BEHAVIORAL AND MEDICAL CONDITION BASED PREMIUM ADJUSTMENT IN HEALTH INSURANCE: STUDY ON THE SRILANKAN CUSTOMER PERSPECTIVE

Dheepicca Bhasgaran

199104D

Degree of Master of Business Administration in Information Technology

Department of Computer Science and Engineering

University of Moratuwa

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The dissertation was submitted to the Department of Computer Science and Engineering of the University of Moratuwa in partial fulfilment of the requirement for the Degree of Master of Business Administration in Information Technology.

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DECLARATION

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ABSTRACT

The fact that poor health perpetuates poverty is becoming more widely recognized. In recent times, Sri Lankan insurance companies have gradually implemented different models of health insurance to expand access to health care for disadvantaged households to avoid the harmful downward spiral of poverty and illness.

The knowledge gap between Sri Lankan consumers, the insurance industry and the wearable technology industry was evident. It was clear that not only the customer's characteristics but also other factors such as a lack of experience, trust towards the insurance provider, privacy factors, adoption of the new technologies also played a role. The lack of knowledge about wearable technology products in the local market has also been based on low consumer motivation.

By examining available approach, this study examines the inhibiting and contributing factors affecting the acceptance of wearable devices. To better understand these variables, quantitative data was gathered through a survey.

This study will lay the foundation for producers to understand how they can build on the medical insurance's opportunity by developing new technological products that cater to the Sri Lankan market.

Keywords: Wearable devices, Technology Acceptance Model (TAM), Medical Insurance, smart watch

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LIST OF ABBREVIATIONS

SPSS	Statistical Package for the social sciences
PEU	Perceived Ease of Use
PU	Perceived Usefulness
ATT	Attitude towards using
SN	Subjective Norm
BI	Behavioural intention
GDP	Gross domestic product
IoT	Internet of Things
UBI	Usage Based Insurance
PAYL	Pay As You Live
TRA	Theory of Reasoned Action
TAM	Technology Acceptance Model
TAM 2	extended Technology Acceptance Model
UTAUT	Unified Theory of Acceptance and Use of Technology
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behaviour
PLS	Partial Least Squares

1. INTRODUCTION

The primary goal of this chapter of research is to provide background information on the Sri Lankan medical insurance industry, wearable technologies and to introduce the wearable-based premium calculation method. Moreover, this analysis tries to figure out the customer perspective to accept this newer trending business model.

This chapter provides a basic introduction to the conducted research. The chapter explains the problem addressed by the research while providing high-level insight into the background. Furthermore, it also describes the significance of the problem, objectives, scope of the research and methodology.

1.1. BACKGROUND

There is a growing awareness of universal health coverage in today's world. Because of the increase in out-of-pocket spending on health, people expect to increase service utilization and improve financial protection. In recent years, to reduce the economic vulnerability and increase customize satisfaction, people are moving towards Health Insurance Coverage.

When it comes to Sri Lanka, around 4% of GDP spent on healthcare and government health expenditure is annually increasing by an average of about 7% from 2014 – 2018. In Sri Lanka, apart from the government, health services are provided by the private sector and to a lesser extent by non-profit organizations. Government health expenses are financed from revenue taxation. Private sector expenses are paid from out-of-pocket spending, private insurance, insurance paid for by enterprises, directly by enterprises, and contribution from non-profit organizations. Due to the limited resources available in the public sector, there are long waiting lists for specialized care and advanced procedures. This has paved the way for people to seek treatment from the Private sector but limited only to those who can pay for it.

Therefore, some people are left with the risk of getting medical care at the right time. Health insurance is a suitable risk transfer mechanism for them and even will reduce the burden on the public sector. In addition to that, the current global situation necessitates the need for health insurance. As per the KPMG’s recent survey interest in health insurance increased due to this COVID-19 outbreak. Due to this situation moving towards virtual healthcare and digital transformation is more important than the traditional methodologies. (*COVID-19: Customer and Digitization in Insurance - KPMG Global*, n.d.)

Whatever the demand increases, but the premiums need to be affordable. Health insurance generates the 2nd highest premium income in the General insurance sector and in 2018 this amounted to LKR 14 billion from 17,267 policies. That is 14% of General insurance revenue. The highest net claim ratio in the General Insurance sector is also from health insurance. In 2018 it was 95%. · The high cost of the health insurance business is a challenge for insurance companies to provide the service at a lower premium.

However, when it comes to digital capabilities, the insurance industry has long lagged behind other industries (Suvillan, 2019). To adapt to the digital era, there is a need to move into the digitalized solution. Behavioural customer data captured by wearable devices can be used at the underwriting level to get more realistic and personalized premiums.

Therefore, it is beneficial for the industry as well as the economy of the country to understand the customer willingness to use wearable devices and share the information with the insurance company.

1.2. MOTIVATION

Due to the out-of-pocket expense increases for medical purposes, the number of people who are signing up for medical insurance also increases. Meanwhile, insurance companies are moving from traditional business practices to digitalized solutions. In the international market, insurance companies have a business model where they use wearable devices to capture medical and behavioural data to decide premium amounts based on that. Whatever the demand increases, but the premiums need to be affordable. Wearables can provide the potential evidence to make underwriting decisions, customer management, and increase customer engagement. Behavioural customer data captured by wearable devices can be used at the underwriting level to get more realistic personalized premiums.

Sri Lankan medical insurance companies are trying to align their business model with the world trends in digitization adoption. But digital evaluation and the wearable solution are new for Sri Lankans. This research is to find Sri Lankan medical insurance customers' willingness to adapt to wearable devices and to provide sensitive data to insurance companies to run this business model.

The main motivation of this research is Sri Lankan medical insurance companies are trying to align their business model with the world trends in digitization adoption. Adaptation to digital solutions and wearable devices for Sri Lankans is still evolving. A study should be performed to verify whether this business model will be sustainable before introducing it in Sri Lanka.

1.3. PROBLEM STATEMENT

Due to the out-of-pocket expense increases for medical purposes, the number of people who are signing up for medical insurance also increases. Meanwhile, insurance companies are moving from traditional business practices to digitalized solutions. In the international market, insurance companies have a business model where they use wearable devices to capture medical and behavioural data to decide premium amounts based on that.

This research intends to find Sri Lankan medical insurance customers' willingness to adapt to wearable devices and to provide sensitive data to insurance companies to run this business model.

This is done to verify whether this business model will be sustainable to Sri Lankan insurance companies considering the factors such as Sri Lankan is not advanced in the world digital solution adaptation and the wearable device adoption is very less among Sri Lankans. A quantitative study will be done to identify the factors contributing to the adoption of wearable devices and the willingness of customers to prove data to the insurance companies.

As a summary, the research questions can be stated as follows:

> *“Are customers willing to accept a health insurance business model that uses wearable devices to collect customer behavioural and health data as the basis for Premium Adjustment?”*

1.4. RESEARCH OBJECTIVES

To answer the above research question, the following objectives are proposed:

1. To determine the factors that influence a customer's decision on whether or not to adopt a wearable device to be used by the insurance policy.
2. To determine the significance of factors that influence the wearable device adaptation identified by the above objective.
3. To determine if Sri Lankan medical insurance customers are willing to adopt Pay-As-You-Live (PAYL) policy schemes.
4. To provide insight into customers' attitudes towards accepting a PAYL policy scheme to Sri Lankan insurance firms and authorities.

2. LITERATURE REVIEW

2.1. INSURANCE OVERVIEW

2.1.1. Medical Insurance background in Sri Lanka

In Sri Lanka, health insurance has been used for 30 years. While less significant as a healthcare funding strategy, recent trends in the insurance industry, as well as the proliferation of private health insurance providers, have fascinated policymakers' interest in private insurance. The Presidential Task Force on Sri Lanka and National Health Policy Development (1993) effectively promoted private health insurance as a way of increasing capital mobilization in the health sector and reducing the government's expense and inadequate health services.

2.1.2. Traditional insurers are undergoing digital transformation.

Health insurance markets are being transformed by digital. Payers in Asia have been reluctant to digitize, and their use of artificial intelligence and automation, as well as consumer satisfaction, lags that of other industries.

Digital technology, according to PWC, is one factor that will have a huge effect on insurers' future. Also, the competition would necessitate agile digital companies, new and different pricing strategies, market restructuring, and continuing cost reduction. (Wilson, 2013) Rather than simply applying an advanced approach, digital transformation in insurance necessitates a new business model insight into user expectations, research intervention, a more connected network, and new technologies. Customers are increasingly demanding insurers to work with them in near-real-time for inquiries and claims, as well as for customer support.

(Sherif Mahmoud Radwan, 2019) stated that, Traditional insurance market models are expected to change dramatically in the next five to ten years. And also mentioned, insurance firms must begin planning and forecasting the effect of the Internet of Things on their operations.

However, as a healthcare provider, probably aware that keeping up with digital transformation in the industry can be difficult. The toughest part is deciding which new technologies are worth investing in and keeping the team on board with the change.

In agreement with this, Eckert & Osterrieder, (2020) mentioned that implementing innovation with insurance usage cases necessitates a holistic strategic standpoint due to the strong interconnections in emerging technology. This is not just about one form of digital technology. Considering the massive strategic importance of responding to digitalization, the researcher emphasizes the growing importance of critically handling the IT of insurance firms. (Eckert & Osterrieder, 2020)

In addition to this Lascelles & Patel (2015) argues that, when it comes to existing insurers, a common problem is that they are hampered by legacy programs that were designed decades ago when data handling looked different than it does today. Also mentioned Traditional insurance firms, on the other hand, prefer to expand and grow existing products and services rather than embark on innovative new ventures. (Lascelles & Patel, 2015)

As a result, the problems for a conventional insurer are numerous as a result of digitalization. Individuals have higher aspirations and seek different types of products and services, putting the conventional insurance model under pressure. Traditional insurers are constrained by their existing schemes, and they see creativity and organizational change as difficult terrain to navigate. According to PWC (2020), the industry is defined as one that is too comfortable and slow to adapt to change. The figure below shows the percentage of sectors that have adopted digital technology based on their digital maturity. (Mckinsey, 2018)

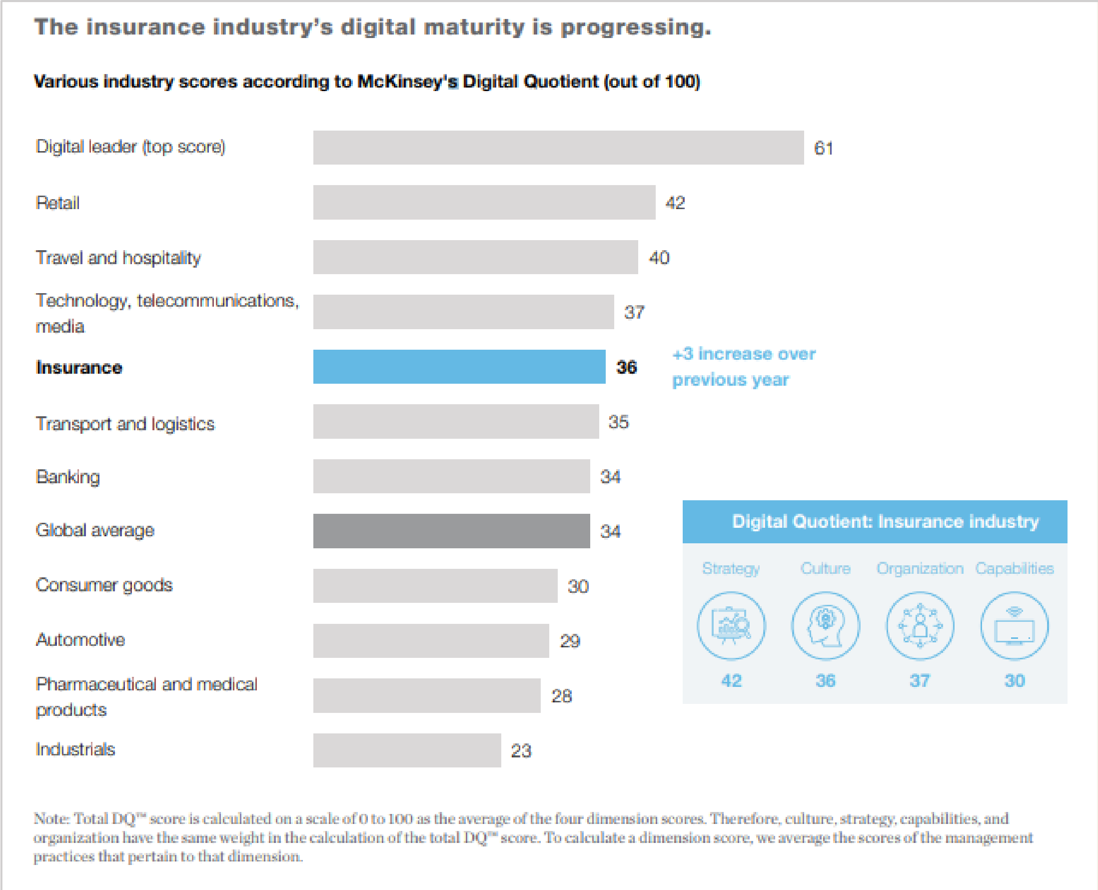

Figure 1: Insurance industry's digital maturity

2.2. INTERNET OF THINGS (IOT) FOR REAL-TIME DATA GATHERING

2.2.1. Healthcare wearable devices

The Internet of Things is one of the key important inventions to develop in the last decade (IoT). Our planet is now awash in sensors that gather data in several sectors, including transportation, irrigation, healthcare, and real estate. (*Wearables in Insurance: Where Do We Go From Here? – ProActuary*, n.d.) Wearable computers and smart textiles are the two types of wearable gadgets. Wearable computers, which are typically bracelets or watches, are fashion accessories that include the requisite circuitry. They allow customers to complete tasks in an unobtrusive and socially appropriate manner, resulting in improved efficiency or pleasure. Electronics are woven into the cloth of smart textiles, allowing products to measure and/or respond to stimuli from the consumer or environment (Peltola, 2017).

The COVID-19 pandemic is projected to have a major effect on business development in 2020. This has increased the importance of wearable devices in the healthcare industry. Demand is expected to be boosted by the rise of the Internet of Things (IoT) and wearable technology, as well as a rise in the number of technically savvy individuals. In response to increasing concerns about the diseases like obesity and other chronic illnesses, fitness devices such as body watches and activity trackers have increased in popularity. These products provide real-time data on the individual's general health condition. These products capture the individual's information like BP, sleep movements, calorie burned, cholesterol levels, steps taken, breathing level, pulse control, and other body activity data requires for day-to-day activities.

When it comes to the opportunity of the wearable based health insurance business model, Barbosa, (2019) discusses Porter's value chain-based conceptual model, which separates between the primary activities and support activities required by an insurance company to provide a service.

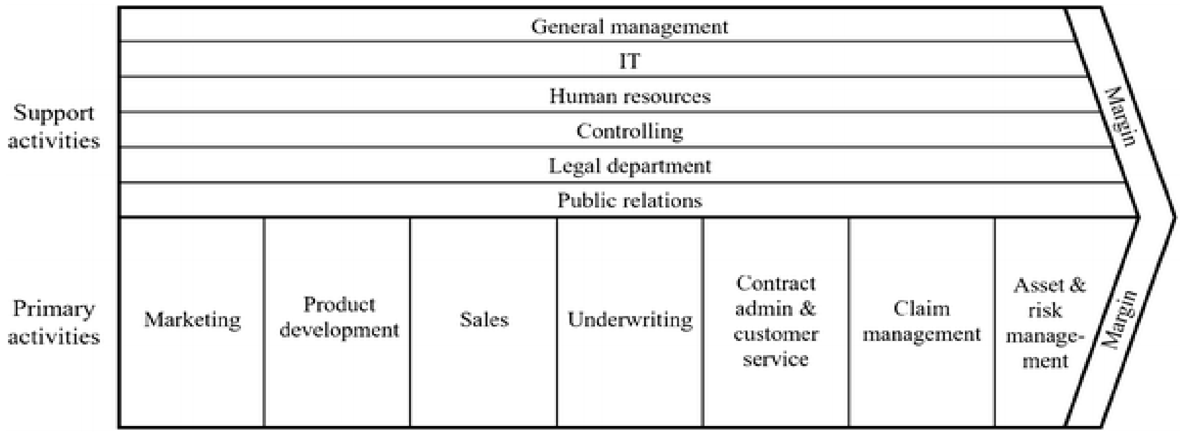

Figure 2: Insurance domain’s value chain model derived from Porter and Rahlfs model

Eling & Lehmann (2018) pointed out the places of the value chain where IoT would have a direct impact: underwriting, IT, and product development. However, the parts that follow look at how wearables can affect other activities such as marketing, sales, and customer service. (Barbosa, 2019) The below figure 3 describes the possible opportunities and pitfalls of this concept.

Capability	Opportunities	Pitfalls
 **Collect real-time data**	• Large amounts of real-time data to track activity and health indicators of individuals	• Storing, processing and creating business value can be tricky. • Risk of collecting incorrect or misleading data. • Regulatory and data protection concerns.
 **Pricing rating factors**	• New rating factors not otherwise available. • Enhance predictive power.	• Complex 'black box' pricing models. • May not provide additional insights compared to traditional methods because the underlying science is still not clear (i.e., we don't know which factors are most predictive of morbidity with any real level of precision). • Potentially expensive to incorporate.
 **Underwriting using additional data**	• New underwriting criteria not otherwise available e.g. having credible and reliable wearables data may be a useful source of information when classifying policyholders as a standard or substandard risk.	• Potential for fraudulent methods used to achieve high activity levels. • Discrepancy between devices may produce different conclusions for different measures. • Lack of evidence that high levels of activity recorded by wearable devices can be associated with better risks.

Figure 3: Opportunity & pitfalls of using data from wearables. (Buckle et al., 2020)

2.2.2. Wearable market overview

Because of the surge in the wellness trend among customers, wearables have gained a lot of momentum. As per the Cisco Systems report quantity of the wearable devices is expected to rise from 593 million to 1,105 million in 2022. The smartwatch segment is growing in demand due to the added features such as a brand that fits with one's everyday routine. To retain their sales, strong brands like Apple and Fossil keep their prices consistent with standard watch price bands. As a result of Google's WearOS, even more, premium wearable device makers, such as TAG and Armani, have entered the industry. (*Global Smart Wearable Market*, n.d.)

