A Study on the Impact of Employee Perception on the Success of IT Startups

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DECLARATION

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The above candidate has carried out research for the Masters thesis under my supervision.

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(Co-supervisor Name) Date

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ABSTRACT

Setting up and running new IT based businesses become more challenging and frustrating for entrepreneurs, investors and employees because of the instability of internal and external environments. Not like well- established organizations, usually the stakeholders of startups share a different state of risk factors among them. This study demonstrates how the perception of employees impacts on success of startups. Eight constructs (Confidence and trust in the owner or partners (CTOP), Confidence and trust in the organisation (CTO), Interest in the employees' future (IEF), Fare remuneration and benefits (FRB), Actively seeking employees' ideas and opinions (ASIO), Communicating information and needs in the organisation (CINO), Train employees to solve problems (TESP), Recognising employees' involvement and accomplishments (REIA)) have been used to derive the perceived value of employees. Four constructs (Growth, Profitability, Investment on R&D, Customers Satisfaction) are used to measure the success of IT startups.

The main hypothesis of this model is proven in this research study in which perception of employees is positively related to success of IT startups. Some factors such that Confidence and trust in the owner or partners (CTOP), Confidence and trust in the organisation (CTO), Interest in the employees' future (IEF) and Interest in the employees' future (IEF) have respectively higher correlation to the perception of employees in IT startups. Similarly profitability (PRO) and growth (GR) indicates a higher correlation to determine the success of startups.

The main constructs identified in this research has correlated to its related constructs while below attributes has been statistically proven that has no correlation to its related constructs these are; CINO_AI (Access to the org Information), FRB_IB (Incentives/ Bonuses), CTOP_DE (Determination of owner), CTOP_E (Experience of owner), CTOP_SS (Social skills-networking with the targeted audience), SIO_JI (Job involvement) and CTOP_SK(Skill and knowledge of owner).

Keywords: Perception of Employees, Success of IT startups, Confidence and trust in the owner or partners (CTOP), Profitability (PRO) and Growth (GR), Partial Least Squares (PLS)

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LIST OF ABBREVIATIONS

ASIO	Actively seeking employees' ideas and opinions
AVE	Average Variance Extracted
B4B	Business for Business
CA	Cronbach's Alpha
CINO	Communicating information and needs in the organisation
CR	Composite reliability
CTO	Confidence and trust in the organisation
CTOP	Confidence and trust in the owner or partners
CUS	Customer Satisfaction
EPS	Employee Perception Scale
FRB	Fare remuneration and benefits
FDI	foreign direct investment
GDP	Gross Domestic Product
GR	Growth
IEF	Interest in the employees' future
IPM	Integrated Performance Measurement
IT	Information Technology
LV	Latent variable
MV	Manifest variable
OLS	Ordinary least squares
PLS	Partial least squares
PRO	Profitability
REIA	Recognising employees' involvement and accomplishments
R&D	Research and development
ROA	Return on assets
SMEs	Small Medium Enterprises
SLASSCOM	Sri Lanka Association of Software and Service Companies
SITS	Success of IT startup

SEM	Structural Equation Modeling
TESP	Teaching employees to solve problems

1. INTRODUCTION

1.1. Background

The term “Startup” gives the sense of initiation. Even if a creative and novel business solution helps to set up a startup, the existence and growth of the business defines the success of itself. No startup can be built up stand-alone without having any collaboration and enormous determination. In this context, employees play a crucial role by sharing the hardship and knowledge of the startup.

Startups can be formulated by gathering 2 or 3 people or more, so as to acquaint innovative products or services to customers in return of profit. These new business ventures are more challenging and frustrating for entrepreneurs because of the instability of internal or external environment and other factors such as entrepreneurial behavior and economy [Hazudin et al.,2015]. Most actions and events in startups consist of higher risks with possible losses and unexpected causes and events. Similarly the employees who are working at startups are supposed to share the risk, as they are expected to be committed more than the due care and responsibilities that usual employees are binding with. Hence most of the functions at startups can be identified as inconsistent and unpredictable for employees as well as the entrepreneur. They all usually have to go beyond the limits in order to achieve the targets that they are entitled for.

Many researchers claim that employee attitude is changed based on his perception towards the organizational values [Krishna et al., 2016], and the person’s attitude performs a great role for the success of the company [Prottas, D. J., 2013]. In the context of a startup, as human behaviour is continuously changing according to the level of expectations, beliefs and attitudes, employers/owners of a startup cannot always be expected the same level of commitment from their subordinates.

