Hypothesis

3.1.1. Technology Acceptance Model (TAM)

The original TAM was introduced by Davis in 1989 and after that TAM has earned the attention of many scholars and has been widely accepted as a framework for the studies related to the adoption behavior of emerging information technologies [29] [30] [31] [32]. Original TAM consists of five concepts namely Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude toward using, Intention to Use and Actual Use (Figure 7).

![Figure 7: Davis’ Technology Acceptance Model](Source [29])

Many researchers have extensively used this framework as the basis for their research and many studies examining e-commerce and m-commerce technology adaptation through TAM has changed the original model to suit e-commerce and m-commerce technologies [33] [34]. But it has been proven and remained that PU and PEOU as the most important determinant of the technology adoption and many studies examining m-commerce
technology adoption through TAM has provided evidence and underlined the importance of PU and PEOU for intention to adopt m-Payment systems [35] [36] [34] [37] [38]. Therefore PU and PEOU have been used as the basic determinant of the m-Payment adoption in Sri Lanka in this research.

According to Davis’ original TAM definition PU is defined as “the degree to which a person believes that using a particular system would enhance his job performance”. Previous studies revealed that the perceived usefulness is a direct determinant of the customers’ intention to use technology. The rationale behind this is that if the system or service enhances person’s performance it will be considered as useful and thus a person will have a higher incentive to use the system or service as it helps to gain positive use-performance relationship.

Hypothesis 1
H1o: Perceived usefulness has no direct effect on intention to use m-Payment services.
H1a: Perceived usefulness has a direct effect on intention to use m-Payment services.

PEOU is defined as “the degree to which a person believes that using a particular system would be free of effort”. Hence it follows that the less complex system or service is, the easier it will be for the users to use a service, the less effort it demands, and therefore higher the probability for the user to use the service.

Hypothesis 2
H2o: Perceived ease of use has no direct effect on intention to use m-Payment services.
H2a: Perceived ease of use has a direct effect on intention to use m-Payment services.

And it is also proven in other countries that the PEOU also has a direct effect on the perceived usefulness. So in this research the relationship between PEOU and PU is determined in Sri Lankan context.
Hypothesis 3

**H3o:** Perceived ease of use has no direct effect on perceived usefulness of m-Payment services.

**H3a:** Perceived ease of use has a direct effect on perceived usefulness of m-Payment services.

3.1.2. Theory of Perceived Risk

The theory of perceived risk has been used to explain consumer behavior in adopting a new technology for decays now. According to the eCommerce testimony, perceived risk refers to certain types of financial, product performance, social, psychological, physical, or time risks when consumers make transactions online [39].

It has been identified that the security factor as one of the major barriers to m-Payment adoption in other countries. Researchers examined barriers to mobile payment adoption have indicated that the security is one of the most frequently called reason for technology refusal [40], preventing consumers from using a particular procedure [41] and effect negatively on the attitude towards using m-Payments [42].

Security of a system or service can be seen in two dimensions according to Kreyer, Pousttchi, and Turowski as objective and subjective security [43]. Objective security is the technical characteristic, given, when a certain technological solution responds to all of five security objectives: confidentiality, authentication, integrity, authorization and non-repudiation. Subjective security as the degree to which a person believes that using a particular mobile payment procedure would be secure.

In order to predict the adoption of the m-Payment service we need to take into consideration the perceived risk (measure subjective security) that might effect on an individual’s decision making process of adopting and using the system.
Hypothesis 4
H4o: Perceived risk has no direct effect on intention to use m-Payment services.
H4a: Perceived risk has a direct effect on intention to use m-Payment services.

Hypothesis 5
H5o: Perceived risk has no direct effect on perceived usefulness of m-Payment services.
H5a: Perceived risk has a direct effect on perceived usefulness of m-Payment services.

Perceived confidentiality which a person believes that the collection and subsequent access, use and disclosure of the consumer personal data and payment details is consistent with his or her expectations, gives the objective security of the system. According to Pousttchi, confidentiality of data proved by far to be one of the most important acceptance criteria for m-Payment [41]. When consumers believe that their payment details are kept in confidence, this becomes an enabling factor for them to use that service and the service itself becomes more useful to the consumers.

Hypothesis 6
H6o: Perceived Confidentiality has no direct effect on intention to use m-Payment services.
H6a: Perceived Confidentiality has a direct effect on intention to use m-Payment services.