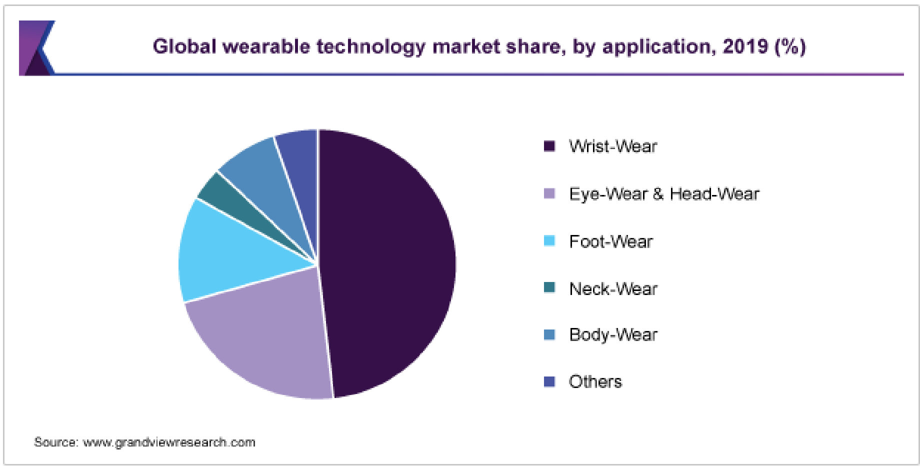

Figure 4: Global wearable technology market share, by application 2019%

Many Insurance companies are already incorporating innovations into their insurance and health programs. The below image illustrates how certain insurers are using technologies to compensate policyholders.

Aditya Birla Health Discounts for policyholders who record a specified number of steps using an activity tracker or attend gym sessions or have a health assessment.	**The Vitality Programme** Vitality members earn points and achieve a higher Vitality status when they undertake activities that are assumed to impact on health status. Higher Vitality statuses unlock higher rewards for benefits such as gym, travel and other discounts.	**AXA** Offers a free Withings Pulse fitness tracker. Participants receive discounts of over $100 on their insurance policies, as well as discounts off any Withings product purchases when they complete a certain number of steps.
Oscar Rewards customers who track their fitness data gift cards when they reach their step goals.	**United Healthcare** Rewards users with healthcare credits for reaching daily fitness goals.	**Qantas Assure** Policyholders receive Qantas frequent flyer points if they lead more active lifestyles.
Aetna Monitors daily activity and provides assistance in achieving personalised health goals. The app also provides recommendations, nudges and rewards.	**Esurance** SavorBand devices are offered which can capture information on food consumed, including recipes, cooking tips, and purchasing discounts along with other data.	**Beam Technologies** Uses Bluetooth-enabled toothbrushes to reward good brushing habits with discounted insurance premiums and other rewards.

Figure 5: Examples of wearables are currently being used in the insurance industry.

2.2.3. Smart watch

Smartwatches are becoming increasingly popular, and this trend is likely to continue, particularly as more features are added. One of the industries that could profit the most from wearables is healthcare, where smartwatches could revolutionize how doctors' control and track patients while keeping a safe distance.

Individuals and corporations can gain benefits from a wide range of smart watch applications. Smartwatches can be used for communication, information, entertainment, wellness & health tracking, schooling, driving, and assisting services, among other things. The smart watch may be used to collect data on customers or users as well as their surroundings.

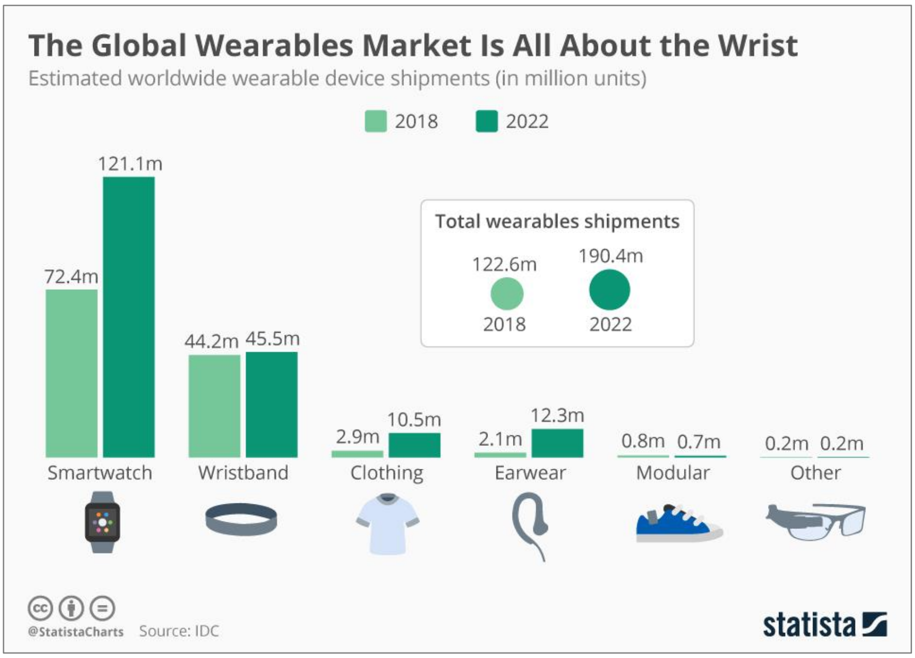

Figure 6: Global wearable market statistic

2.3. USAGE-BASED INSURANCE (UBI)

The “sharing economy” and data revolution, with its revolutionary ideas of sharing services and products and pay-per-use, has firmly established itself in a variety of other industries, ranging from ride and taxi share schemes to vacation rentals. Insurers face both exciting new business prospects and enormous obstacles because of this.

Insurers can tailor insurance to their customers' behaviours and consumption patterns using usage-based insurance (UBI). According to UBI providers, a successful approach can reduce claims costs by 40%, policy administration costs by 50%, procurement costs by 50%, and price policies more efficiently. (Ernst&Young, 2015)

The life and health insurance markets could be greatly disrupted by “Pay As You Live” insurance solutions. When a customer performs a lifestyle, characteristic related to better healthcare outcomes, such as physical activity, daily step counts, heartbeat levels, and blood pressure level, their premiums can be adjusted to match their reduced risk.

A number of our global insurance clients are currently investigating the Pay As You Live (PAYL) model, including the consequences for consumers, data protection, policy, and pricing. As wearable technology gains traction and insurers recognize the ability of this technology to provide value-added information and services to their customers.

2.3.1. Pay As You Live

Healthcare insurers are now implementing a novel insurance business model known as 'Pay-As-You-Live' (PAYL), which collects insights from consumer data and provides policyholders with a variety of significant financial benefits. (Alami et al., 2020)

Nicole Opiela et al. (2016) mentioned that Individual insurance premium rates are determined for each user based on the review of vast volumes of data in a pay-as-you-live (PAYL) insurance policy. For more risk-averse conduct, those who make their data available to the insurance provider can be compensated with lower premiums. For example, a more defensive driving style can lower auto insurance rates, and more health-conscious conduct or more regular exercise can lower health insurance contributions. If you reveal personal information, you will receive lower contributions. (*Pay-as-You-Live - Pay-as-You-Live | Competence Center Public IT (ÖFIT),* n.d.)

Currently, health-related systems are transferring their service delivery to the digital era. Mobile technology's pervasiveness, along with the rise of the "quantified-self" trend, has now provided a vast amount of data on consumer's health and lifestyles. (Alami et al., 2020)

While many publicly and privately sponsored health systems face challenges in migrating to digitalized health care and service delivery. These days mobile users recording a huge amount of their health data and their lifestyle-related data through their mobile or smart devices. Pay-As-You-Live (PAYL) is a modern insurance concept that seeks to derive value from user-generated data.

This approach distinguishes itself from other insurance models in that it offers clients much more interactive yet directive health management assistance. According to (Alami et al., 2020), health insurers use the PAYL model to gain the advantage of the emerging new technologies and data extraction methods while also catering to their customers' evolving medical needs.

2.4. RELEVANT THEORIES OF TECHNOLOGY ACCEPTANCE

2.4.1. Diffusion of Innovation theory

The Diffusion of Innovation theory (DOI), also known as the Innovation Theory of Diffusion, is one of the oldest models that describe human acceptance behaviour and is used as a model for modern technology adoption models. (Rogers, 1995) Everett Rogers introduced the Diffusion of Innovation (DOI) principle in 1962 to explain how, why, and at what rate a good, service, or method spreads through a society or social system. The diffusion of innovation explains the level at which new technological advances propagate.

Since Diffusion of Innovation aims to forecast the future of innovative products for businesses, it is increasingly becoming a subject of academic study. As a result, the principle will assist managers in developing marketing strategies for new goods. Innovation diffusion theory is increasingly being applied in new fields as emerging markets, such as services and electronic media, expand. (Li & Sui, 2011)

Rogers described diffusion as the mechanism by which innovations are transmitted among members of social institutions over time through the use of a communication medium. The three groups of actors participating in the diffusion process are the innovation determination system, invention characteristics, and innovator attributes.

Based on the spread of adopters for an invention that estimated the normal distribution of time to adapt, (Rogers, 1995) divided the adoption process into five stages. However, any innovation's acceptance or rejection was dependent on individual or community decision-making. The following are the stages:

- **Innovators:** Those interested in becoming the first to try a new product or service. Innovators are essential for the success of every new product or service because they help it achieve consumer acceptance.

- **Early Adopters:** Early adopters are less risk-averse than innovators and are more likely to wait for reviews before buying a product or service. They are important in achieving "critical mass" for a product or service.

- **Early Majority:** They choose not to take chances and instead wait for a product or service to be tested or used by a trustworthy peer. These individuals are picky and want to purchase items that have been shown to work.

- **Late Majority:** They are known as conservatives, and they are always afraid of technology, cost-conscious, doubtful, and unable to make a buy. Furthermore, late populations are often compelled to purchase goods or services by their peers.

- **Laggards:** They are resistant to change and can cling to traditional products or services until they are no longer available. New technology is usually only accepted until it is essentially forced upon them.

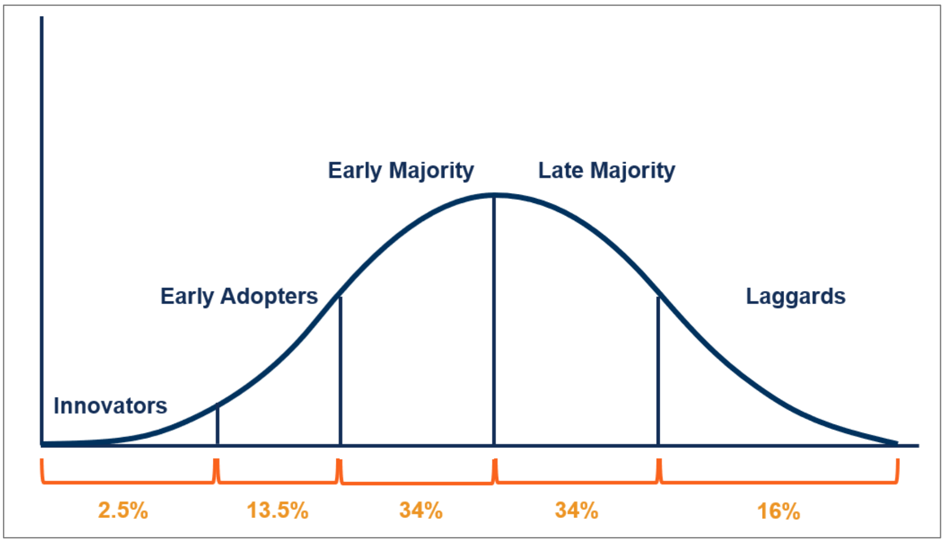

Figure 7: Distribution of the adopter spectrum (Roger, 1983)

When a new idea is developed, innovation will confuse the minds of adopters. Adopters want to know why the new practice is better than the old one. Furthermore, the same invention could be ideal for one purchaser in one case but not for another. The following five features of inventions can be used to explain individual approval levels: (USA INTHARAKSA, 1999)

- **Relative Advantage:** Expresses how much better, more efficient, or beneficial a new thing is than an existing one.
- **Compatibility:** Compatible with the current beliefs, personal interactions, and desires of future adopters.
- **Complexity**: The extent to which an invention is difficult to grasp and use for a newcomer. Easy-to-understand and use innovations can be applied faster than those that need additional expertise and experience.
- **Trialable**: The extent to which a new idea can be tried on a small scale. New inventions can be implemented more readily if they can be implemented than non-divisible innovations. Adopters who are considering adopting an invention would have less uncertainty if it were trialable.
- **Observability**: The level to which the breakthrough's effects are visible to all, also known as observability, is a result of demonstrability.

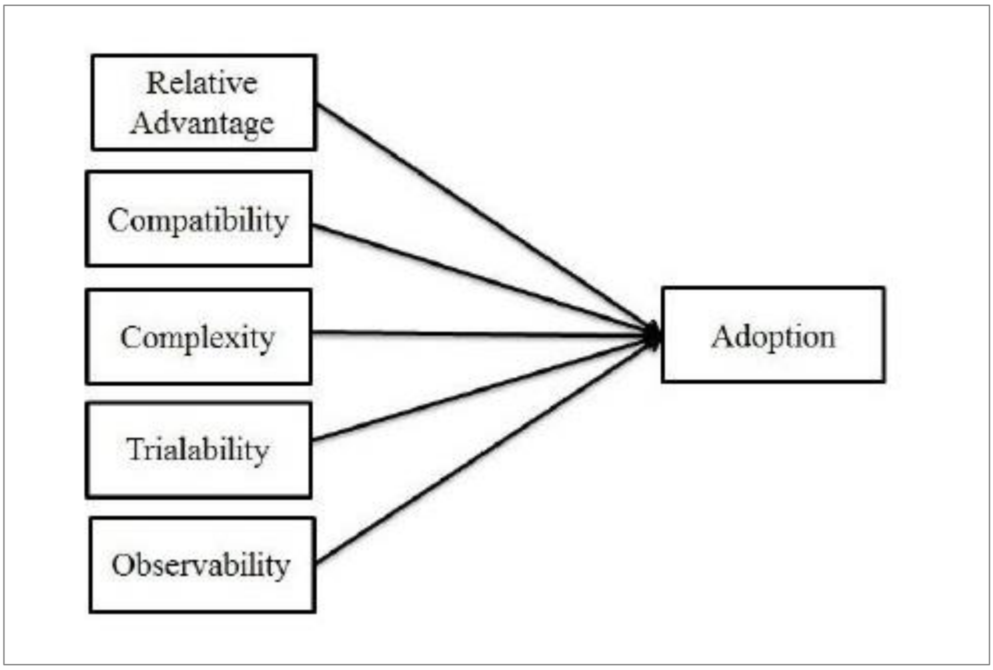

Figure 8: Diffusion of Innovation Theory (Roger, 1983)

2.4.2. Theory of Reasoned Action (TRA)

The Theory of Reason Action (TRA) was established in the 1960s as a model for evaluating behavioural intention. It explains that action is influenced by behavioural intention to execute said action. An individual's perceptions and subjective norms towards the behaviour moderate this behavioural goal. The relationships between adoption or actual action and the TRA model's main dimensions are shown in the diagram below.

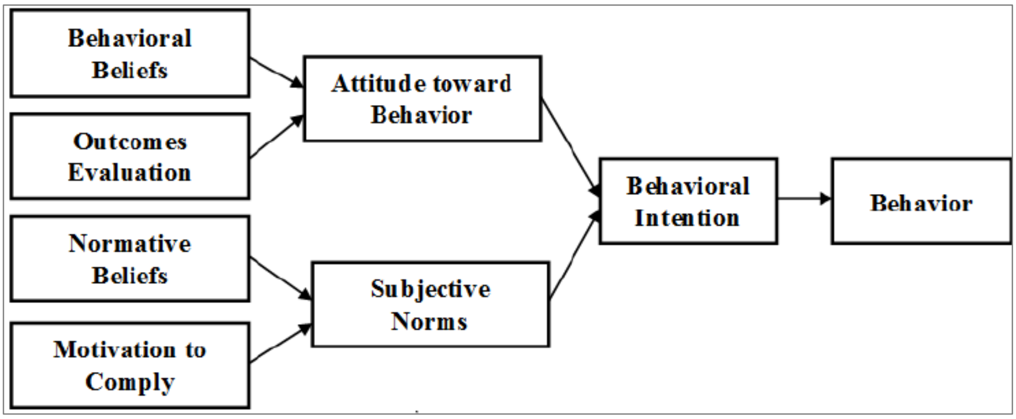

Figure 9: Theory of Reasoned Action – TRA (Fishbein & Ajzen, 1975)

Two variables, as per Reasoned Action, construct, or trigger behavioural intent: behaviours and subjective norms. Attitudes have two components, similar to Information Integration Theory. There are referred to as evaluation and strength of belief by Fishbein and Ajzen. The second element influencing behavioural motive is subjective norms, which is made up of two parts: normative expectations and a desire to conform. (*Theory of Reasoned Action*, n.d.)

TRA, considering its broad reach, has limitations and, like any other theory, needs constant refinement and revision, especially when it is extended to include options and goals (Sheppard et al., 1988).

According to Eagly and Chaiken, TRA does not justify the fact that some requirements that permit individuals to conduct a condition are not available to them. The TRA is constrained in its ability to predict activities that require access to certain opportunities, abilities, environments, and/or resources because it focuses on behaviours that people decisively execute.

2.4.3. Technology Acceptance Model (TAM)

The technology acceptance model (TAM) developed by Davis was one of the most well-known models in this field when it was first developed in the 1980s by Davis. TAM is based on the theory of reasoned action (Ajzen, 1985). The model describes technology acceptance by determining variables and evaluating individuals' intentions to use technology. According to Holden & Karsh (2010), knowing which factors adversely impact technology adoption can help companies properly handle those factors to boost technology acceptance and even improve IT use.

TAM is a principle that has undergone many modifications. In a TAM2, the ATU portion of the model was removed, which originally mediated some of the impacts of PU and PEOU. TAM2 also included a subjective norm (SN) variable to capture the social impacts that encourage end-users to favourably assess and consider it. The

Unified Theory of Acceptance and Use of Technology (UTAUT), a theory that has several similarities with TAM, was established in a more recent attempt to unify the IT acceptance literature. (Holden & Karsh, 2010)

According to the model, technology usage intentions are mainly influenced by these parameters: perceived usefulness and perceived ease of use (Fred D. Davis, 1985). The following is an overview of the TAM predictors:

- **Attitude Towards Using:** This describes individual actions by explaining an individual's positive or negative assessment of executing a behaviour. (Sheppard et al., 1988)
- **Behaviour Intention:** Described as a measurement for the strength of one's desire to carry out a specific action.
- **Perceived Usefulness:** Defined as a potential participant's subjective likelihood that using a particular application framework would increase their job performance as a result of an organization. Venkatesh et al., (2003John compared PU to the motivating model's ideas of extrinsic incentive and performance anticipation, as well as the UTAUT's progress expectancy.
- **Perceived Ease of Use:** Described as the level to which the target system is expected to be effort-free by the prospective consumer.
- **External Variables:** Described as a measurement for the strength of one's desire to carry out a specific action.