1.1.1. Motivation

Compared to other startups, the survival rate of technology startups is the lowest among new ventures in general [Nilsen, G. T. (2015)]. This failure occurs due to many reasons such as lack of customer and market identification, not being proactive at the phases of product & company growth, lack of learning and iteration (experience), entrepreneurial behaviour, perceived government & non-government support, leadership, no difference on product, failing to plan, not learning from mistakes, poor managements, capital shortfalls and not being customer centric etc. [Achchuthan and Kandaiya,2014], [Hazudin et al.,2015] [Krishna et al., 2016] [Nilsen, G. T. (2015)]. None of them has focused on the role of employee and how their perception matters for driving the startup.

With respect to large and well-established organizations, Kurtessis (2017) studies on the theory of perceived Organizational Support, which elaborates employee perception is dependable on the perceived value of the organization and whatever the success factor implemented within the firm will be dependable on the perceived value by the employees or the partners who are involved in the process. However, the internal environment of such large companies differ from IT startups on factors such as the number of employees (mostly less than 30), risk factors, years of operation, management and skill and knowledge, which play a critical role in the business operations. Therefore, it is not proven whether Kurtessis's (2017) theory would equally apply on IT start-ups.

1.1.2. Research Scope

With the emerging trends in IT solutions globally, Sri Lanka has had opportunities to grow in the IT Industry where by giving low cost technical expertise and new IT product developments to the global market. As a country Sri Lanka itself is not strengthened with credibility or size of market or utilization, startups should be wise enough to target the sufficient market in order to gain the target profit.

This research mainly focuses on the perception of employees in IT, product, consultancy or service based new ventures, and the overall success of the start-up. In this research, measurement of employee perception within IT startups is narrowed down to the most significant areas as defined by Kurtessis (2017) : confidence and trust in the owner or partners (CTOP), confidence and trust in the organisation (CTO), Interest in the employees' future (IEF), Fare remuneration and benefits (FRB), Actively seeking employees' ideas and opinions (ASIO), Communicating information and needs in the organisation (CINO), Train employees to solve problems (TESP) and, Recognising employees' involvement and accomplishments (REIA).

Growth, profitability, Investment on R&D and level of customer satisfaction are considered as the determinants to measure the success of IT startups in the perspective of employees [J.M. Unger et al.,2011]. The target audience of the study is employees who are working on IT startups in Sri Lanka.

1.2. Problem Statement

Unger et al.,(2011), who suggested that human capital is an essential attribute for new ventures. Many researchers consider the human capital as a countable asset, but this study formulates human capital as a value creating source which operates based on the perceived value of each individual.

Research Problem: How does employee perception impact the success of IT startups.

1.2.1. Research Objectives

The purpose of this research is to measure the impact of perception of employees to the success of IT startups and to develop a model based on Identified facts that support positively to improve the perceived value of employees within the context of startups

The main objective and sub objectives of this research are as follows;

- develop a model to evaluate how employee perception matters for the success of IT startups
  - Identify important areas of startups that can change the perceived value of employees
  - Identify the most appropriate scale to measure the perception of employee
  - Identify determinants of success of startups

1.2.2. Research Significance

Local studies show a potential growing market in IT product and services [SLASCOM, 2016]. Yet, many entrepreneurs are struggling to survive in the market, while few are succeeding. Every startup confronts innovative products or services at the initial stage but gives a lack of focus to the business continuation process. As individuals play a significant role in tech startups, many studies enforce to have the idea whether the employee has impact over continuation of business [Kurtessis, J.N. et al., 2017], [Miettinen, M. R., & Littunen, H., 2013]. Most importantly the feedback from interviews carried for the target audience shows that behaviour of owners and firm makes a huge difference on employee perception. As we observed, the internal environment of IT startups can make a huge difference on perceived value on employees. The criticality of the situation boosts when negative perceptions of one person become viral among other subordinates and they start to leave the company. Not like well –established organizations, where IT startups operate with less number of people and sudden turnover may cause huge damage to the continuation of business, delay in delivery, customer dissatisfaction and lose the trust of other stakeholders. The finding of this research will help entrepreneurs to clearly identify the most significant factors that can positively improve the employee perception and to minimize the gap between perceived value and employee expectations within the internal business environment of IT startups. Thus, this model will help entrepreneurs to maintain a healthy environment within the organization while improving the productivity and reducing the risk of business failures. This will indirectly lead to success of the startup.

2. LITERATURE REVIEW

This chapter provides an evaluation of the literature that supports the research development such that; how IT startups differ from other organizations, impact of human capital for the success of organization, metrics to measure the perception of employees, drawbacks of existing models and frameworks and different perspectives of measuring organizational success.

2.1 How Tech Startups Differ From Other Well-Established Organizations

Entrepreneurial businesses are usually confronted with different and potentially new activities and have a higher propensity of failing due to skill gaps and lack of information, than older, well established organizations [Aldrich and Wiedenmayer, 1993; Stinchcombe, 1965].