Hypothesis 7
H7o: Perceived Confidentiality has no direct effect on perceived usefulness of m-Payment services.
H7a: Perceived Confidentiality has a direct effect on perceived usefulness of m-Payment services.

3.1.3. Switching Barrier Theory
According to the Switching Barrier Theory, individuals are less likely to adopt a new system or service if they perceive a high switching cost. People are most unlikely to
switch from one service to another if the switching service would incur a certain cost. Here cost may refer to time, money, effort, or any other form of psychological cost associated with switching away from the service [44]. Switching barriers have been classified into three groups: attractiveness of alternatives, interpersonal relationship, and perceived switching cost. But here we only consider the attractiveness of alternatives and perceived switching cost.

Attractiveness of alternatives refers to the perceived reputation, image, and service quality of a competing alternative solution. In this case alternatives for the m-Payment service in Sri Lanka are credit/debit cards and internet payments. Therefore it is important to evaluate whether there is a direct effect of attractiveness of the credit or debit cards on adoption m-Payment service in Sri Lanka.

**Hypothesis 8**

**H8o:** Attractiveness of alternatives has no direct effect on intention to use m-Payment services.

**H8a:** Attractiveness of alternatives has a direct effect on intention to use m-Payment services.

### 3.1.4. Perceived Switching Cost

Perceived switching cost refers to the cost incurs when switching from one service to another and the extra cost incurs when using that service. In this case switching cost may be the cost when switching from credit/debit cards and transaction cost of m-Payment services. When consumers believe that the cost incurred to obtain m-Payment service is really worth, this becomes an enabling factor for them to use that service and the service itself becomes more useful to the consumers.

**Hypothesis 9**

**H9o:** Perceived switching cost has no direct effect on perceived usefulness of m-Payment services.
H9a: Perceived switching cost has a direct effect on perceived usefulness of m-Payment services.

3.1.5. Task-Technology-Fit
In the context of mobile payment, task technology fit is viewed as the extent to which mobile technology functionality matches with the task requirements of the payments procedure [45]. In some research, this has been viewed as the compatibility of the technology. In the context of e-commerce, it has been proved that the good fit between the functionality of the technology and the characteristics of the task has a higher perceived usefulness of that technology. Therefore in the context of mobile payment, if a mobile payment procedure provides a good fit with the respective mobile technology, consumers should perceive that the procedure is useful.

Hypothesis 10
H10o: Task technology fit of the mobile payment service has no direct effect on perceive usefulness of m-Payment services.
H10a: Task technology fit of the mobile payment service has a direct effect on perceive usefulness of m-Payment services.

3.1.6. Awareness
In the context of technology adaptation, awareness plays a major role in the consumer’s actual use of that technology. Awareness about the new technology, its benefits and the way it works really affects how easily consumer can use that technology. Therefore in m-Payment service adaptation, it is important to evaluate the impact of awareness on ease of use of the technology in the Sri Lankan context.

Hypothesis 11
H11o: Awareness has no direct effect on perceive ease of use of m-Payment services.
H11a: Awareness has a direct effect on perceive ease of use of m-Payment services.
3.1.7. Merchant Acceptance

Even though all the above mentioned criteria are fulfilled, it is not guaranteed that m-Payment actual usage as one single condition will prevent the customer from using the procedure i.e. Merchant acceptance. Customers perceive the model if it can be used to purchase most of the goods/services at any merchant outlet. Therefore it is important to evaluate merchant acceptance and perceive ease of use of m-Payment service [55].

Hypothesis 12

H12o: Merchant acceptance has no effect on perceive ease of use of m-Payment services.
H12a: Merchant acceptance has a direct effect on perceive ease of use of m-Payment services.

3.1.8. Personal Factors

According to the Venkatesh, personal factors such as age, gender, self efficacy, field expertise and prior knowledge about the technology will have a real impact on the ease of use of mobile service and the actual intention of using mobile payment services [46]. It has been revealed that the people with higher levels of ability, experience and confidence on a technology typically result in more favorable reaction on adopting that technology. Here we consider age, gender, prior experience with mobile phones and technology and payment expertise and their impact on ease of use and intention to adopt m-Payment service.

Hypothesis 13

H13o: Personal Factors has no direct effect on intention to use m-Payment services.
H13a: Personal Factors has a direct effect on intention to use m-Payment services.

Hypothesis 14

H14o: Personal Factors has no direct effect on perceived ease of use of m-Payment services.
H14a: Personal Factors has a direct effect on perceived ease of use of m-Payment services.
3.2. Research Model

Figure 8: Proposed Research Model