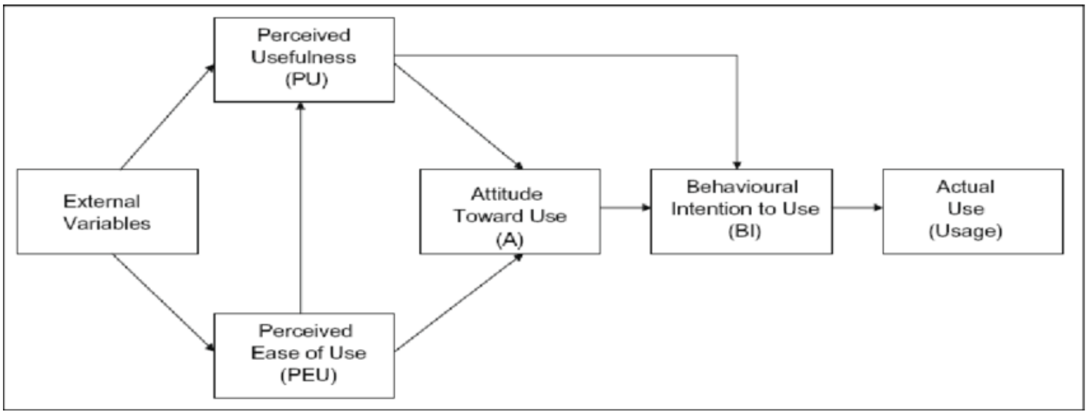

Figure 10: Technology Acceptance Model (Davis et al., 1989, p.985)

2.4.4. Unified Theory of Acceptance and Use of Technology

Venkatesh et al. (2003) analyzed similar research and performed an empirical study in which they synthesized some elements of the eight behavioural target models used in previous technology acceptance contexts in their quest for a more accurate IT acceptance model. TRA, TAM, TPB, combined TAM-TPB, MPCU, MM, SCT, and IDT are examples of these models. As a result, the researchers used the UTAUT model to bring together the various hypotheses on how users adopt the technology.

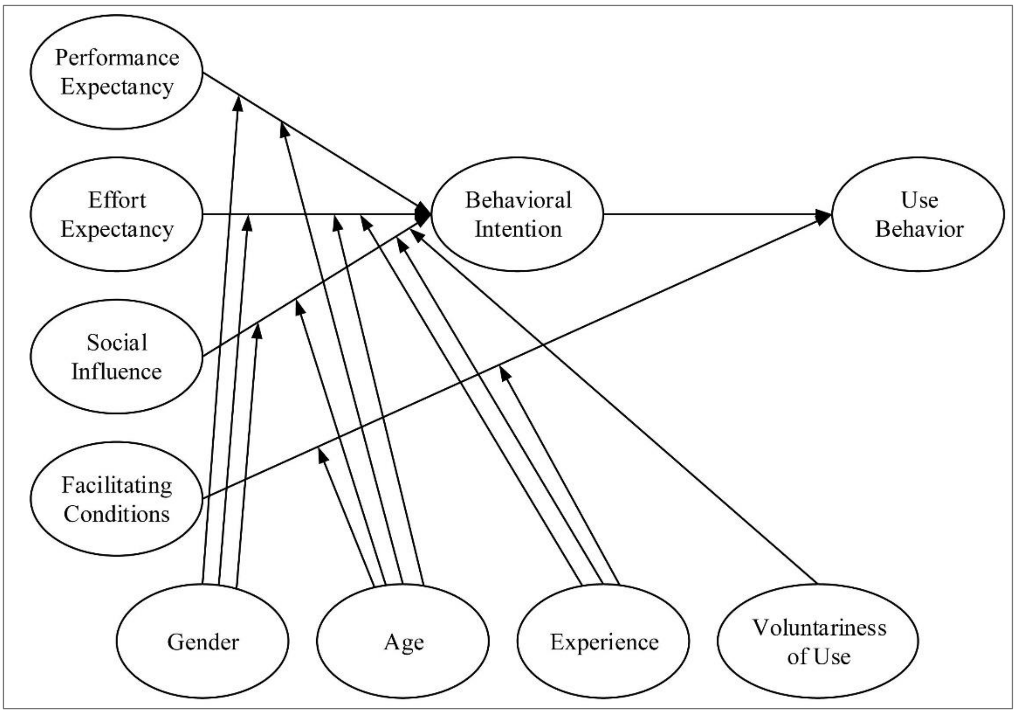

Figure 11: The Unified Theory of Acceptance and Use of Technology model (UTAUT).

2.5. COMPARISON OF MODELS IN THE LITERATURE

The below table taken from the literature covers the summary of the existing research result.

Table 1: Comparison of different technology adoption models based on the literature. (Abbasi, 2011)

Author	**Purpose of Study**	**Context/Sample/ methodology**	**Variable**	**Model**	**Variance/ Explanatory power (R2)**	**Significant Finding**	**Non-Significant findings**
Mathieson (1991)	Comparative study between TAM and TPB	Spread Sheet word processing program Students (262) Longitudinal Study	PEOU, PU, A, BI, SN, PBC	TAM	A = 0.727 PU=0.442 BI=0.69	EOU → PU, EOU+PU → A A+PU → BI	
				TPB	A= 0.388 BI= 0.60	PBC+A → BI	SN → BI
Chau and Hu, (2002)	Comparative study between TAM, TPB	Healthcare-Telemedicine technology-Hong Kong Physicians (400) Cross-sectional Study	PEOU, PU, A, BI, SN, PBC, COMP	TAM	BI= 0.42 A= 0.36 PU=0.01	A → BI, PU → BI PU → A	PEOU→ PU PEOU→ A
				TPB	BI =0.32		SN→BI(-ve)

Taylor and Todd (1995b)	Combined TAM and TPB and examination based on experience	Computing resources project Student (430 and 356) Longitudinal Study	PU, PEOU, A, SN, PBC, BI, B	TAM	Experience B = 0.21 BI= 0.43	Experience BI→B, PBC→BI	Experience A→ BI, PU→ A SN→ BI
					Inexperience B = 0.17 BI= 0.60	PU→ BI, PBC→ B, PEOU→ A	Inexperience A→ BI, PU→ A SN→ BI
Wu et al. (2007)	Revision of technology acceptance models (TAM and IDT)	Health-care use of mobile devices-Taiwan Physician (310) Cross-sectional Study	BI, PU, PEOU, SE, COMP, TST	TAM, IDT	BI=0.70 SE= 0.56 PU=0.70 PEOU= 0.65	COMP→ BI, COMP→ PU COMP→ PEOU COMP→ SE SE→ PU, SE→ PEOU TST→ SE, PU→ BI PEOU→ PU, PEOU→ BI	TST→ PU TST→ PEOU

Hu et al. (2003)	Examination of technology acceptance in teaching	Microsoft word program Academics (130) Longitudinal Study	PEOU, PU, SN, JR, COM, SE, BI	TAM, TRA, IDT	Prior training BI=0.47	Prior training JR→ PU, COM→PEOU SE→ PEOU, SE→ BI SN→ BI, SN→ PU (-ve) PU→ BI, PEOU→ PU	Prior training PEOU→ BI COM→ PU
					Post-training BI=0.72	Post-training JR→ PU, COM→PEOU COM→PU (-ve) SE→PEOU, SE→ BI SN→ BI, SN→ PU (-ve)	Post-training PEOU→ BI SN→ BI

						PU→ BI, PEOU →PU	
Davis et al., (1989)	Development of TAM and comparison with TRA	Word processing Student (107) Longitudinal Study	PEOU, PU, A, BI, SN	TRA	BI=0.26 A=0.30	A→ BI	SN→ BI
				TAM	BI=0.51 A=0.36 PU=0.05	PU→ BI, PU→ A PEOU→ A, PEOU→ PU	A→ BI

2.5.1. Factors Affecting wearable based premium calculation adoption.

The below table explains the selected variables and theoretical model mapping.

Table 2: Variables & models includes the variables.

Variable	**Definition**	**Models**
Behavioural intention (BI)	The desire or willingness of an individual to carry forth effort to perform the desired action.	TAM, TAM2, UTAUT, TRA/TPB
Attitude Toward Use	An individual's evaluative assessment of the target action on certain dimensions.	TAM, TRA/TPB
Perceived ease of use (PEOU)	An individual's belief that using an IT system would be free of effort.	TAM, TAM2
Perceived usefulness (PU)	A person's belief that implementing an IT system would improve efficiency at work.	TAM, TAM2

Subjective norm (SN)	The degree to which a person believes important other people approve or disapprove of the target action.	TAM2,
Behavioral beliefs	Individuals' perceptions of specific positive and negative consequences of engaging in the goal behaviour	TRA/TPB
Social influence	The extent to which an individual believes significant others approve or disapprove of the target action.	UTAUT

2.6. SUMMARY

The research assumptions of this study and its proposed acceptance model for this research are outlined in the diagram below, which was based on an exhaustive analysis of relevant journals and papers.

3. RESEARCH METHODOLOGY

This chapter aims to explain and justify the data collection and analysis methodology and approach. Choosing an approach, as well as data collection and review methods, is akin to agreeing on a broad viewpoint from which the research findings will be guided. A quantitative analysis methodology was used to evaluate the acceptance of the wearable-based medical insurance premium calculation. Faculty and colleagues were sent a web-based survey with closed-ended questions and demographic data. This chapter covers the questionnaire, online survey design and procedures, pretest, and instruments used in a preliminary analysis.

The survey questionnaire creation process, as well as content, wording, and layout criteria, are covered in this chapter. Also includes a discussion of how the population and sample for the current study were chosen, with clear rationales and justifications. This study outlines instrument production as well as scale adoption. Finally, with structural equation modelling (SEM) and PLS, explore data collection techniques, a pilot project, and data analysis techniques.

3.1. CONCEPTUAL FRAMEWORK

To accomplish the study's goal, this chapter will formulate the research hypotheses, which are conceptually related to one another. To do so, the previous chapter conducted a systematic analysis of different models as well as the current research on individual acceptance behaviour. There were some significant variations and shortcomings between the structures and/or connections in these models, but there were a few recurring themes.

3.2. THEORETICAL BACKGROUND

TAM is made up of three main factors that influence user motivation: perceived ease of use, perceived utility, and attitudes toward technology. Two of these elements, perceived Usefulness (PU) and perceived ease of use (PEU), are thought to be a primary determinant of behavioural intention to use (acceptance) new technology. The constructs and associations identified in the updated TAM model were hypothesized to be accurate for measuring insurance companies' behavioural intention to use wearable-based technology in this study. Figure 12 depicts the proposed research variables, their relationships, the research framework, and our hypotheses. Below the table list down the construct model's variable selection reference list.

Table 3: Definitions of key constructs in the proposed model

Construct	Definition	References
Perceived Usefulness (PU)	User's perceptions about wearable gadgets are beneficial to the user's wellbeing, according to the user.	(Fred D. Davis, 1985) (Min, 2016)
Perceived Ease of Use (PEOU)	The consumer assumes the wearable device is simple to use.	(Fred D. Davis, 1985) (Min, 2016)
Trust Towards the Insure	Users' trust towards the insurance service provider	(Gefen et al., 2000) (Min, 2016)
Intention to Use	The consumer has made a clear decision to use or not use wearable devices.	(Rogers, 1995) (Min, 2016)

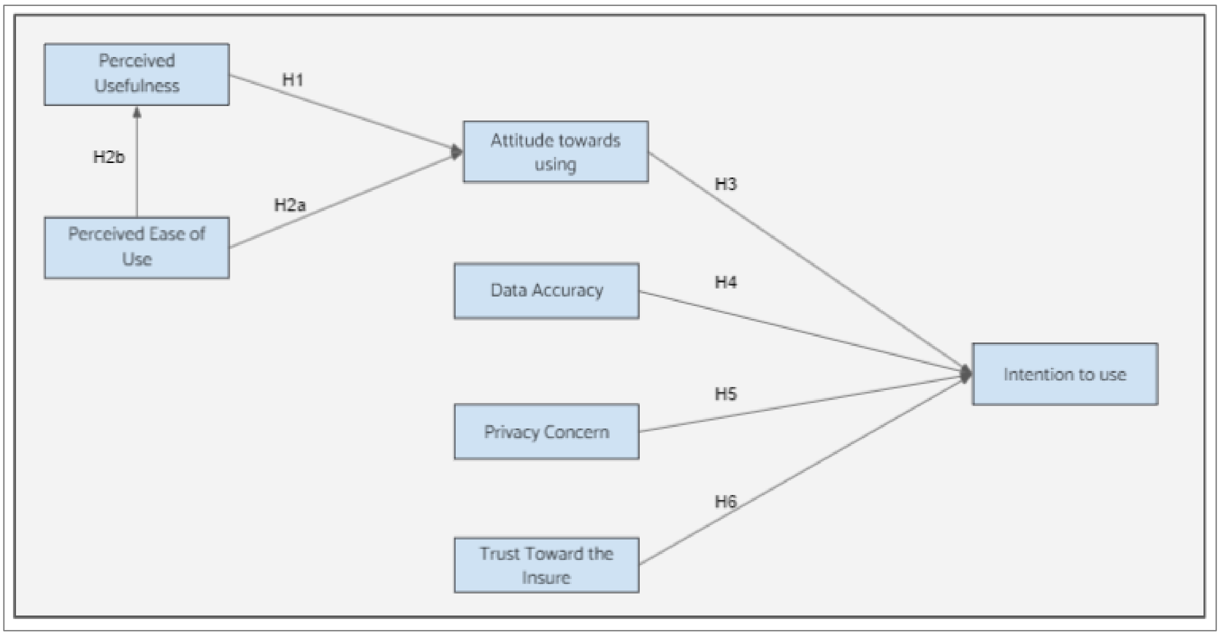

Figure 12: Research framework.

The following seven hypotheses (H1-H6) relating to wearable-related health insurance premium calculation acceptance were formulated based on the research framework:

H1	Perceived usefulness has a significant positive effect on attitude toward using wearable based premium calculation. (Durodolu & Literacy, 2018) (Fred D. Davis, 1985)
H2a	Perceived ease of use has a significant positive effect on attitude toward using wearable based premium calculation. (Fred D. Davis, 1985)
H2b	Perceived ease of use has a significant positive effect on perceived usefulness. (Fred D. Davis, 1985) (Wolf, 2018)
H3	Attitude towards using the wearable based premium calculation method has a significant positive effect on the intention to use. (Jeffrey, 2015)
H4	Wearable device’s data accuracy has a significant positive effect on the intention to use the wearable base premium calculation. (Soliño-Fernandez et al., 2019)

H5 Policy holder’s privacy concern has a significant positive effect on the intention to use the wearable base premium calculation. (Gribel et al., 2016)

H6 Trust towards the insurer has a significant positive effect on the intention to use the wearable base premium calculation. (Min, 2016)

3.3. DIRECT RELATIONSHIPS

3.3.1. Perceived Usefulness

The usefulness scale developed by Davis was modified to evaluate perceived usefulness. Davis' information technology usefulness scale inspired this measure. Furthermore, Fred D. Davis, (1985) suggests that increases, promotions, incentives, and other rewards naturally reinforce people's desire to perform better. Many researchers would certainly find the TAM useful because it has effectively shown how such value can increase users' acceptance. In most recent research, perceived usefulness is a critical factor in technology adoption. (Durodolu & Literacy, 2018)

3.3.2. Perceived Ease of Use

Perceived ease of use refers to the extent to which a potential customer expects the target system to be hassle-free. This is described as "the extent to which an individual feels that using a certain device would be painless." Studies have shown that when people believe technology is simple to use, they are more likely to use it.

3.3.3. Attitude Towards Use

All the factors listed above, such as PEU and PU, influence the ATU factor. ATU is also thought to have an impact on Intention to Use, according to previous studies. (Jeffrey, 2015)

3.3.4. Privacy Concern

Because of the emerging trend of smart devices to store and analyze data, privacy issues are a new dimension when implementing a solution for medical insurance.

3.3.5. Behaviour Intention to Use

The first to include behaviour in the TRA model introduced by (Ajzen, 1985) (Sheppard et al., 1988). TRA was influential in the design of the TAM. According to TRA, beliefs influence attitudes and attitudes influence the nature of intentions that direct behavioural use. The cognitive process defines an individual's readiness to perform a specific behaviour and is a direct antecedent of usage behaviour's purpose.

3.4. DEVELOPMENT OF QUESTIONS

The survey questions were created using data from previous research, which can be found in the table below.

Table 4: Measurement items of the model in the survey

Variable	Measurement item	Reference
Perceived usefulness (PU)	• Wearable devices provide very useful services to me. • I find this application useful in my work activities. • Overall, I find wearable devices useful in my life in general. • Using wearable devices increases my productivity. • Using this application enhances my	(Davis, 1989) (Yang et al., 2016) (Amela Ajanović, n.d.) (Wolf, 2018)

	effectiveness at work.	
Perceived ease of use (PEU)	• Interacting with wearables is often frustrating (reversed item) • Overall, I find wearables easy to use (reversed scoring scale) • I find it cumbersome to use a wearable (reversed scoring scale and reversed item) • Learning to operate this application is easy for me. • I find it easy to get this application to do what I want it to do. • It is easy for me to become skilful at using this application. • I find this application easy to use.	(Fred D. Davis, 1985) (Wolf, 2018)
Privacy Concern (PC)	• Using a wearable device makes me feel uncomfortable due to potential data security issues. • I do not use a wearable device, because I am concerned about being observed. • I am afraid of my health data being tracked by wearable devices. • I am familiar with how my mobile health device transmits, stores, label and handle my sensitive information. • I understand that health information is considered “sensitive” or “confidential”. • I am familiar with my mobile health device’s Information Security Policies and how they	(Gribel et al., 2016), (Wolf, 2018) (Cilliers, 2020)

	protect my information/privacy	
Intention To Use (ITU)	• I intend to use wearables in the future. • I recommend others to use wearable devices. • Using wearables is worthwhile. • I intend to continue using the BI application in the future. • I expect my use of the BI application to continue in the future.	(Davis et al., 1989) (Yang et al., 2016) (Wolf, 2018)
Trust Toward the Insure (TTI)	• I believe that the smart bands are reliable for data recording. • I believe that personal information is safe. • I believe that the smart bands and their applications provide accurate information	(Min, 2016)

3.5. RESEARCH STRATEGY: QUANTITATIVE

According to Creswell (2003), Quantitative methodology is founded on objectivism ontology, positivism epistemology, voluntarism/unbiased axiology, and deductive methodology (Clark, 2007). Also, Bell & Bryman, (2016) described quantitative research as a deductive approach that uses scientific procedures and numerical analysis to show the relationship(s) between the variables in a study's phenomenon.