Some studies suggest to avoid the risk of being newbie and avoid the above mentioned gaps by promoting the human capital [Davidsson and Honig, 2003]. Specific attributes that are confronted by startups are; requiring immediate decisions and actions in given situations, routines and strategies yet to be developed, accomplishing daily tasks in the business, solving problems, and making entrepreneurial decisions (e.g., decisions to act upon business opportunities), continuously identifying new tasks and roles and, adapting to new situations. In contrast, older businesses have a "track record", routines and established practices they can refer to as described in Table 2.1.

Unger et al.,(2011) claims that technology does not make a difference for the relationship between human capital and success and yet the relationship between human capital and success is higher for younger businesses than for older businesses [Unger, J. M. et al.,2011]. Human capital should be more vital in the initial years of business rather than during later stages.

Expertise of employees plays a significant role in an IT organization [Ouimet, P., & Zarutskie, R. 2014]. For IT startups, this need is higher than the well-established IT organizations, where the tasks and roles are well defined and predictable. There is a huge behavioral difference between startups and well –established organizations. Ouimet & Zarutskie have suggested that a major proportion of young employees join startups with greater innovation potential and that carries out higher growth while increasing the ability of business survival of business. Some of these facts are consistent with skills, risk tolerance, and career dynamics of young workers [Ouimet, P., & Zarutskie, R. 2014].

Above identified gaps between tech startups and well- established organizations can be summarized as below (table 2.1).

Tech Startups	Well- Established Organizations
Higher failure rate	Lower failure rate
Higher skill gaps	Lower skill gaps
Lack of information	Proper information management
Situational decision making approach	Well established decision management process
Decisions to act upon business opportunities	Predefined actions
Routines and strategies are not well developed	Well defined strategies
Role and tasks are not well defined	Role and tasks are well defined
Human capital is highly correlated with the success of business	Human capital is not highly correlated with the success of business
Expertise of employee plays a significant role	Expertise of employees plays a significant role. Maintain a pool of expertise

Table 2.1 How Startups differ from the well-established organizations

2.2.1 Factors contribute to the success of startups

Organizational success is a common topic that many business owners, researchers, investors, employers and the other stakeholders are studying over years to develop an efficient and effective business environment. This section evaluates the number of studies explaining what factors and how they impact on the success of new business ventures.

Kelly (2017) ("B4B" site) discusses the top ten reasons for business failure; those are respectively poor Leadership, no difference in product, failing to plan, not learning from mistakes, poor management, capital shortfalls, not being customer centric, no profits and entrepreneur's pride. Similarly the findings by Miettinen (2013), Cassar(2014), Krishna (2016) and Nilsen (2015) further studied some of those factors as described below.

Leadership – Leadership at startups is solely defined as a responsibility of entrepreneurs where not able to make the right decisions and lead a team are a significant reason to failing startups Kelly, M. (2017). While some studies do not directly mention the term 'Leadership' instead use the term of "Founder attributes influence on success of startups" which includes industrial knowledge and experience is associated with the particular skills, insights and abilities transferable to a sector or industry and personal business experience, understanding of markets and customers and the specific technologies etc. [Miettinen, M. R., & Littunen, H. ,2013 ;

Cassar, G. 2014]. According to the above fact many of the top ten reasons of business failures are influenced by the capabilities or attributes of the founder or leader.

Management – Many studies cite poor management as the number one reason for the failing startups and it covers all the areas in business such that; finance, purchasing, selling, production, and hiring and managing employees within the organization. [Krishna et al., 2016] [Kelly, M., 2017].

Plan/Decision Making - Researchers noted that rushing in to business without proper planning is one of sever mistake that entrepreneurs may do [Kelly, M. ,2017] and the article further recommend rather than sticking in to an annual plan, it is better to plan more regularly, informally and map the action plan with actual by defined deadlines and responsible persons.

Experience/ Not learning from mistakes - Identifying personal business experience as a critical success factor for the success of startups is a bit controversial. Some findings claim that past experience of an entrepreneur does not really matter for the success of startups, while individuals who have no prior business experience are reported to have a higher likelihood of having a lower credit risk [Miettinen, M. R., & Littunen, H., 2013].

Market Attributes - The same concept as above is explained by Miettinen, M. R., & Littunen, H., (2013), which explains the demand for the product(s) and service and competitive position.

Begin customer centric - The white paper by Kelly, M. (2017) explains that most of the failing startups give verbal promises with their product or services, but ignore customer requests for new products or services and forget to evaluate the level of customer satisfaction and ignore trends in buying habits.

Capital Investment - A common fatal mistake for many failed businesses is having insufficient operating funds where many startups are lack of understanding cash flows and have unrealistic expectations of estimated revenue [Krishna et al., 2016], [Kelly, M. 2017]. Further Kelly, M. (2017) explains capital is not one initial investment but also a consecutive plan of investment to stay in business and it is usual that start up may take a year or two to get financially stable in business.