This research will use a quantitative research technique since it is one of the most useful methods in social science research. It aids the researcher in deciding the feasibility and reliability of previously investigated scientific hypotheses and theories based solely on research and calculation techniques.

The justification for not using qualitative analysis is that qualitative testing would not imply that it is inadequate for the current study. The qualitative analysis methodology is suitable since it seeks to subjectively evaluate culture by identifying and analyzing human changing phenomena in a natural environment.

According to Collis & Hussey (2003), qualitative approaches are incapable of completing this analysis, which is based on adequate literature and necessitates a consistent relationship(s) between structures to reveal meaningful evidence using statistical tests. (Collis & Hussey, 2003).

3.6. RESEARCH APPROACH

This descriptive and explanatory study focuses on users' acceptance, usage habits, expectations for product functionality, and the factors that influence consumers' willingness to consider the wearable-based medical insurance premium calculation. To evaluate the research question and evaluating the research model of analyzing the acceptance of wearable-based medical insurance premium measurement, a quantitative research design was chosen. (Min, 2016)

- **Descriptive research*:*** This study aims to determine the level of acceptance of wearable base medical insurance premium measurement.
- **Explanatory research:** Another aim of the study is to put the research model of wearable-based medical insurance premium measurement to the test, as well as to figure out how the independent and dependent variables are related. (Intention to use or acceptance). PEOU, PU, trust towards the insure, intention to use, privacy concern, and data accuracy are the independent variables.

3.7. RESEARCH DESIGN

Study design refers to the overall approach for defining research problems, identifying the data collection method, data collection and analysis processes, and the researcher's role during the data collection process. Figure 13 depicts the main steps in the research design for carrying out the research phase in the current study in the form of a flow chart.

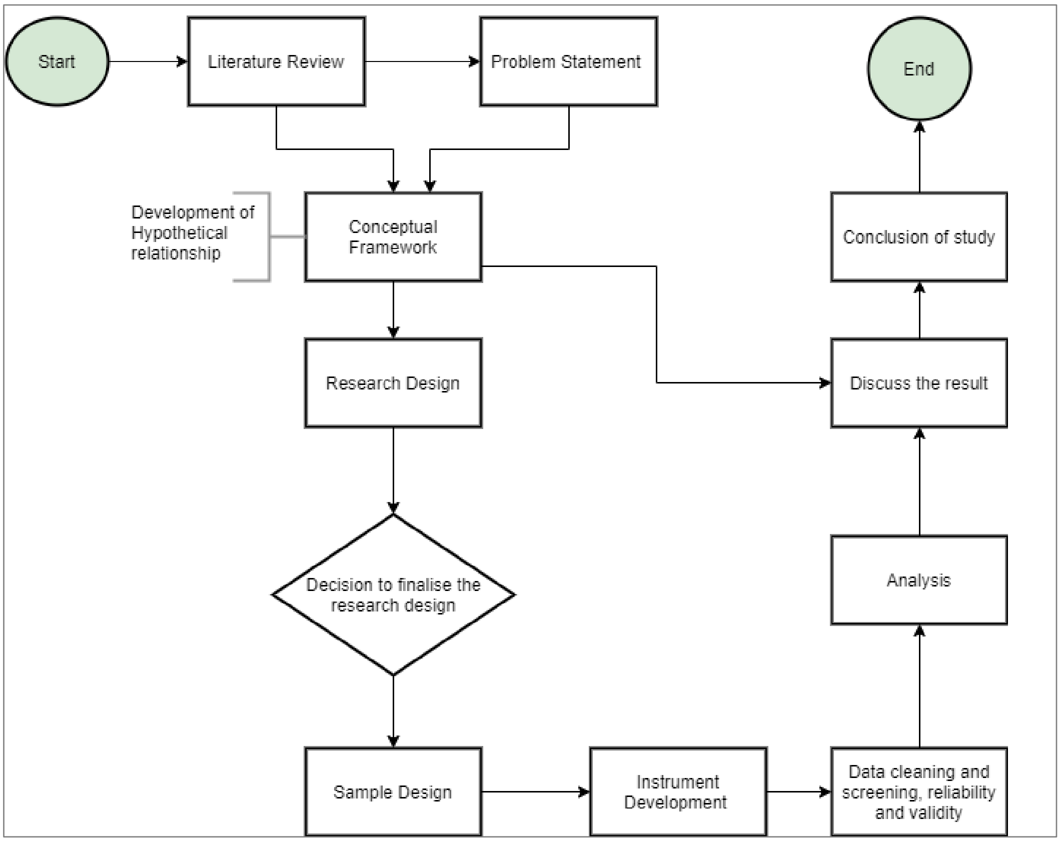

Figure 13: Research Design

3.8. SAMPLING

Following the selection of the most suitable research process, the next step in the research is to make a targeted sample. Before collecting data, it's important to identify the respondents and their information so that all appropriate data for the target can be gathered. It would be excellent to use the entire population, but in most cases, since the population is almost finite, it is not possible to use every subject. In the wearable-based medical insurance concept, a limited population aware of the idea. When just a small number of people have the trait of interest, a judgmental sampling design is used. The data will be collected using a Judgmental sampling approach in the current context of the sample.

The justification for this is that the study's target audience is the public who having or willing to take out a medical insurance policy, and they are divided into demographic categories (age, gender, educational level, organization form, technology use experience, insurance experience and requirements for using), and each group's answer is expected on an equal basis (Delİce, 2001).

It is a statistical approach wherein people are chosen based on their willingness to participate, availability, or accessibility. Furthermore, researchers will choose respondents who are most easily available, regardless of their characteristics or other defined conditions. The sampling process is finished until the sample size exceeds the required sample size.

3.9. INSTRUMENT DEVELOPMENT

A self-administered questionnaire was created to match the study using multiple-item measurement scales from the literature. The instrument consists of ten parts:

1. Perceived ease of use
2. Perceived usefulness
3. Data Accuracy
4. Privacy Concern
5. Attitude towards use
6. Trust towards the insure.
7. Intention to use.
8. Wearable device usage
9. Insurance usage related usage and
10. Demographic information.

3.10. SURVEY DESIGN AND PROCEDURES

An online survey was conducted, which included closed-ended questions as well as demographic data. Participants were sent an invitation letter that included a web link to a short web-based questionnaire that would take about 15 minutes to complete. The purpose and importance of the study were explained in the invitation letter, as well as a request for participation and a promise of data confidentiality. Participants agreed to participate in the survey by clicking the URL for the questionnaire website.

There was a total of six key closed-ended questions relating to the variables, as well as nine closed-ended questions and nine demographic questions. The closed-ended questions were designed to evaluate policyholders'/users' views of the wearable-based premium measurement and their ability to embrace it. Perceived ease of use, perceived usefulness, data accuracy, privacy concerns, trust towards the insurer, attitude toward use, and intention to use were all factors considered. Participants could quit the survey at any time, and their answers were not linked to their names.

3.10.1. PRE-TEST

A pre-test was conducted before the main survey to evaluate the clarity of the questionnaires, the accessibility of the website, and to determine a participation period. A convenience sample of 15 Informatics International Limited colleagues participated in the pre-test. The participants were sent an email encouraging them to take part in the web-based survey, and they were asked to write down any issues or difficulties they had completed. The questionnaire and web-based survey protocol were updated based on the pre-test results and participant recommendations.

3.11. DATA ANALYSIS PROCESS

For this reason, the current study's research is split into two stages: preliminary data analysis and structural equation model assessment. The preliminary data analysis and descriptive statistics are discussed in the first part of this chapter. The outcome in this segment provides an overview of the respondents' knowledge and responses to the questionnaire survey. As a result, the tasks ranging from the pilot study to the primary study were completed using the SPSS 20 edition, which has been endorsed by many academics.

In the next part of the study, the structural equation model was then evaluated to examine the interrelationships between independent and dependent variables that are important to acceptance. To evaluate the theoretical model, structural equation modelling (SEM), also known as path analysis with latent variables, was used.

3.12. ETHICAL CONSIDERATION

The criteria taken into consideration to ensure the highest possible quality of our analysis are stated in the following sections. The terms applicability, accuracy, and reliability are discussed as characteristics that can be used to assess the quality of a study. Also, discuss the ethical issues that had to be discussed when conducting this study.

At this point, can assure you that all the information given by the respondents to this study was confidential. For this study, to expressly agreed not to disclose any details provided by the respondents. Respondents were assured that their information would only be used for research purposes.

According to ethical considerations, the survey creates a consent document that ensures responders that their contribution to the study is voluntary and that they have the freedom to withdraw at any time if they feel it is appropriate. Finally, participants were assured that the researcher would prioritize their confidentiality and data privacy and that protected data would not be exchanged or used with any other person/research.

4. DATA ANALYSIS

In this chapter, different types of primary data collection procedures are discussed, and the validation method of the collected primary data is discussed here. A mixed methodology is used here to confirm the data. The initial part of the chapter contains the techniques we used for the qualitative data gathering methodology. The qualitative data collection contains two main parts: The interview process and the observation result of the Touch method. The next part of the chapter contains the quantitative data gathering techniques used in our developed device and methodology to collect the data. The rest of the part contains a detailed explanation of the gathered data.

Investigation of Results, Data presentation, and analyses involve the presentation of the analyzed data to make convenient the decision. To present the data as information, it is necessary to process those data. In this research, the researcher used "Descriptive Analysis", “Correlation table”, "Model Summary table", "ANOVA table", and "Coefficients table" for presenting data, because it is necessary to perform a better comparison, within the alternative methods of different activities.

To identify the acceptance of the wearable-based premium adjustment model and factors affecting the questionnaire was share with 700 public. As shown in Table 5 the response rate was 42.1%.

Table 5: Tested sample

Public	**Questionnaire copies sent**	**Answered**	**Percentage**
Srilankan citizen	700	294	42.1%

Due to the geographic distribution, a random sampling method was used, and because of geographic distribution, a google form survey was used to collect data. In the first section of the questioner, participants were asked to answer the factors that influenced demographic information, such as gender, age, marital status, monthly income, educational qualifications, and category of job. In the second section, they were asked to identify the medical insurance usage and experience towards the service. In the next section, questioned about the smart wearable-related experiences.

Finally, they were asked to identify the important factors such as perceived ease of use, perceived personal benefits, perception of data accuracy, affordability of the device, privacy concern, trust towards the insured, that they considered the intention of acceptance. Most of those elements in this section were assessed using a five-point weighted Likert scale. (5 = Strongly Agree to 1 = Strongly Disagree)

4.1. NORMALITY ANALYSIS

The normality test determines if the survey data comes from a population with a normal distribution. It was necessary to verify the distribution of variables to be used in the analysis because factor analysis and structural equation modelling both require variables to be normally distributed. The normality of data could be tested by calculating the skewness and kurtosis values for the distribution of latent variable scores. To see if the skewness and kurtosis values were substantially different from the normal distribution, they were each separated by their standard error. (Fidell & Tabachnick, 2003)

The Shapiro–Wilk test, skewness, kurtosis, histogram, box plot, P–P Plot, and mean with SD are some of the most common methods for testing the normality of continuous data. The normality of the data was tested using the skewness and kurtosis tests in this analysis. To analyze this test, using SPSS version 20, and the produced result is attached in Appendix C. According to Medrano et al., (2014), the appropriate range for skewness test values is -2 to 2. The appropriate range for the Kurtosis test is -3 to 3. (Mohd Razali & Bee Wah, 2011) As per the result all the skewness and kurtosis values are within the correct range. The skewness and kurtosis were computed by SPSS 20.0.

4.2. DESCRIPTIVE ANALYSIS

4.2.1. Composition of the sample according to age

According to Figure 14 the data collected from the sample of 294 participants, Analysis of the age group of participants revealed that the majority 215 (73.13%) of them belong to the age group of 25-34 years. There were 26 (8.84%) participants belonging to the age group of 35-44. The 18-24 and 45-64 age groups cover 14.28% (44) of the population and 1.3%(4) participants are over 65 years of age. While seven participants amounting to 2.38% belonged to the less than 18-year age segment.

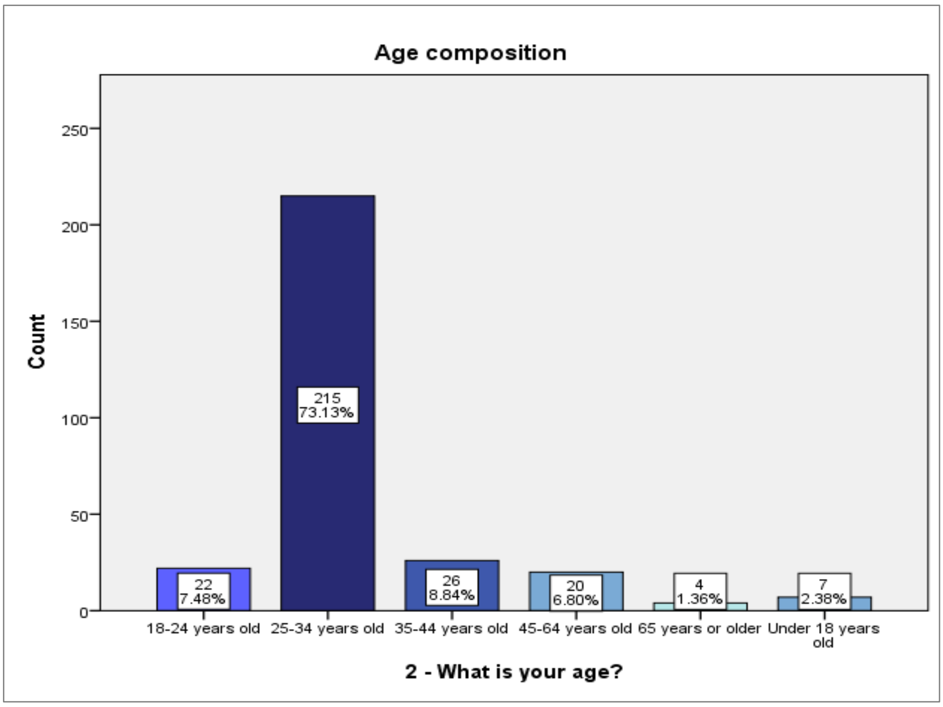

Figure 14 : Age composition

4.2.2. Composition of the sample according to gender.

According to the data collected from the sample following descriptive statistics about the selected sample have been developed. As shown in figure 15, gender analysis among the participants reveals, that the majority of the 207 (70.41%) were males and the rest, 87(29.59%) were females.

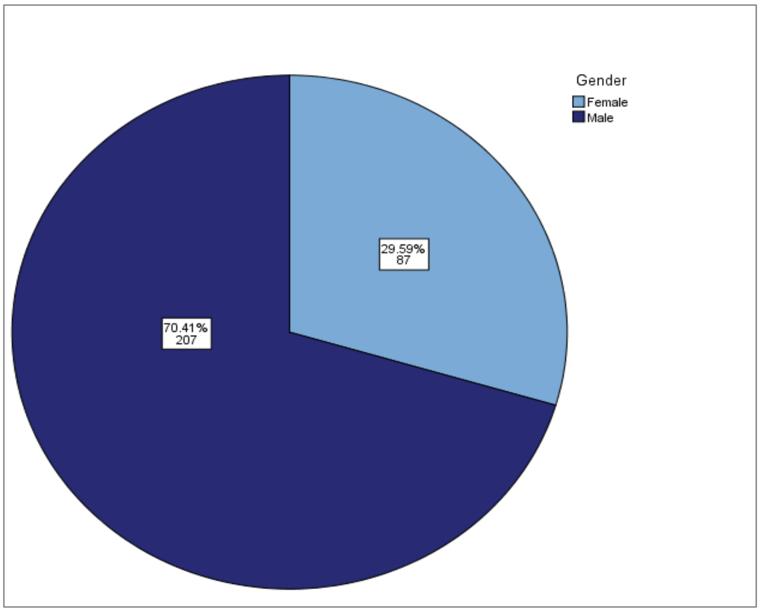

Figure 15: Distribution of gender

4.2.3. Composition of the sample according to the employment status

A breakdown of the employment status of survey participants is shown in Figure 16. It can be seen that. 215 (73.13%) of responders belong to the private. 20 (6.80%) were government employees, 19 (6.46%) were students, another 19 (6.46%) were semi-government employees, 16 (5.44%) were self-employed and 4 (1.36%) unemployed and finally 1 participant was retired.

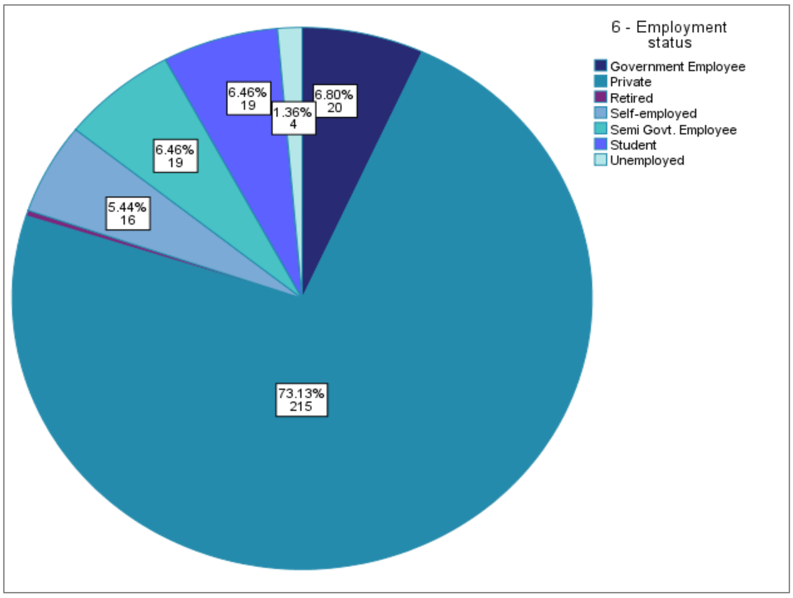

Figure 16: Distribution of employment status

4.2.4. Composition of the sample according to the monthly income.

According to the data sample of 294 participants, the following data relevant to monthly income was collected, and it is given in Figure 17. Analysis of the income level of participants revealed that most of their income is more than 150,000 LKR per month amounting to 125(42.52%).

There were 46(15.65%) participants who earn between 100,000 LKR to 149,999 LKR per month and there were 45(15.31%) participants who earn between 50,000 LKR to 74,999 LKR per month. Following those 45(11.90%) participants earning between 75,000 LKR to 99,000 LKR, 19 (6.46%) participants earning less than 25,000 LKR per month, 17(5.78%) participants earning between 35,000 LKR to 49,999 LKR and 7(2.38%) participants earning between 25,000 LKR to 34,999 LKR.

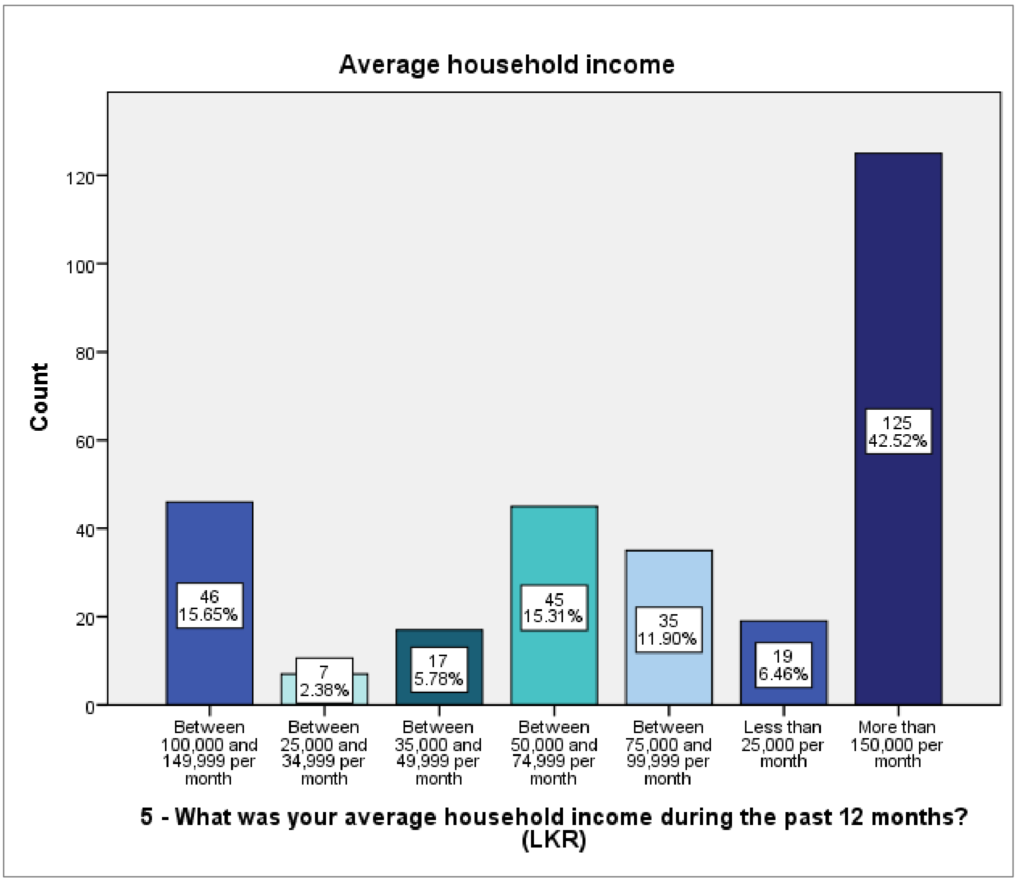

Figure 17: Distribution of average household income

4.2.5. Composition of the sample according to the insurance policyholders

According to Figure 18 Analysis of the insurance policy availability. As per the analysis most of them we are having a medical insurance policy. 60.55% of the participants having a medical insurance policy, and the rest of the 39.45% of the participants not having a medical insurance policy.

Within this 60 (20.41%) of the participants having personally purchased medical policy and 117(39.80%) of them were having company-sponsored policies. 65(22.11%) of the participants not having a medical policy and they do not want to get one. 51(17.35%) of the participants not having a medical insurance policy and would like to evaluate available options and 1 member who have both companies provided and personally purchased policy.

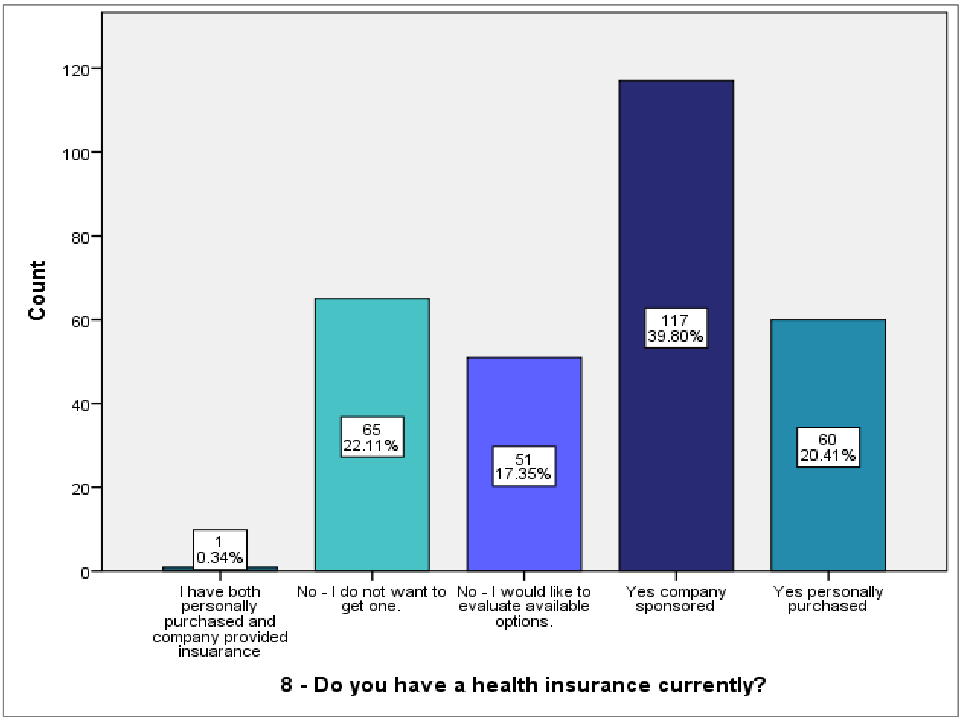

Figure 18: Distribution of insurance policy holders

4.2.6. Composition of the sample according to the customer satisfaction level

The distribution of customer satisfaction of the insurance process is illustrated in Figure 19. 87 participants (48.6%) indicated that their satisfaction level as “Satisfied”. 71 (39.66%) indicated as “Neutral”. 18 responses (10.06%) indicated that the satisfaction level is “Extremely Satisfied”. 2 participants (1.12%) indicated that their satisfaction level is “Dissatisfied” while only one response (0.56%) was received for “Extremely Dissatisfied”.

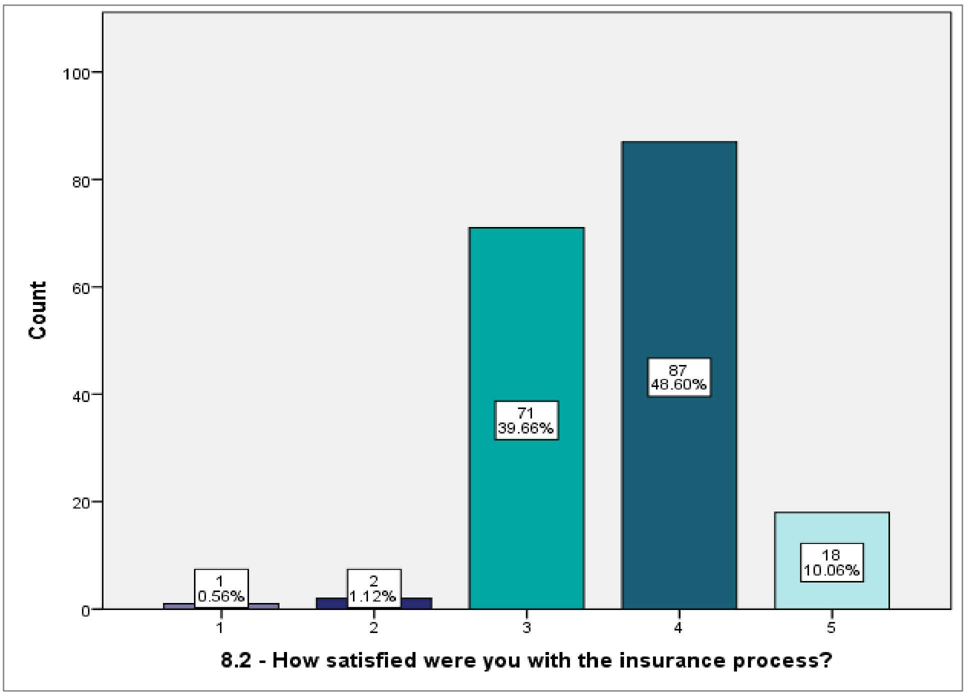

Figure 19: Customer satisfaction level

4.2.7. Composition of the sample according to the insurance policy benefit utilization

Figure 20 shows that most participants did not receive any benefits from their policies. Within 294 participants 179 participants answered for received benefits from their policy. Within that 179 participants, 106 (59.22%) have not received or utilized benefits from their health insurance policies. 73 (40.78%) participants received or utilized their policy benefits. Within the member who received the benefits, 24(30.77%) participants received one time, 25(32.05%) participants received two times, 11(14.10%) participants received 3 times and 18(23.08%) participants received more than 3 times.

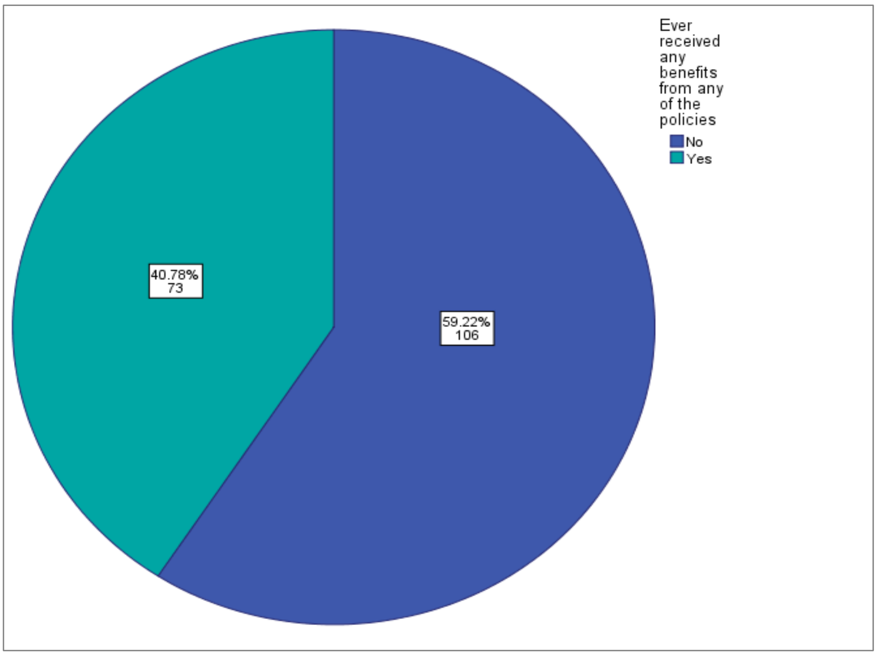

Figure 21: Insurance policy benefit utilizers

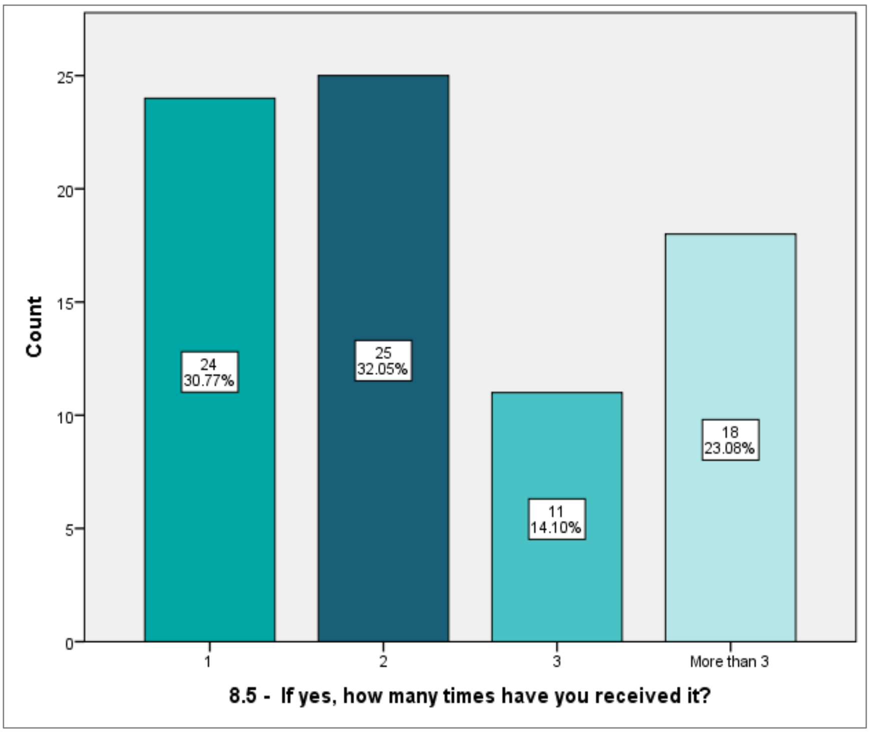

Figure 20: Frequency of the insurance policy benefit utilizers

4.2.8. Composition of the sample according to the smart wearable device usage

According to Figure 22, 55.78% of the participants are not having their own wearable device, and 44.22% of the participants having their own wearable devices.

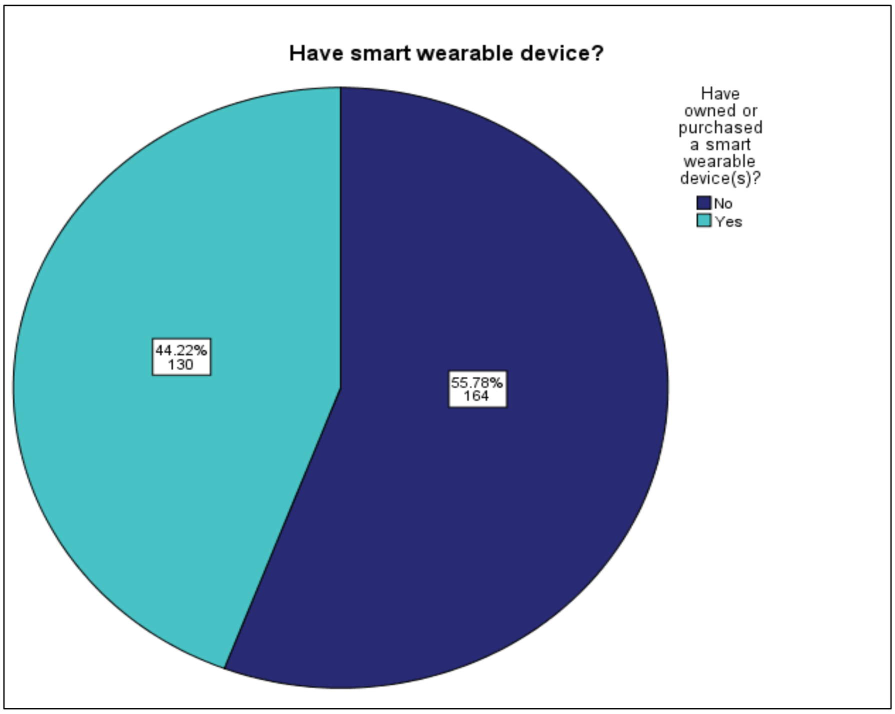

Figure 22: Wearable device usage

4.2.9. Composition of the sample who connect the device with others to share activity.

Figure 23 depicts the distribution device connected with others to share the activity, 97 (74.62%) of the participants out of the total 130, not connected with others to share their activity. 33 (25.38%) of participants sharing their activity with others. Received 16(50%) responses for ‘Compare activity with others’, 9(28.1%) responses for ‘To compete with others’, 13(40.6%) responses for ‘To engage with community’, 17(53.1%) responses for ‘To gain motivation from others’ and finally 1(3.1%) response for ‘Involved in count its program.’

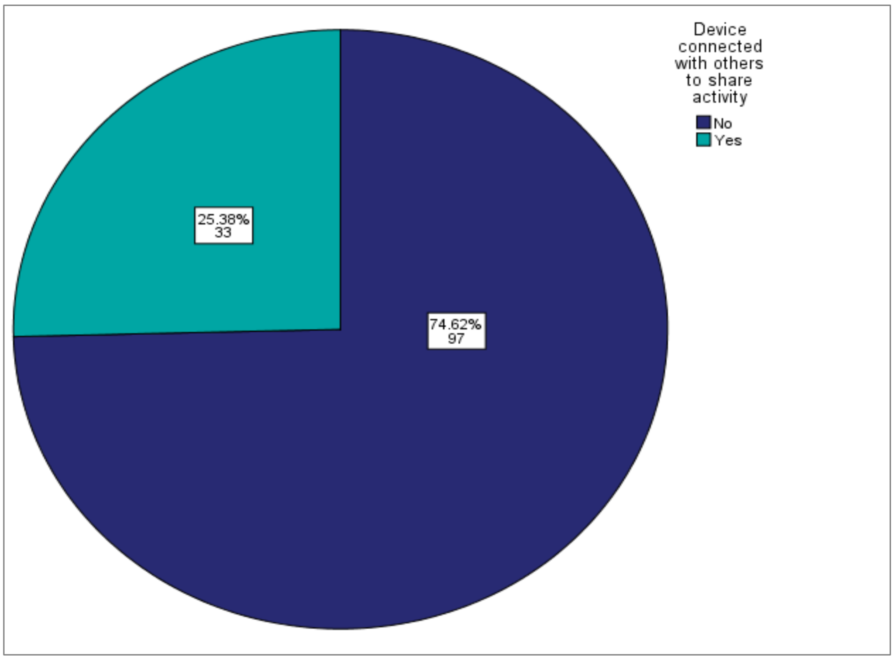

Figure 23: Device connected with others to share activity.