The study by Krishna (2016) has collected the data of 7000 successful startups and 4000 failed startups from Crunchbase to propose a model to predict the success or failure over the lifetime of startups. They listed 20 key factors that are sometimes equally important to determine the success or failure of new ventures. The study proposed three aspects of investment approaches; seed funding, time to get seed funding and round funding that are more into investment of capital. Under the severity factors they have discussed some of issues in internal environment of new ventures such as plenty of traction, low burn rate, good management system, good use of funds and time, a vision to monetize from the very beginning, social skills-networking with the targeted audience, discipline, determination, ability to adapt to changes, fundraising skills, unwavering belief, the composition of capital structure, prospects of future earnings, correct market positioning, business expansion, flexibility, passion or persistence, correct leadership, motivated team, having long term road-map for Return of Investment, luck or timing.

The above determinants are explainable outcomes that closely derive together with behavioral aspects of entrepreneurs, decision makers and workers within the organization. The study by Carmel (2003) emphasizes on the importance of the external environment for the success of software industry in India. The studies on measuring success of startups use the approach of measuring performance of identified factors in order to measure the success of organization. Some of these artifacts are market type, Phases of product & company growth etc. The framework for lean startup mentioned that meeting thresholds frequently leads the organization to success [Nilsen, G. T. (2015)].

Out of the above factors, leadership, Managing, Planning and decision making, Being customer centric, experience or not learning from experience and time to market and decisions and capital investments are tasks carried by human capital.

2.2 Importance of human capital in success of startups

Human capital is one of the known factors that support the success of startups [Unger, J. M et al.,2011]. But generally these studies consider the human capital as a steady measurable asset. The below sections evaluate the involvement of people towards the success of startups.

In an organizational context, Unger et al., (2011) found an overall positive relationship between human capital and entrepreneurial success. Entrepreneurial success was completely defined by the size, growth and profitability of the organization [Miettinen, M. R., & Littunen, H. 2013] and [Unger, J. M et al.,2011]. Further they examined theoretically derived moderators of the relationship, referring to conceptualizations of human capital to context, and to measurement of success. This model is straightforward with subjective constructs to measure the human capital such as knowledge, skills, education, and experience of entrepreneurs and employees [Unger, J. M et al.,2011]. Hence it is suggested that future research should pursue moderator approaches to study the effects of human capital on success.

Miettinen (2013) proves that *firm specific attributes* have a significant relationship on success of start-ups. Among the factors ***team*** is considered as one of the major factors that defines the firm specific attributes [Miettinen, M. R., & Littunen, H. 2013]. Briefly a group of people that form to achieve common targets within the company can drive the company to success.

People play a significant role in deriving the factors discussed above. Most of the activities within companies are derived as an outcome of personal effort or skill level such as leadership, management and being customer centric etc. These factors determine the success of the company where human capital helps owners to acquire utilitarian resources such as financial and physical capital, and it assists in the accumulation of new knowledge and skills. Human capital increases owners' capabilities of discovering and exploiting business opportunities [Unger, J. M et al.,2011].

2.3 Perception of Employee

Perception can just be a perspective an individual has based on one's view of a particular situation. According to Pickesens (2005) the definition of attitude[1] is "a mindset or a tendency to act in a particular way due to both an individual's experience and temperament." Perception is closely related to attitudes. Perception is the process by which organisms interpret and organize sensation to produce a meaningful experience of the world (Lindsay & Norman, 1977).

Perception is identified as a significant contingency or outcome of human capital in organizational context. The term (perceived organizational support, or POS) attracts much more interest in explaining employee–organization relationships from the employees' viewpoint [Kurtessis, J.N. et al., 2017].Therefore perception can be considered as an outcome of human capital.

There is another suggestion that perception and attitude of employee act as a moderate variable when determining the perceived success of an organization and further explains the level of employee perception is highly dependable on the organizational behaviour and how they will be treated to the employees [Kurtessis, J et al., 2017].

2.3.1 How to measure perception

Research that measures employees' perception towards organizational change in IT industry uses the attitude of employees to measure the employee perception [Kansal, K. K., & Singh, A.,2016], and it shows that the attitude of an employee is a valid indicator of perception.

Talent or skill is something owned by the employee, and how effectively they use them for the growth of the company might depend on the perception and attitude of each individual [Prottas, D. J. ,2013]. According to Prottas (2013), manager's behavioral integrity is one fact that can manipulate the perception of employees. The other factors that can manipulate the perception of employee are affective organizational commitment, Economic and social, exchange with the organization, felt obligation and normative commitment, Job involvement, Organizational identification by fulfilling employees' socio emotional needs for esteem, approval, affiliation, and emotional support, performance–reward expectancy and Trust etc. [Kurtessis, J.N. et al., 2017].