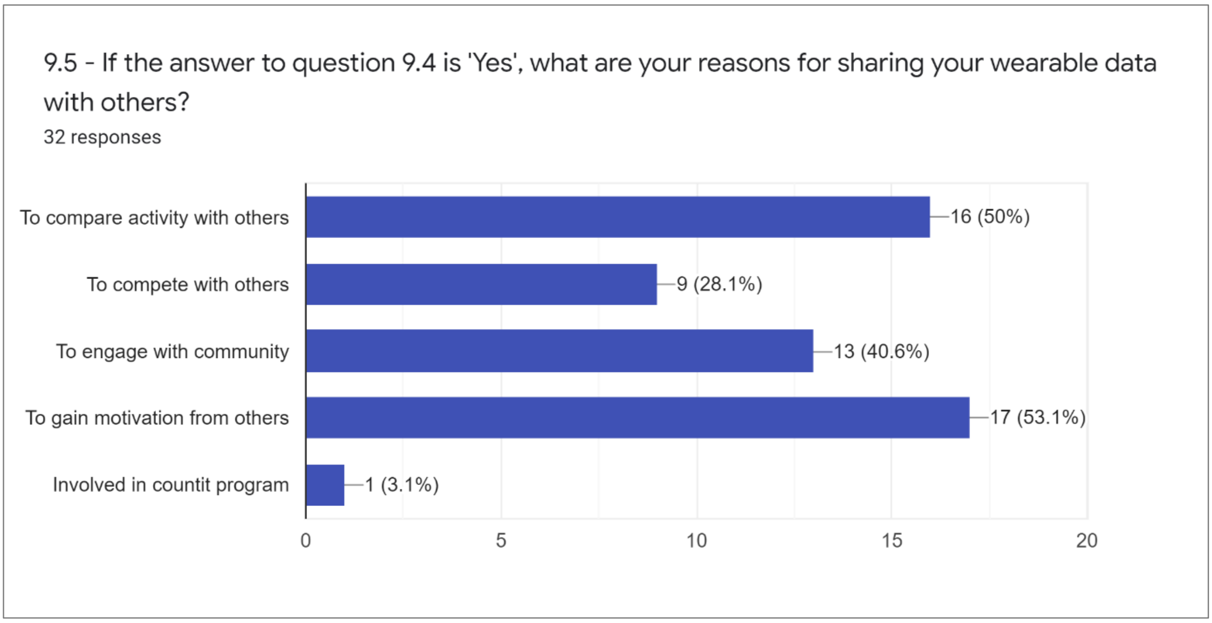

Figure 24: Reason for sharing wearable data with others.

4.2.10. INFERENCE ANALYSIS

The inference analysis provides the relationship between the research problem and the factors impacting the research problem. The marginal analysis conducted to interpret the individual and independent impact from each variable. The main analysis in the section is the hypothesis testing which determines the level of significance of each variable on the dependent variable. Furthermore, the conceptual framework is tested in the inference analysis.

4.2.11. Definitions of variables

Table 6 shows the definitions of variables that are used in the hypothesis testing. The relevant expected signs are given in the table, excluding the dependent variable, which represents the research problem. The type of the variable is given in the description section as categorical or nominal.

Table 6: Definitions of variables

Variable Name	Description	Expected Sign
Perceived ease of use	Ease of Use of the wearable device	Positive
Perceived personal benefits	The usefulness of the wearable base premium calculation	Positive
Perception of data accuracy	Data accuracy of the smart wearable	Positive
Affordability of the device	Affordability to purchase a smart device.	Positive
Privacy concern	Security of the personal data	Positive

Trust towards the insure	Trust toward the insurance service provider	Positive
Intention of acceptance	Acceptance of the wearable based medical insurance premium calculation.	N/A

4.3. DESCRIPTIVE STATISTICS

The dependent variable is relevant to the intention of acceptance is also calculated using answers given to the 5-point Likert scale questions provided and weighted values as follows. For positive questions,

Term	**Value**
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

A series of indicators were used to identify the factors affecting wearable based medical insurance premium calculation acceptance. The research used the survey method to get data from a sample of 294 respondents. Respondents were provided with a standard questionnaire. Answers were analyzed using the quantitative methodology and mainly carried out by using the SPSS analytical method. Statistical analyses such as descriptive and inferential were used, and statistics were included frequency, percentages, means and standard deviation. Appendix B contains further information on the frequency tables.

4.4. PERCEIVED USEFULNESS

For the Perceive usefulness, the mean was 3.75. This value indicates that the respondents agree or strongly agree with the statement. Below table 7 shows the details list. PU1 (74.5%), PU3 (73.1%), and PU7 (74.2%) all had high agreeing or strongly agreeing rates.

Table 7: Frequency of Perceived Usefulness

	N	Mean	Std. Deviation
I believe that a smart wristband would be useful. (PU1)	294	3.88	.757
I think using the smart wristband is a more efficient way to monitor my health than visiting my doctor to collect similar information. (PU2)	294	3.58	.949
Wearing the smart wristband motivated me to be more active. (PU3)	294	3.92	.799
I believe that a smart wristband would make my life more effective. (PU4)	294	3.70	.830
I think using the smart wristband can help me improve my overall health. (PU5)	294	3.76	.867
I believe that a smart wristband would increase my productivity. (PU6)	294	3.66	.894
I consider that a smart wristband is useful for the care of my health. (PU6)	294	3.89	.794

I value the wellness and health-related advice received from the insurance company.	294	3.62	.850
Valid N (listwise) (PU7)	294	3.75	0.842

4.5. PERCEIVED EASE OF USE

For the Perceive ease of use, the mean was 3.786. This value shows that the respondents agree with the statement. Below table 8 shows the details list. PUE1 (78.9%), PEU2 (72.7%), and PUE3 (74.9%) all had high agreeing or strongly agreeing rates.

Table 8: Frequency of Perceived Ease of Use

	N	Mean	Std. Deviation
Health applications on smart wristbands seem easy to learn how to use.	294	4.00	.737
I believe that using a smart wristband would be self-explanatory.	294	3.93	.758
I think the interaction with the smart wristband is clear and understandable.	294	3.95	.726
I find it comfortable to wear the smart wristband all day in order to allow my insurer to track my activities	294	3.40	1.142

Wearing the smart wristband make me uneasy as it reminds me that the insurance company is watching me all the time.	294	3.65	1.097
Valid N (listwise)	294	3.786	0.892

4.6. DATA ACCURACY

For the data accuracy, the mean was 3.62 This value shows that the respondents agree with the statement. Below table 9 shows the details list.

Table 9: Frequency of Data Accuracy

	N	Mean	Std. Deviation
I have concerns about the accuracy of the data captured by the smart wristband.	294	3.81	.787
The technology is too new to be reliable.	294	3.51	.937
I believe that the data recorded by the smart wristband is reliable.	294	3.63	.767
I have concerns about inaccurately captured data will increase my premium. (such as step count not captured)	294	3.73	.865
I have concerns about the accuracy of the assumptions used in the calculation of my premium.	294	3.80	.827
Valid N (listwise)	294	3.69	0.836

4.7. PRIVACY CONCERN

For the privacy concern, the mean was 2.92. This value indicates that respondents were often undecided, but often remained neutral on the statement. Just 73.5 % of PC4 respondents agreed or strongly agreed (APPENDIX B) The information list is seen below in table 10.

Table 10: Frequency of Privacy Concern

	N	Mean	Std. Deviation
I am afraid that the smart wristband would discover a major health issue.	294	3.13	1.071
I am comfortable with my health data being stored on the internet.	294	3.13	1.151
I have no concerns about my privacy while wearing the smart wristband.	294	2.91	1.262
I am concerned about the security of my personal data.	294	4.02	.914
I believe that there can be unforeseen implications like giving my data to third parties.	294	3.86	.935
I am aware that my data will be used in insurers pricing models, but I have no concerns about it if it is unanimous.	294	3.40	1.053
I can trust my health insurance provider.	294	3.23	.909
Valid N (listwise)	294	2.92	1.042

4.8. TRUST TOWARD THE INSURE

For the trust toward the insurer, the mean was 3.29 This value shows that the respondents neutral with the statement. Below table 11 shows the details list.

Table 11: Frequency of Trust Towards the insure

	N	Mean	Std. Deviation
I am aware that my activity will be monitored by the insurance company, but I am using it because it is given to me by the insurer.	294	3.33	.926
I am using it because by wearing it I will get financial benefits from my insurer.	294	3.16	.971
To get a premium discount I have no concerns about sharing my data with the insurer via a smart wristband.	294	3.15	1.012
I have concerns that the insurance company would use the information collected through the smart wristband against me in a claim or at renewal.	294	3.57	.931
I would enrol to PAYL policy scheme as it would reduce my premium, even if the insurance company monitors and handles my personal information.	294	3.27	.966
Valid N (listwise)	294	3.29	0.961

4.9. ATTITUDE TOWARDS USING

For the attitude toward using, the mean was 3.67 This value shows that the respondents agree with the statement. Below table 12 shows the details list.

Table 12: Frequency of Attitude Towards Using

	N	Mean	Std. Deviation
I believe that using a smart wristband would be a positive decision.	294	3.72	.777
I believe that using a smart wristband would be a smart decision to make.	294	3.70	.825
I like the idea of using a smart wristband.	294	3.80	.781
I have a positive attitude towards wearable technology.	294	3.83	.858
I feel more loyal to the insurance company because of the smart wristband and the health and wellness information received from it.	294	3.31	1.013
Valid N (listwise)	294	3.67	0.851

4.10. INTENTION TO USE

For the attitude toward using, the mean was 3.77 This value shows that the respondents agree with the statement. Below table 13 shows the details list.

Table 13: Frequency of Intention to Use

	N	Mean	Std. Deviation
I feel the concept is relevant and worth trying.	294	3.78	.863
Srilankan Medical insurance industry needs such innovations.	294	3.96	.794
PAYL (Wearable device-based medical insurance premium calculation) will lead to better customer satisfaction.	294	3.66	.863
PAYL premium calculation method is better than the traditional method of premium calculation.	294	3.68	.838
If I am given a trial period, I would be more comfortable in obtaining a PAYL policy.	294	3.89	.846
I would prefer to get information about the PAYL policy from an insurance agent.	294	3.65	.937
Valid N (listwise)	294	3.77	0.856

4.11. RELIABILITY ANALYSIS

Cronbach's alpha test, which is commonly used where you have multiple Likert questions in a survey/questionnaire, was used to determine internal accuracy (reliability). (2019, Adetayo) Table 14 of the reliability statistics show the actual importance for Cronbach's alpha, as follows:

Table 14: Reliability statistic table

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.857	.859	7

Cronbach's alpha is 0.857, indicating that this scale has a high level of reliability of internal consistency.

Table 15: Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived ease of use	.701	.830
Perceived personal benefits	.720	.823
Perception of data accuracy	.464	.857
Affordability of the device	.526	.851
Privacy Concerns	.573	.846
Trust towards the insurer	.731	.821
Intention of accepting	.677	.830

Above table 15 presents the value to check if a question deleted from the survey what would happen to the Cronbach's alpha. As per the result all the ''Cronbach's Alpha if Item Deleted'' =< .857, which indicated we would not want to result any of the questions form the survey. In addition to that 'Corrected Item-Total Correlation' also above 0.5 except Perception of data accuracy (0.464) which specify that we do not want to do any removal.

4.12. STRUCTURAL EQUATION MODEL

Structural equation modelling (SEM) is a multivariate method for analysing and assessing multivariate causal relationships that is widely being used in scientific analysis. SEMs differ from most modelling approaches in that they look at both direct and indirect impacts on pre-determined causal interactions. (Fan et al., 2016) Over the last 16 years, ecologists have used SEM to evaluate a variety of hypotheses using multiple variables. SEM can identify the complicated networks of causal relationships that exist in ecosystems. The researcher prefers this approach because it estimates many and interconnected dependencies in a single study. Researchers can use SEM to model multiple-layer relationships between multiple independent and dependent variables at the same time (Gefen et al., 2000). According to Gefen et al., (2000, p. 6), SEM is widely being used to verify measurement items and evaluate the causal relationship between the constructs in well-known information systems journals.

Covariance-based SEM, such as AMOS, LISREL, and EQS, and variance-based or component-based SEM, such as PLS, PLS Graph, are the two major techniques used in SEM analyses. Until analysing the conceptual model, it is critical to stress the importance of using the component-based or variance-based SEM methodology PLS to interpret the results, as well as the explanations for using it.

The following are the reasons for using PLS component-based SEM in this analysis: First, it is widely accepted and applied in recent literature. E.g. Wearable Health Monitoring Technology(Binyamin & Hoque, 2020), Internet (Shiau et al., 2019), Software Engineering Research (Russo & Stol, 2021). The relevance of the current research is the second reason for using PLS.

When the sample size is small, the relationships defined in the research diagram are uncertain, and the accuracy of the predictions made is the most important goal of the study, partial least squares (PLS) is optimal. (Henkel & Endres, 2019) Because of this reason, the selected PLS based SEM to analyse the model. WarpPLS version 7.0 software is used to analyze the approach.

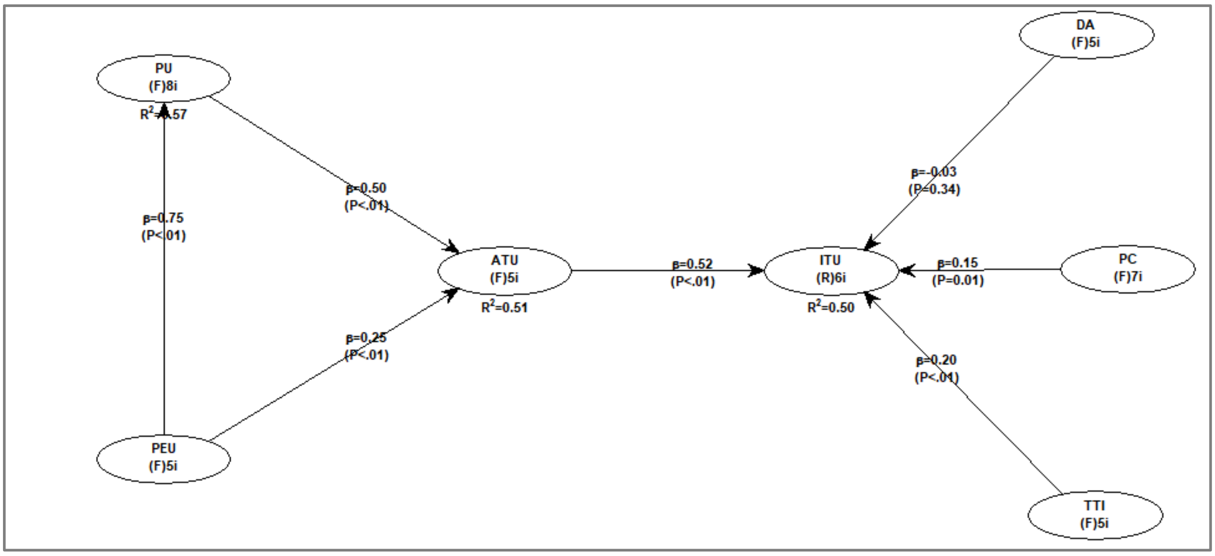

Figure 25: Structural Equation Model

The purpose of the SEM review determines how the model fit and quality indices are interpreted. (Kock, 2020) If the goal is to test hypotheses, model fit, and quality indices are less important. The model fit and consistency indices are a valuable set of measurements related to model quality if the aim is to determine whether one model suits the original data better than another data.

The value of the Goodness of Fit Model can be used to evaluate the structural model (inner model). In the WarpPLS study, there were several steps to see the Goodness of Fit model. Table xx shows the goodness of fit model values. All of the models fit, and quality indices requirements were met, according to Table 16. As a result, the

Goodness of Fit model was satisfied, and the model used in this analysis can be used to evaluate hypotheses. Refer Appendix D for WarpPLS generated result.

Table 16: Model Fit and Quality Indices Results

	Model fit and quality indices	**Criteria Fit**	**Value**
1	Average Path coefficient (APC)	Accepted if $p < 0.05$	0.343
2	Average R-squared (ARS)	Accepted if $p < 0.05$	0.525
3	Average adjusted R-squared	Accepted if $p < 0.05$	0.520
4	Average block VIF (AVIF)	Accepted if ≤ 5	1.764
5	Average full collinearity VIF	Accepted if ≤ 5	2.132
6	Tenenhaus GoF (GoF)	Small > 0.1, Medium > 0.25, Large > 0.36	0.543
7	Symphson's paradox ratio	Accepted if ≥ 0.7	0.857
8	R squared contribution ratio	Accepted if ≥ 0.9	0.995
9	Statistical suppression ratio	Accepted if ≥ 0.7	1.000
10	Nonlinear bivariate causality direction ratio (NLBCDR)	Accepted if ≥ 07	1.000

4.13. HYPOTHESES TESTING

A correlation analysis using a Pearson correlation as well as regression analysis is used to investigate the hypothesis.

Table 17: Summary of Hypotheses

	Hypothesis
H1	Perceived usefulness has a significant positive effect on attitude toward using wearable based premium calculation.
H2a	Perceived ease of use has a significant positive effect on attitude toward using wearable based premium calculation.
H2b	Perceived ease of use has a significant positive effect on perceived usefulness.
H3	Attitude towards using the wearable based premium calculation method has a significant positive effect on the intention to use.
H4	Wearable device's data accuracy has a significant positive effect on the intention to use the wearable base premium calculation.
H5	Policy holder's privacy concern has a significant positive effect on the intention to use the wearable base premium calculation.
H6	Trust towards the insurer has a significant positive effect on the intention to use the wearable base premium calculation.

4.14. CORRELATION ANALYSIS

The correlation sets the relationship between all the variables used in the conceptual framework. This correlation between factors can use for testing the hypothesis for bi-variate relationships. Further regression factor analysis was used for the hypothesis test. It will help to identify how different factors affect the intention of acceptance.

The coefficient values range from +1 to -1, with +1 representing a perfect positive relationship, -1 representing a perfect negative relationship, and 0 representing no relationship. A perfect correlation exists when the value is equal to 1.

I. **High degree:** Correlation is said to be strong when the coefficient value is between 0.50 and 1.
II. **Moderate degree:** A medium correlation is defined as a number that ranges from 0.30 to 0.49.
III. **Low degree:** The correlation is said to be small when the value is less than +.29.
IV. When the value is zero, there is **no correlation.**

4.14.1. Hypothesis Testing 1

H1: Perceived usefulness has a significant positive effect on attitude toward using wearable based premium calculation.

The first hypothesis of this study was that perceived usefulness does have a significant impact on attitude toward using.

H1-: Perceived usefulness has no significant positive effect on attitude toward using wearable based premium calculation.

As the initial process for Hypothesis 1, need to check the correlation between Perceived usefulness and the attitude towards using the wearable based premium calculation, was examined.). According to Table 18 correlation between 'Perceived usefulness' and the 'attitude toward using' has a high degree positive 0.501 relationship. It means perceive usefulness directly and positively effects on the intention of acceptance. As a result, H1 could be sponsored based on the Pearson correlation results.

Table 18: PU & ATU

	Attitude Towards Use		
Perceived usefulness	Path Coefficients	P value	R2
	.501**	<0.001	0.347

4.14.2. Hypothesis 2a & 2b

H2a: Perceived ease of use has a significant positive effect on attitude toward using wearable based premium calculation.

H2a-: Perceived ease of use has no significant positive effect on attitude toward using wearable based premium calculation.

H2b: Perceived ease of use has a significant positive effect on perceived usefulness.

H2b-: Perceived ease of use has no significant positive effect on perceived usefulness.

Secondly, Hypotheses 2a and 2b analysed. Here analysed the correlations between perceived ease of use and attitude toward use as well as perceived ease of use and perceived usefulness, were examined. As per the result, the correlation between perceived ease of use and attitude toward using the wearable device was found as 0.253 a weak correlation. This correlation was statistically significant at the 0.05 level ($p < 0.05$). As a result, H2a may be sponsored based on the Pearson correlation results. A strong positive correlation of 0.753 between perceived ease of use and perceived usefulness was also found, which was important at the 0.05 stage ($p = 0.05$). As a result, based on the Pearson correlation data, H2b may also be sponsored.

Table 19: PEU, ATU & PU

	Attitude Towards Use			Perceived Usefulness		
Perceived Ease of Use	Path Coefficients	P value	R2	Path Coefficients	P value	R2
	0.253	<0.001	0.160	0.753	<0.001	0.567

4.14.3. Hypothesis Testing 3

H3: Attitude towards using the wearable based premium calculation method has a significant positive effect on the intention to use.

H3-: Attitude towards using the wearable based premium calculation method has no significant positive effect on the intention to use.

As the next point, hypothesis 3 is the correlation between 'attitude towards using' and 'intention to use' was examined. The Pearson Correlation test revealed a strong positive correlation of 0.515 between the two dimensions, which was statistically important at the 0.05 stage ($p < 0.05$). The result shows that there is significant evidence of a correlation.

Table 20: ATU & ITU

	Intention to Use		
Attitude Towards Use	Path Coefficients	P value	R2
	.515**	<0.001	0.337

4.14.4. Hypothesis Testing 4

H4: Wearable device's data accuracy has a significant positive effect on the intention to use the wearable base premium calculation.

H4-: Wearable device's data accuracy has no significant positive effect on the intention to use the wearable base premium calculation.

Furthermore, Hypothesis 4 explains the correlation between data accuracy and intention to use was examined. Here the Pearson Correlation test identified a small positive correlation -0.030 and p-value 0.336. As per the result data accuracy and intention to use not have a positive relationship and significant. Based on the result Pearson correlation H4- could be supported.

Table 21: DA & ITU

	Intention to Use		
Data accuracy	Path Coefficients	P value	R2
	-0.030	0.336	-0.008

4.14.5. Hypothesis Testing 5

H5: The policy holder's privacy concern has a significant positive effect on the intention to use the wearable base premium calculation.

H5-: Policy holder's privacy concern has no significant positive effect on the intention to use the wearable base premium calculation.

Subsequently, as per hypothesis 5 privacy concern and intention to use was examined. For the two dimensions, the Pearson correlation test found a poor positive correlation of 0.152. This finding was statistically important at the 0.05 stage ($p < 0.05$), indicating that H5 could be supported based on the Pearson Correlation data.

Table 22: PC & ITU

	Intention to Use		
Privacy Concern	Path Coefficients	P value	R2
	0.152	<0.001	0.071

4.14.6. Hypothesis Testing 6

H6: Trust towards the insurer has a significant positive effect on the intention to use the wearable base premium calculation.

H6-: Trust towards the insurer has no significant positive effect on the intention to use the wearable base premium calculation.

Lastly, Hypothesis 6 was examined and analysed the correlation between trust towards the insure and intention of use. The result of the Pearson Correlation is a low positive correlation of 0.198 that was statistically significant at the 0.05 level ($p = 0.00 < 0.05$) between both dimensions. Based on the results of the Pearson Correlation, H6 could be supported as well.

Table 23: TTI & ITU

	Intention to Use		
Trust towards the insure	Path Coefficients	P value	R2
	0.198	<0.001	0.102

4.15. SUMMARY OF THE HYPOTHESIS TEST

Below table 24 provide the summarized result of the hypothesis test.

Table 24: Summarized hypothesis result

	Path Coefficients	**P value**	**R2**	**Result**
PU → ATU	.501	<0.001	0.347	Accepted (High degree)
PEU → ATU	0.253	<0.001	0.160	Accepted (Low degree)
PEU → PU	0.753	<0.001	0.567	Accepted (High degree)
ATU → ITA	.515	<0.001	0.337	Accepted (High degree)
DA → ITU	-0.030	0.336	-0.008	Rejected
PC → ITU	0.152	<0.001	0.071	Accepted (Low degree)
TTI → ITU	0.198	<0.001	0.102	Accepted (Low degree)

5. DISCUSSION AND CONCLUSION

The research goals outlined in Chapter 1 were the focus of this report. The findings of this study are critically illustrated in the discussion portion. It provides a more detailed study of the hypotheses' acceptance or rejection. This study aimed to figure out why the wearable-based medical insurance premium calculation model was so popular. This study included 294 people from all over Sri Lanka. This allowed the structural model to be tested both with and without the moderating influence of demographic and other variables.

According to previous reports, health insurance insurers in other countries would modify their product strategies and allow consumers to adopt wearable devices because policyholders would be likely to use a wearable device and share data with their health insurance company in return for financial benefits towards healthy behaviours. Other researches have looked at whether wearable technologies are accepted by the general public or by particular audiences such as the elderly, cyclists, or health professionals, and discovered that people use a risk-benefit analysis when deciding whether or not to use them for healthcare.(Soliño-Fernandez et al., 2019)

This research expands on those results by revealing more information about users' decision-making processes and motivations based on the type of wearable-driven business model they use. Even though, to our knowledge, this is the first research to look at individuals' willingness to implement wearable-based health insurance policies in Sri Lanka.

Following the results of the previous chapter, the aim of this chapter is to consider potential justifications for the importance and insignificance of the conceptual model's proposed relationships. The acceptance of the wearable-based medical insurance premium measurement was checked on the selected sample. The research looked at the main aspects of medical insurance, smartwatch use, and acceptance requirements. In the current analysis, variables include perceived usefulness, perceived ease of use, privacy concerns, intention to use, trust towards the insurer, data accuracy, and attitude toward use. To test the impact of the above seven variables on acceptance, hypotheses were established. Six of the seven theories are accepted, according to the conclusions reached after testing them.

According to the hypothesis, users' perceived usefulness and perceived ease of use high positive relationship with the attitude towards using the wearable-based medical insurance calculation model. As per the result that we can consider Sri Lankan users are willing to use the wearable-based insurance premium adjustment based on this business model's usefulness and smartwatch usefulness. However, privacy concerns, trust towards the insure and attitude towards using the wearable device playing a significant acceptance. But these factors are affecting less than the perceived usefulness and perceived ease of use significantly. However, throughout this research, we can conclude that users are not considering much about the data accuracy.

5.1. WHAT DOES THIS MEAN FOR INSURANCE IN THE FUTURE?

While the insurance industry is unlikely to be the driving force behind widespread wearable technology adoption, it is becoming more likely to be a consumer of wearable data, metrics, and observations. Insurers are expected to reach a point where sufficient accurate and reliable wearable data is available for analysis as part of the process of drafting insurance policies, but the challenge is whether they will be able to do it.

What is the most effective method for obtaining this data and information in the future? Through offering wearable-related insurance, some insurers have already acquired direct access to results. These strategies may provide evidence-based risk premium reductions in return for safe behaviour demonstrations, or they may simply provide a negligible reduction because data collection is the primary objective.

Some insurers are expanding their data collection and processing capability and recruiting professionals to study wearable data. It is critical to recognize that those best positioned to successfully use wearable data can be found outside of the traditional insurance industry. Companies that bring new technologies and data management to the insurance market, companies that are more versatile than conventional insurers, think about risk differently, and may even have data and experience in wearables, are more flexible than traditional insurers.

5.2. THEORETICAL CONTRIBUTION

The aim of this study was to use the Technology Acceptance Model to describe user acceptances of wearable-based medical insurance premium calculation (TAM). The basic TAM was designed to look at the factors of perceived usefulness, perceived ease of use, privacy concerns, data accuracy, and trust towards the insurer to understand why anyone might choose to use a technology.

By developing a new research model, the analysis contributes to the theory. This is a new application that is new in the research world. As a result, the TAM has been portrayed in a better perspective, with a stronger focus on the technology's benefits (Perceived usefulness) and ease of use (Perceived Ease of Use) rather than the data quality of its application.

Only two variables, including perceived ease of use and perceived usefulness, were found to be significantly relevant in this study's context, while privacy concern, trust towards the insure, and attitude toward usage had only a minor impact on the acceptance of the technology.

5.3. LIMITATIONS

The answers may have been influenced by a lack of understanding of the concept of the PAYL business model in Sri Lanka. In addition to that IOT based solution in Sri Lanka is in the early stage, because of this it is hard to imagine and understand the concept by both users and insurers.

The demographic composition of the sample may have also influenced the study's findings. The sample was biased by gender, age group, and occupation. The majority of the sample (73.13 %) was restricted to people between the ages of 25 and 34, as well as urban areas in Sri Lanka. Further, most respondents stated that their annual income exceeds Rs 100,000. These factors show that the sample may not accurately represent the population. The sample being young and comparatively high-income earning people from urban areas, may have an impact on the study's outcome.

5.4. RECOMMENDATIONS FOR FUTURE RESEARCH

It is suggested to repeat this study as a longitudinal study since the sample was a little biased. This will help confirm and generalise the research outcome.

The current research was limited to quantitative study that was designed based on the facts obtained from the literature. Due to various socio-economic reasons these factors may not be fully compatible to the Sri Lankan context. Therefore, it is recommended that the perceptions of users on their willingness to adopt wearable devices and the PAYL scheme to be studied qualitatively. This qualitative study should also focus on identifying the factors that may influence in their decision-making.

Because a significant number of respondents (39.8%) use insurance plans provided by their employers, it is recommended that this user group be considered separately and that feedback from both employers and employees be obtained.

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APPENDIX A: QUESTIONNAIRE

Questionnaire on Usage of Wearable Devices and Medical Insurance

1. Please select your gender *
    - Male
    - Female
2. What is your age? *
    - Under 18 years old
    - 18-24 years old
    - 25-34 years old
    - 35-44 years old
    - 45-64 years old
    - 65 years or older
3. Please select your highest academic qualification *
    - Advanced Level (Al/L)
    - Certificated Course
    - Higher Diploma
    - Bachelor's degree
    - Master's degree
    - Doctorate degree
4. What is your marital status? *
    - Single
    - Married
    - Divorced
    - Widowed
5. What was your average household income during the past 12 months? (LKR) *
    - Less than 25,000 per month
    - Between 25,000 and 34,999 per month
    - Between 35,000 and 49,999 per month
    - Between 50,000 and 74,999 per month
    - Between 75,000 and 99,999 per month
    - Between 100,000 and 149,999 per month
    - More than 150,000 per month
6. Employment status *
    - Student
    - Government Employee
    - Semi Govt. Employee
    - Private
    - Self-employed
    - Retired
    - Unemployed
7. Place of residence *
    - Urban
    - Rural
8. Do you have a health insurance currently? *
    - Yes, personally purchased.
    - Yes, company sponsored.
    - No - I do not want to get one.
    - No - I would like to evaluate available options.
    - Other:

Insurance Details -Actual Use

8.1 How long have you been with your insurance? *

- Less than one year
- One to nearly two years
- Two to nearly five years
- Five to nearly ten years
- Ten years or more

8.2 How satisfied were you with the insurance process? *

1	2	3	4	5
○	○	○	○	○

Extremely Dissatisfied Extremely Satisfied

8.3 Have you ever received any incentives from your insurance company on the insurance premiums? *

- Yes
- No

8.4 Have you ever received any benefits from any of the policies you currently have? *

- Yes
- No

8.5 If yes, how many times have you received it?

- 1
- 2
- 3
- More than 3

Wearable Details

9. Have you ever owned or purchased a smart wearable device(s)? *

- Yes
- No

Wearable Details - Actual use

9.1 What was your intention on purchasing a smart wearable device(s)? *

- ☐ Receive alerts and notifications.
- ☐ Monitor workouts.
- ☐ Sport watch functionality (e.g., time of day, stopwatch, etc.)
- ☐ Track states (e.g. Sleep, Heart rate, Resting heart rate)
- ☐ Other:

9.2 How often do you work out? *

- 0 days/week
- 1-2 days/week
- 3-4 days/week
- 5+ days/week

9.3 How useful did you find the information provided by the smart wearable devices (such as step count, sleep data, heart rate) either on the wearable itself, or in the smartphone application? *

1	2	3	4	5
○	○	○	○	○
Very Useful				Not at all useful

9.4 Have you connected your device with others to share your activity? *

- Yes
- No

9.5 If the answer to question 9.4 is 'Yes', what are your reasons for sharing your wearable data with others?

- To compare activity with others
- To compete with others
- To engage with community
- To gain motivation from others
- Other:

Pay As You Live (PAYL) Base Insurance Policy Acceptance

"PAYL" that stands for "pay as you live"; "Pay according to your way of life" ABC private insurance company offers a new service contingent on using a smart wristband and sharing the health data from customer's device with the insurance company. The service consists of tracking daily movements such as heart rate, calories burned, steps walked, blood pressure, and giving insights based on that data. (Location data will not share with the insurance company.)

10 Please answer each of the following questions, regarding ease of use to the policy holder. *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Health applications on smart wristband seem easy to learn how to use.	○	○	○	○	○
I believe that using smart wristband would be self-explanatory.	○	○	○	○	○
I think the interaction with the smart wristband is clear and understandable.	○	○	○	○	○
I find comfortable to wear the smart wristband all day in order to allow my insurer to track my activities	○	○	○	○	○
Wearing the smart wristband make me uneasy as it reminds me that the insurance company is watching me all the time.	○	○	○	○	○

11 Potential benefits for policy holder *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that smart wristband would be useful.	○	○	○	○	○
I think using the smart wristband is a more efficient way to monitor my health than visiting my doctor to collect similar information.	○	○	○	○	○
Wearing the smart wristband motivated me to be more active.	○	○	○	○	○
I believe that smart wristband would make my life more effective.	○	○	○	○	○
I think using the smart wristband can help me improve my overall health.	○	○	○	○	○
I believe that smart wristband would increase my productivity.	○	○	○	○	○
I consider that smart wristband is useful for the care of my health (measuring pulsations, body temperature, and sleep cycles).	○	○	○	○	○
I value the wellness and health related advice received from the insurance company.	○	○	○	○	○

12 Data Accuracy *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I have concerns about the accuracy of the data captured by the smart wristband.	○	○	○	○	○
The technology is too new to be reliable.	○	○	○	○	○
I believe that the data recorded by the smart wristband is reliable.	○	○	○	○	○
I have concerns about inaccurately captured data will increase my premium. (such as step count not captured)	○	○	○	○	○
I have concerns about the accuracy of the assumptions used in the calculation of my premium.	○	○	○	○	○

13 Privacy concerns *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am afraid that the smart wristband would discover a major health issues.	○	○	○	○	○
I am comfortable with my health data being stored on the internet.	○	○	○	○	○

I have no concerns about my privacy while wearing the smart wristband.	○	○	○	○	○
I am concerned about the security of my personal data.	○	○	○	○	○
I believe that there can be unforeseen implications like giving my data to third parties.	○	○	○	○	○
I am aware that my data will be used in insurers pricing models but I have no concerns about it as long as it is unanimous.	○	○	○	○	○
I can trust my health insurance provider.	○	○	○	○	○

14 How well you know your insurer? *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am aware that my activity will be monitored by the insurance company, but I am using it because it is given to me by the insurer.	○	○	○	○	○
I am using it because by wearing it I will get financial benefits from my insurer.	○	○	○	○	○
To get a premium discount I have no concerns about sharing my data with the insurer via a smart wristband.	○	○	○	○	○
I have concerns that the insurance company would use the information collected through the smart wristband against me in a claim or at renewal.	○	○	○	○	○
I would enroll to PAYL policy scheme as it would reduce my premium, even if the insurance company monitors and handles my personal information.	○	○	○	○	○

15 Attitude towards using smart wearable device *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that using a smart wristband would be a positive decision.	○	○	○	○	○
I believe that using a smart wristband would be a smart decision to make.	○	○	○	○	○
I like the idea of using a smart wristband.	○	○	○	○	○
I have a positive attitude towards wearable technology.	○	○	○	○	○
I feel more loyal to the insurance company because of the smart wristband and the health and wellness information received from it.	○	○	○	○	○

Intention to use

16 Health insurance company offered you a smart wristband and shared the health data from your device with the insurance company. The service consists of tracking daily movements such as calories, heart rate, pulse rate, sleep and giving you actionable insights based on that data. Also, the service consists of you receiving an alert if the analysis of the data from your smart watch reveals a pattern related to a disease (e.g. hypertension or diabetes) or a disorder (e.g. anxiety or depression). This way you could go to the doctor in advance and prevent it. Besides, the cost of your health insurance would decrease if you lowered your health risk but not increase if you do not. What would be your thoughts of accepting this policy? *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel the concept is relevant and worth trying.	○	○	○	○	○
Srilankan Medical insurance industry needs such innovations.	○	○	○	○	○
PAYL (Wearable device based medical insurance premium calculation) will lead to better customer satisfaction.	○	○	○	○	○
PAYL premium calculation method is better than the traditional method of premium calculation.	○	○	○	○	○
If I am given a trial period, I would be more comfortable in obtaining an PAYL policy.	○	○	○	○	○
I would prefer to get information about PAYL policy from an insurance agent.	○	○	○	○	○