In 2007 Winston G. Lewis presented Employee Perception Scale (EPS) to measure the six constructs for continual improvement in SMEs. The scale comprises 6 constructs and also include some factors later presented by Kurtessis (2017). The six attributes are constructed incorporating 46 criteria for continual improvement and compromises them into six unique attributes to measure the perception of the employee [Lewis W G. et al.,2007]. The measurement scale of employee perception can be further described as below;

[1] Attitudes are a complex combination of things we tend to call personality, beliefs, values, behaviors, and motivations.

1. Confidence and trust in the organisation (CTO) – explains how employees perceive value of the organization including Management commitment, Customer satisfaction, Leadership, Total Quality Management vision, Customer feedback, Firms characteristics, Business characteristics, Competitive strategy, Leadership training, Product quality design, Resource management

2. Interest in the employees' future (IEF) - Basically this construct covers whether the employee feels secured with their jobs and they have proper training and education, Employees see a good future for themselves in the organization etc.

3. Teaching employees to solve problems (TESP) – explains the continuous improvement in business and positive encouragement that employee received from the organization

4. Communicating information and needs in the organisation (CINO) – explains the proper communication of information that needs to continue the job such that communication of business or project plans, targets and procedures.

5. Actively seeking employees' ideas and opinions (ASIO) - explains the level involvement of employees for the decision making or idea generation and also implies whether the employee being respected, accepted and enjoy their job.

6. Recognising employees' involvement and accomplishments (REIA) – Explains whether the employee being recognized and rewarded for the performance.

The above scale is used to measure the continual improvement of SMEs and the same scale can be altered in order to match with IT startups as far as above facts might not fully accurate for IT employees to manipulate their perception towards the success of the organization.

2.4 Success of startups

It is not easy to define the success or failure of the business. The study by de Silva et. al., (2015) explained that entrepreneurship associated with startups phenomenon becomes confusing when each student or entrepreneur uses his/her own experiences and concepts to define it. Thus, the study has analyzed how the concept has evolved over centuries. The concepts of entrepreneurship - and the entrepreneur himself - are the subject of studies for longtime and have different personal definitions of success and failure. If someone asks the question "Are you successful in your business/new venture?" The answer would be quite fascinating with different opinions of response. In 2004 Mitchell and the team quoted some of the responses given for the Question "How do you explain your failures?" such that;

Entrepreneur: "What mistakes? (She laughs) . . . Well, I would say that in the first two to three years, we have been in business for seven years, there was definitely a lot of naïveté, and so I should have known better." (Female, age 29, not-failed)

Entrepreneur: "To tell you the truth no. I have never experienced failure. I guess I have been lucky. Both businesses that I started have been successful."

Entrepreneur: “To tell you the truth I don’t really know. I have never really asked myself that question. Hmmm . . .” (male, age 40, not-failed)

Entrepreneur: “Well, I don’t wanna sound like I am a major winner here but I can’t think of any major things here”. The above facts emphasize the need to distinguish the threshold to measure the success and failure.

The general opinion of a failed venture is one that closes down owing money to the creditors. But some studies say that money is not the only reason for failures, while quitting or earning less than they could working for someone else, are other reasons for failures [Read et al., 2016]. Also success is the coin-side of failure. Number of researchers have figured out that cultural differences of each region makes the fact more complicated where in Europe, failure is considered as a death knell, financially and socially. In some parts of the world, an entrepreneur, whose venture doesn’t work out, may find it difficult to get married and move forward with life (similar to life failure) [Read et al., 2016]. But in Silicon Valley, if someone hasn’t fail, then it is considered as something abnormal [Read et al., 2016].

2.4.1 Measuring Success of startups

To examine the survival rates of new ventures, Nilsen (2015) conducted a longitudinal analysis of 11,259 new technology ventures established between 1991 and 2000 in the United States and claimed that IT or Technology startups have the highest possibility in failing at its early stages. Theoretical frameworks that have been presented to measure the success of startups are generic and applicable for all types of new ventures. Lean Startup is not just a theoretical model but a framework with practical implications. The study by Nilsen (2015) has fully focused on proving that the Lean Startup framework is the ideal among other frameworks for Norwegian high-tech entrepreneurs. Since this study is focused on IT based startups, the impact of theoretical frameworks towards the success of IT startups are important to evaluate. The article presents a measurement criteria for the success of a startup using the attributes such that; Company age, Products launched, Funding, Valuation, Revenue last year and Number of customers.