APPENDIX B: FREQUENCY TABLE

1. PERCEIVED EASE OF USE

PEU 1 - Health applications on smart wristband seem easy to learn how to use.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.7	.7	.7
	Disagree	4	1.4	1.4	2.0
	Neutral	56	19.0	19.0	21.1
	Agree	163	55.4	55.4	76.5
	Strongly Agree	69	23.5	23.5	100.0
	Total	294	100.0	100.0	

PEU2 - I believe that using smart wristband would be self-explanatory.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	8	2.7	2.7	2.7
	Neutral	72	24.5	24.5	27.2
	Agree	148	50.3	50.3	77.6
	Strongly Agree	66	22.4	22.4	100.0
	Total	294	100.0	100.0	

PEU3 - I think the interaction with the smart wristband is clear and understandable.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.3	.3	.3
	Disagree	3	1.0	1.0	1.4
	Neutral	70	23.8	23.8	25.2
	Agree	156	53.1	53.1	78.2
	Strongly Agree	64	21.8	21.8	100.0
	Total	294	100.0	100.0	

PEU4 - I find comfortable to wear the smart wristband all day in order to allow my insurer to track my activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	7.5	7.5	7.5
	Disagree	37	12.6	12.6	20.1
	Neutral	90	30.6	30.6	50.7
	Agree	92	31.3	31.3	82.0
	Strongly Agree	53	18.0	18.0	100.0
	Total	294	100.0	100.0	

PEU5 - Wearing the smart wristband make me uneasy as it reminds me that the insurance company is watching me all the time.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	4.1	4.1	4.1
	Disagree	29	9.9	9.9	13.9
	Neutral	87	29.6	29.6	43.5
	Agree	88	29.9	29.9	73.5
	Strongly Agree	78	26.5	26.5	100.0
	Total	294	100.0	100.0	

02. PERCEIVED USEFULNESS

PU1 - I believe that smart wristband would be useful.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.4	1.4	1.4
	Disagree	4	1.4	1.4	2.7
	Neutral	67	22.8	22.8	25.5
	Agree	166	56.5	56.5	82.0
	Strongly Agree	53	18.0	18.0	100.0
	Total	294	100.0	100.0	

PU2 - I think using the smart wristband is a more efficient way to monitor my health than visiting my doctor to collect similar information.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	2.7	2.7	2.7
	Disagree	29	9.9	9.9	12.6
	Neutral	85	28.9	28.9	41.5
	Agree	129	43.9	43.9	85.4
	Strongly Agree	43	14.6	14.6	100.0
	Total	294	100.0	100.0	

PU3 - Wearing the smart wristband motivated me to be more active.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	1.0	1.0	1.0
	Disagree	6	2.0	2.0	3.1
	Neutral	70	23.8	23.8	26.9
	Agree	147	50.0	50.0	76.9
	Strongly Agree	68	23.1	23.1	100.0
	Total	294	100.0	100.0	

PU4 - I believe that smart wristband would make my life more effective.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.4	1.4	1.4
	Disagree	11	3.7	3.7	5.1
	Neutral	101	34.4	34.4	39.5
	Agree	131	44.6	44.6	84.0
	Strongly Agree	47	16.0	16.0	100.0
	Total	294	100.0	100.0	

PU5 - I think using the smart wristband can help me improve my overall health.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.0	2.0	2.0
	Disagree	14	4.8	4.8	6.8
	Neutral	77	26.2	26.2	33.0
	Agree	146	49.7	49.7	82.7
	Strongly Agree	51	17.3	17.3	100.0
	Total	294	100.0	100.0	

PU6 - I believe that smart wristband would increase my productivity.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	7	2.4	2.4	2.4
	Disagree	15	5.1	5.1	7.5
	Neutral	98	33.3	33.3	40.8

		Frequency	Percent	Valid Percent	Cumulative Percent
	Agree	126	42.9	42.9	83.7
	Strongly Agree	48	16.3	16.3	100.0
	Total	294	100.0	100.0	

PU7 - I consider that smart wristband is useful for the care of my health (measuring pulsations, body temperature, and sleep cycles).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.4	1.4	1.4
	Disagree	7	2.4	2.4	3.7
	Neutral	65	22.1	22.1	25.9
	Agree	159	54.1	54.1	79.9
	Strongly Agree	59	20.1	20.1	100.0
	Total	294	100.0	100.0	

PU8 - I value the wellness and health related advice received from the insurance company.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.4	1.4	1.4
	Disagree	18	6.1	6.1	7.5
	Neutral	106	36.1	36.1	43.5
	Agree	125	42.5	42.5	86.1
	Strongly Agree	41	13.9	13.9	100.0
	Total	294	100.0	100.0	

03. DATA ACCURACY

DA1 - I have concerns about the accuracy of the data captured by the smart wristband.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.7	.7	.7
	Disagree	12	4.1	4.1	4.8
	Neutral	76	25.9	25.9	30.6
	Agree	154	52.4	52.4	83.0
	Strongly Agree	50	17.0	17.0	100.0
	Total	294	100.0	100.0	

DA2 - The technology is too new to be reliable.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	1.7	1.7	1.7
	Disagree	38	12.9	12.9	14.6
	Neutral	92	31.3	31.3	45.9
	Agree	120	40.8	40.8	86.7
	Strongly Agree	39	13.3	13.3	100.0
	Total	294	100.0	100.0	

DA3 - I believe that the data recorded by the smart wristband is reliable.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	1.0	1.0	1.0
	Disagree	13	4.4	4.4	5.4
	Neutral	103	35.0	35.0	40.5
	Agree	145	49.3	49.3	89.8
	Strongly Agree	30	10.2	10.2	100.0
	Total	294	100.0	100.0	

DA4 -I have concerns about inaccurately captured data will increase my premium. (such as step count not captured)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	21	7.1	7.1	7.1
	Neutral	96	32.7	32.7	39.8

	Agree	117	39.8	39.8	79.6
	Strongly Agree	60	20.4	20.4	100.0
	Total	294	100.0	100.0	

DA5 - I have concerns about the accuracy of the assumptions used in the calculation of my premium.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.3	.3	.3
	Disagree	12	4.1	4.1	4.4
	Neutral	93	31.6	31.6	36.1
	Agree	126	42.9	42.9	78.9
	Strongly Agree	62	21.1	21.1	100.0
	Total	294	100.0	100.0	

<u>04. PRIVACY CONCERN</u>

PC1 - I am afraid that the smart wristband would discover a major health issues.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	5.8	5.8	5.8
	Disagree	70	23.8	23.8	29.6
	Neutral	94	32.0	32.0	61.6
	Agree	83	28.2	28.2	89.8
	Strongly Agree	30	10.2	10.2	100.0
	Total	294	100.0	100.0	

PC2 - I am comfortable with my health data being stored on the internet.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	34	11.6	11.6	11.6
	Disagree	51	17.3	17.3	28.9
	Neutral	78	26.5	26.5	55.4
	Agree	106	36.1	36.1	91.5
	Strongly Agree	25	8.5	8.5	100.0
	Total	294	100.0	100.0	

PC3 - I have no concerns about my privacy while wearing the smart wristband.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	54	18.4	18.4	18.4
	Disagree	56	19.0	19.0	37.4
	Neutral	74	25.2	25.2	62.6
	Agree	81	27.6	27.6	90.1
	Strongly Agree	29	9.9	9.9	100.0
	Total	294	100.0	100.0	

PC4 - I am concerned about the security of my personal data.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	1.0	1.0	1.0
	Disagree	13	4.4	4.4	5.4
	Neutral	62	21.1	21.1	26.5
	Agree	112	38.1	38.1	64.6
	Strongly Agree	104	35.4	35.4	100.0
	Total	294	100.0	100.0	

PC5 - I believe that there can be unforeseen implications like giving my data to third parties.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	2.7	2.7	2.7
	Disagree	12	4.1	4.1	6.8
	Neutral	68	23.1	23.1	29.9
	Agree	132	44.9	44.9	74.8
	Strongly Agree	74	25.2	25.2	100.0
	Total	294	100.0	100.0	

PC6 - I am aware that my data will be used in insurers pricing models but I have no concerns about it as long as it is unanimous.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	5.8	5.8	5.8
	Disagree	36	12.2	12.2	18.0
	Neutral	92	31.3	31.3	49.3
	Agree	109	37.1	37.1	86.4
	Strongly Agree	40	13.6	13.6	100.0
	Total	294	100.0	100.0	

PC7 - I can trust my health insurance provider.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	15	5.1	5.1	5.1
	Disagree	32	10.9	10.9	16.0
	Neutral	135	45.9	45.9	61.9
	Agree	94	32.0	32.0	93.9
	Strongly Agree	18	6.1	6.1	100.0
	Total	294	100.0	100.0	

05. TRUST TOWARDS THE INSURE

TTI1 - I am aware that my activity will be monitored by the insurance company, but I am using it because it is given to me by the insurer.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	15	5.1	5.1	5.1
	Disagree	31	10.5	10.5	15.6
	Neutral	106	36.1	36.1	51.7
	Agree	125	42.5	42.5	94.2
	Strongly Agree	17	5.8	5.8	100.0
	Total	294	100.0	100.0	

TTI2 - I am using it because by wearing it I will get financial benefits from my insurer.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	6.5	6.5	6.5
	Disagree	44	15.0	15.0	21.4
	Neutral	118	40.1	40.1	61.6
	Agree	96	32.7	32.7	94.2
	Strongly Agree	17	5.8	5.8	100.0
	Total	294	100.0	100.0	

TTI3 - To get a premium discount I have no concerns about sharing my data with the insurer via a smart wristband.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	8.8	8.8	8.8

		Frequency	Percent	Valid Percent	Cumulative Percent
	Disagree	38	12.9	12.9	21.8
	Neutral	110	37.4	37.4	59.2
	Agree	105	35.7	35.7	94.9
	Strongly Agree	15	5.1	5.1	100.0
	Total	294	100.0	100.0	

TTI4 - I have concerns that the insurance company would use the information collected through the smart wristband against me in a claim or at renewal.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	3.4	3.4	3.4
	Disagree	18	6.1	6.1	9.5
	Neutral	102	34.7	34.7	44.2
	Agree	121	41.2	41.2	85.4
	Strongly Agree	43	14.6	14.6	100.0
	Total	294	100.0	100.0	

TTI5 - I would enroll to PAYL policy scheme as it would reduce my premium, even if the insurance company monitors and handles my personal information.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	20	6.8	6.8	6.8
	Disagree	27	9.2	9.2	16.0
	Neutral	123	41.8	41.8	57.8
	Agree	103	35.0	35.0	92.9
	Strongly Agree	21	7.1	7.1	100.0
	Total	294	100.0	100.0	

06. ATTITUDE TOWARD USING

ATU1 -I believe that using a smart wristband would be a positive decision.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	1.7	1.7	1.7
	Disagree	10	3.4	3.4	5.1
	Neutral	80	27.2	27.2	32.3
	Agree	165	56.1	56.1	88.4
	Strongly Agree	34	11.6	11.6	100.0
	Total	294	100.0	100.0	

ATU2 -I believe that using a smart wristband would be a smart decision to make.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	1.7	1.7	1.7
	Disagree	16	5.4	5.4	7.1
	Neutral	79	26.9	26.9	34.0
	Agree	156	53.1	53.1	87.1
	Strongly Agree	38	12.9	12.9	100.0
	Total	294	100.0	100.0	

ATU3 - I like the idea of using a smart wristband.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.4	1.4	1.4
	Disagree	8	2.7	2.7	4.1
	Neutral	76	25.9	25.9	29.9
	Agree	160	54.4	54.4	84.4
	Strongly Agree	46	15.6	15.6	100.0
	Total	294	100.0	100.0	

ATU4 - I have a positive attitude towards wearable technology.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	1.7	1.7	1.7
	Disagree	11	3.7	3.7	5.4
	Neutral	74	25.2	25.2	30.6
	Agree	143	48.6	48.6	79.3
	Strongly Agree	61	20.7	20.7	100.0
	Total	294	100.0	100.0	

ATU5 - I feel more loyal to the insurance company because of the smart wristband and the health and wellness information received from it.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	5.8	5.8	5.8
	Disagree	37	12.6	12.6	18.4
	Neutral	109	37.1	37.1	55.4
	Agree	100	34.0	34.0	89.5
	Strongly Agree	31	10.5	10.5	100.0
	Total	294	100.0	100.0	

07. INTENTION TO ACCEPT

ITA1 - I feel the concept is relevant and worth trying.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	1.0	1.0	1.0
	Disagree	20	6.8	6.8	7.8
	Neutral	70	23.8	23.8	31.6
	Agree	146	49.7	49.7	81.3
	Strongly Agree	55	18.7	18.7	100.0
	Total	294	100.0	100.0	

ITA2 - Srilankan Medical insurance industry needs such innovations.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	10	3.4	3.4	3.4
	Neutral	68	23.1	23.1	26.5
	Agree	139	47.3	47.3	73.8
	Strongly Agree	77	26.2	26.2	100.0
	Total	294	100.0	100.0	

ITA3 - PAYL (Wearable device based medical insurance premium calculation) will lead to better customer satisfaction.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	2.7	2.7	2.7
	Disagree	9	3.1	3.1	5.8
	Neutral	102	34.7	34.7	40.5
	Agree	132	44.9	44.9	85.4
	Strongly Agree	43	14.6	14.6	100.0
	Total	294	100.0	100.0	

ITA4 - PAYL premium calculation method is better than the traditional method of premium calculation.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	1.0	1.0	1.0
	Disagree	13	4.4	4.4	5.4
	Neutral	107	36.4	36.4	41.8
	Agree	122	41.5	41.5	83.3
	Strongly Agree	49	16.7	16.7	100.0

		Frequency	Percent	Valid Percent	Cumulative Percent
	Total	294	100.0	100.0	

ITA5 - If I am given a trial period, I would be more comfortable in obtaining an PAYL policy.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	1.0	1.0	1.0
	Disagree	10	3.4	3.4	4.4
	Neutral	74	25.2	25.2	29.6
	Agree	135	45.9	45.9	75.5
	Strongly Agree	72	24.5	24.5	100.0
	Total	294	100.0	100.0	

ITA6 - I would prefer to get information about PAYL policy from an insurance agent.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	4.1	4.1	4.1
	Disagree	11	3.7	3.7	7.8
	Neutral	94	32.0	32.0	39.8
	Agree	129	43.9	43.9	83.7
	Strongly Agree	48	16.3	16.3	100.0
	Total	294	100.0	100.0	

APPENDIX C: DESCRIPTIVE STATISTICS

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
PEU1	294	4.00	.737	-.614	.142	1.110	.283
PEU2	294	3.93	.758	-.253	.142	-.385	.283
PEU3	294	3.95	.726	-.300	.142	.160	.283
PEU4	294	3.40	1.142	-.397	.142	-.511	.283
PEU5	294	3.65	1.097	-.472	.142	-.432	.283
PU1	294	3.88	.757	-.753	.142	1.738	.283
PU2	294	3.58	.949	-.540	.142	.077	.283
PU3	294	3.92	.799	-.585	.142	.749	.283
PU4	294	3.70	.830	-.367	.142	.382	.283
PU5	294	3.76	.867	-.705	.142	.828	.283
PU6	294	3.66	.894	-.507	.142	.444	.283
PU7	294	3.89	.794	-.752	.142	1.354	.283
PU8	294	3.62	.850	-.316	.142	.165	.283
DA1	294	3.81	.787	-.497	.142	.485	.283
DA2	294	3.51	.937	-.330	.142	-.318	.283
DA3	294	3.63	.767	-.408	.142	.599	.283
DA4	294	3.73	.865	-.127	.142	-.715	.283
DA5	294	3.80	.827	-.201	.142	-.394	.283
PC1	294	3.13	1.071	-.049	.142	-.701	.283
PC2	294	3.13	1.151	-.370	.142	-.757	.283
PC3	294	2.91	1.262	-.095	.142	-1.075	.283
PC4	294	4.02	.914	-.722	.142	.119	.283
PC5	294	3.86	.935	-.822	.142	.797	.283
PC6	294	3.40	1.053	-.462	.142	-.242	.283
PC7	294	3.23	.909	-.392	.142	.305	.283
TTI1	294	3.33	.926	-.658	.142	.282	.283
TTI2	294	3.16	.971	-.378	.142	-.140	.283
TTI3	294	3.15	1.012	-.530	.142	-.194	.283
TTI4	294	3.57	.931	-.540	.142	.416	.283
TTI5	294	3.27	.966	-.530	.142	.239	.283
ATU1	294	.777	-.799	.142	1.538	.283	.283
ATU2	294	.048	.825	-.714	.142	.933	.283
ATU3	294	.046	.781	-.679	.142	1.262	.283
ATU4	294	.050	.858	-.679	.142	.792	.283
ATU5	294	.059	1.013	-.373	.142	-.158	.283
ITA1	294	.050	.863	-.592	.142	.296	.283
ITA2	294	.046	.794	-.345	.142	-.434	.283
ITA3	294	.050	.863	-.588	.142	.904	.283
ITA4	294	.049	.838	-.226	.142	.024	.283
ITA5	294	.049	.846	-.546	.142	.330	.283
ITA6	294	.055	.937	-.719	.142	.806	.283
Valid N (listwise)	294						

APPENDIX D: WARPPLS RESULT

Model fit and quality indices

Average path coefficient (APC)=0.343, P<0.001
Average R-squared (ARS)=0.525, P<0.001
Average adjusted R-squared (AARS)=0.520, P<0.001
Average block VIF (AVIF)=1.764, acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)=2.132, acceptable if <= 5, ideally <= 3.3
Tenenhaus GoF (GoF)=0.543, small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)=0.857, acceptable if >= 0.7, ideally = 1
R-squared contribution ratio (RSCR)=0.995, acceptable if >= 0.9, ideally = 1
Statistical suppression ratio (SSR)=1.000, acceptable if >= 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if >= 0.7

Path coefficients

	PU	PEU	ATU	ITU	DA	PC	TTI
PU		0.753					
PEU							
ATU	0.501	0.253					
ITU			0.515		-0.030	0.152	0.198
DA							
PC							
TTI							

P values

	PU	PEU	ATU	ITU	DA	PC	TTI
PU		<0.001					
PEU							
ATU	<0.001	<0.001					
ITU			<0.001		0.336	0.015	0.002
DA							
PC							
TTI							

	PU	PEU	ATU	ITU	DA	PC	TTI
PU		0.567					
PEU							
ATU	0.347	0.160					
ITU			0.337		-0.008	0.071	0.102
DA							
PC							
TTI							

Figure 26: Causality assessment coefficients: View R-squared contributions