While some studies emphasize that foreign direct investment (FDI) and the domestic investment of the country depends on the regulations required to start a new venture and also the findings proved that the countries with FDI crowds out investment has high cost entry regulations and lower GDP per capita [Munemo,2014]. Since this study has focused on developing countries, a similar impact can be expected regarding Sri Lanka as well and other significant factors which affect domestic investment are the cost of capital, government’s economic growth track record, institutional quality, and market size [Munemo,2014].

Another novel opinion of the failure of a new venture has been seen in both positive and negative perspectives. The negative effects of failure are manifest in monetary and emotional costs, its positive effects are less visible-being associated with learning, experience, and other cognitive constructs [Mitchell et al.,2004]. Thus, failure is not a bad thing for business, rather it could be one step towards success. However, no entrepreneur expects to fail in business, they all start business to earn more things in life including profit, reputation, power etc. Failures

happen without intention, and are inevitable in some cases, but seeing positive aspects in failure is a psychological persuasion where failures are not always must for the success. This argument can be proven by the quotes that have been presented in the case above. (Eg:" I have never experienced failure. I guess I have been lucky." [Mitchell et al.,2004].)

Therefore the success or failure cannot be known as a dichotomous event where Read has defined the success along a scale of measures as in figure 1.

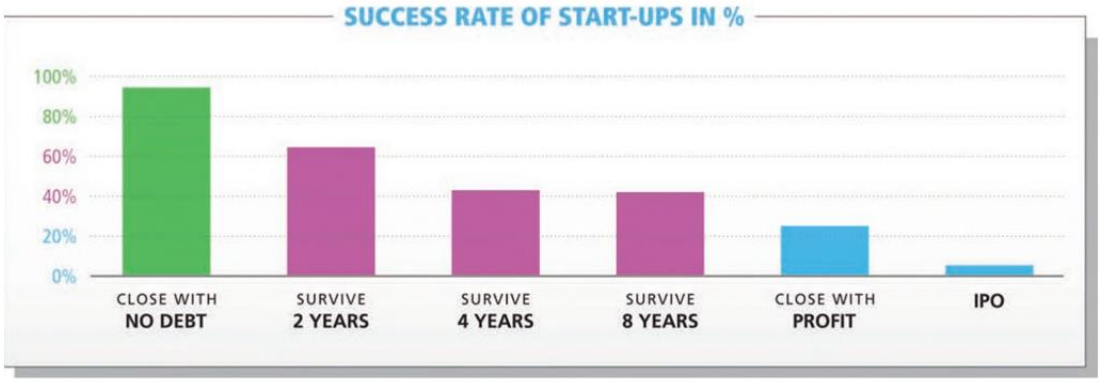

Figure 2.1 Success Rate of Startups.(Read, S., Sarasvathy, S., Dew, N., & Wiltbank, R. (2016). Effectual entrepreneurship. Taylor & Francis)

The three aspects of start-up performance based on Bosma et al. (2004): survival, profit and employment are not only determined by the financial aspects but also on specific investment in human and social and social capital generate more promising start-ups. [Miettinen, M. R., & Littunen, H. 2013]

The research study by J.M. Unger (2011) has covered qualitative analysis to measure the performance of startups Based on 70 independent samples where the empirical analysis to measure the specific concept of success is used profitability, growth, and size of the Startups. Each categorization has a specific measurement attribute like given in the table. For an example organization Profitability can be measured via profit, income, ROI, ROA, Net cash flow, owners' salary.

Coding and frequencies of success variables.

Size	*N*	Growth	*N*	Profitability	
Number of employees	28	Growth in sales	16	Profit	14
Sales volume	15	Growth in employment	15	Income	7
Expert rating	5	General business growth	8	Revenues	5
Equipment value	4	Growth in profits	6	ROA	4
Scale organizational success	3	Growth in revenues	3	ROS	3
Business volume	1	Growth in assets	2	ROI	2
		Growth in market share	2	Sales per employee	2
		Growth in cash flow	1	Cash flow (net)	1
		Growth in output	1	Earnings	1
		Growth in ROS	1	Owner's salary	1
				Return on cash flow	1

Figure 2.2 Coding anonyms of Success variable [J.M. Unger et al.,2011]

Integrated Performance Measurement (IPM) model is a well-known performance measurement model which is used to measure the performance level of the company in managerial point of

view. In 2002, Laitinen used this model to measure the dynamic performance of small Finnish technology companies. The author argues that the model is useful as a managerial tool for decision making. The dimensions of the model uses traditional and active based costing systems together to measure the performance and main two classification of the attributes are internal and external where external dimensions are respectively; financial performance and competitiveness and internal dimensions are costs, production factors, activities, products and revenues [Laitinen, E. K., 2002]. Later in 2007, the study by Winston G. suggests that employees' perception as one of its dimensions. In that way the author evaluates employees' perception as one of an indicator to measure the performance of a company. But in this research study the argument is developed on the other way that employees' perception would contribute to the success of IT startups.

2.3 Summary of Literature

Related Work	**Factor Considered**	**Constructs**	**Research Methodology**	**Advantages**	**Disadvantages**
[Nilsen, G. T. 2015], [Krishna et al., 2016], [Miettinen, M. R., & Littunen H., 2013], [Kurtessis, J et al., 2017]. [Kelly, M. ,2017]	**Confidence and trust in the owner or partners (CTOP)**	**Founder Attributes** • Experience and learn from experience • Skills and Knowledge • Personality attribute • Personal Values • A vision to monetize from the very beginning, • Social skills-networking with the targeted audience • Discipline • Determination • Ability to adapt to changes	Defined framework to measure the perceived value	This model can use to measure any level of perceived value This covers all value creation sources within organizational context	Usage of attribute differ from context to context. Therefore need adjustment to make them match with IT Startups

[Lewis W G. et al.,2007] [Vogel, R.M. et al.,2015], [Kelly, M. ,2017], [Miettinen , M. R., & Littunen H., 2013]	**Confidence and trust in the organisation (CTO)**	**Firms Attributes** • Management and resources • Labour and technology • Strategies and plan • Market orientation • Capital and funding • Good management system	Quantitative analysis based on questionnaire and Interviews	This model can use to measure any level of perceived value	Constructs need to be redefined
[Lewis W G. et al.,2007] [Kurtessis, J et al.,2017].	**Interest in the employees' future (IEF)**	• Organizational identification • Economic and social exchange with the organization • Remuneration	Quantitative analysis based on questionnaire and Interviews	Defined framework to measure the perceived value	Constructs needs to be redefined
[Lewis W G. et al.,2007], [Nilsen, G. T. 2015]	**Teaching employees to solve problems (TESP)**	• Training • Feedback • Motivation	Quantitative analysis based on questionnaire and Interviews	Can directly use used along with the constructs	
[Lewis W G. et al.,2007], [Nilsen, G. T. 2015]	**Communicating information and needs in the organisation (CINO)**	• Lack of access to resources • Communication	Quantitative analysis based on questionnaire and Interviews	This model can use to measure any level of perceived value	Constructs should be redeveloped to match the context
[Lewis W G. et al.,2007], [Kurtessis, J et al., 2017].	**Actively seeking employees' ideas and opinions (ASIO)**	• Affective organizational commitment • Felt obligation and normative commitment • Job involvement	Quantitative analysis based on questionnaire and Interviews	Defined framework to measure the perceived value	Constructs should be redeveloped to match the context

[Lewis W G. et al.,2007]. [Kurtessis, J et al., 2017].	**Recognising employees' involvement and accomplishments (REIA)**	• Performance–reward expectancy • Self-Enhancement - Approval - Esteem - Affiliation - Emotional support	Quantitative analysis based on questionnaire and Interviews		Constructs should be redeveloped to match the context

Table 2.2 Factors defined employee perception – summary

Related Work	**Factor Considered**	**Constructs**	**Research Methodology**	**Advantages**	**Disadvantages**
[J.M. Unger et al.,2011]	• **Size of the company**	• Number of employees • Sales volume • Expert rating • Equipment value • Scale organizational success	Qualitative data analysis based on interviews	This criteria can directly use to measure the success of startups	
[J.M. Unger et al.,2011] [Laitinen, E. K. ,2002], [Song, M. et al.,2008]	• Growth • Profitability - Profit - Income	• Growth in sales • Growth in market share • Growth in cash flow	Qualitative data analysis	can directly use to measure the success of startups	Response might not reliable

[Nilsen, G. T. 2015]	• **Customers Satisfaction** • **Number of Products Launched** • **Company Age**		Quantitative analysis based on likert scale	can directly use to measure the success	
[Song, M. et al.,2008]	• **Product Innovation Frequency** • **Investment on R&D**		Quantitative analysis based on likert scale	can directly use to measure the success	Response might not reliable

Table 2.3 Factors to Measure Success of Startups -Summary

Determinants of employee perception

Related Work	Confidence and trust in the owner partnership (CTOP)	Confidence and trust in the Organization (CTO)	Interest in the employees' future (IEF)	Teaching employees to solve problems (TESP)	Communicating information and needs in the org (CINO)	Actively seeking employees' ideas and opinions (ASIO)	Recognizing employees' involvement and accomplishments (REIA)
[Lewis W G. et al.,2007]		X	X	X	X	X	X
[Nilsen, G. T. 2015],	X			X	X		
[Krishna et al., 2016]	X						
[Miettinen, M. R., & Littunen H., 2013]	X	X					
[Kurtessis, J et al., 2017]	X		X			X	X
[Kelly, M. ,2017]	X	X					
[Vogel, R.M. et al.,2015]		X					

[Thomsen, H. K., & Hoest, V. ,2001]		X	X	X	X	X	X
Most considerable demotivation factors	High	High					

Table 2.4 Prioritization of determinants of employee perception-Summary

Determinants of success of startups

Related Work	Size of the company	Company Growth	Profitability	Customers satisfaction	Number of Products Launched	Company Age	Product Innovation Frequency	Investment on R&D
[J.M. Unger et al.,2011]	X	X	X					
[Laitinen, E. K. ,2002]	X	X	X					
[Nilsen, G. T. 2015]				X	X	X		
[Song, M. et al.,2008]		X	X				X	X
[Kelly, M. ,2017]			X				X	X
Most considerable demotivation factors		High	High					

Table 2.5 Prioritization of Determinants of success of startups– Summary of literature

3 RESEARCH METHODOLOGY

This section provides an insight of research methodologies used to develop the research model by identifying dimensions to measure the perception of employees against the success of IT startups. The identified variables under each dimension are systematically evaluated using validation and verification techniques of qualitative data gathering through literature review, interviews with target audience, quantitative data gathering through secondary data, interviews and questionnaires.

3.2 Research Method

Research design

The main objective of this study is to determine how attitude and perception impact on success of IT based startups and it describes the development approach of the research design as given below. This study formulated all attributes into a structured model based on the findings from literature and interviews.

Later in 2007, the study by Lewis W.G. et al.,(2007) suggests that employees' perception as one of dimensions of startup performance (Section 2.2.1). In that way the author evaluates employees' perception as one of an indicator to measure the performance of a company. Based on that this study developed an argument that employees' perception would contribute to the success of IT startups.

Perception of employees is considered as the independent variable and this section examines the input from interviews and literature review in order to develop the model constructs.

Founder attributes and human capital have a significant impact towards the success of IT startups [Miettinen M.R. & Littunen H., 2012]. Unger et al.,(2011),who suggested that human capital is particularly essential for young firms. In this research we look into the term "Human Capital" not as an asset but also a dynamic behavioral attitude of each individual, as explained in the literature (section 2.3.2) [Prottas, D. J. ,2013]. Within this phenomena the research uses the term *Employee perception* to measure the attitude of employees towards the success of a company.

Lewis et al., (2007)'s **Employee Perception Scale (EPS)** used six constructs to measure continual improvement in **SMEs.** This study additionally introduced two more constructs such that construct 1 - Confidence and trust in the owner or partners (CTOP) and construct 4 - Fare remuneration and benefits (FRB) based on the interviews and literature reviews [Miettinen, M. R., & Littunen, H. 2013; Unger, J. M et al.,2011]. To further illustrate employee perception of employees we have identified eight independent constructs as below. The below table 3.1will describe the definition of each construct used in the model.

- Construct 1 - Confidence and trust in the owner or partners (CTOP)
- Construct 2 - Confidence and trust in the organisation (CTO)
- Construct 3 - Interest in the employees' future (IEF)

- Construct 4 - Fare remuneration and benefits (FRB)
- Construct 5– Actively seeking employees' ideas and opinions (ASIO)
- Construct 6– Communicating information and needs in the organisation (CINO)
- Construct 7– Train employees to solve problems (TESP)
- Construct 8 – Recognising employees' involvement and accomplishments (REIA)

Construct		Definition	Attributes
Construct 1 - Confidence and trust in the owner or partners (CTOP)		Characteristics of founders and characteristics of Business where at the internal factors matters in perception of employees	1. Experienced person and learn from experience 2. Skillful and knowledgeable 3. Great leader 4. Treat people well 5. A visionary person 6. Disciplined 7. Deterministic 8. Social skills-networking with the targeted audience
Construct 2 - Confidence and trust in the organisation (CTO)		This construct defines how employees perceive value of the organization including Management commitment, Leadership, Total Quality Management vision, Firms characteristics, Business characteristics, Competitive strategy, Resource management	1. Managerial commitment 2. Loyalty over the org 2. Leadership 3. Clear vision and mission 4. Firms characteristics 7. Employee satisfaction
Construct 3 - Interest in the employees' future (IEF)		This construct defines whether the employee feels secured with their jobs and they have proper training and education, Employees see a good future for themselves in the organization etc.	1. Job security 2. Career enhancement

Construct 4 - Fare remuneration and benefits (FRB)		This construct defines the level of satisfaction of employees regarding the financial benefits and remuneration package being received for their work/time. This construct is identified from the interview that carried for target audience.	1. Incentives/ Bonuses 2. Remuneration
Construct 5 – Actively seeking employees' ideas and opinions (ASIO)		Defines the level involvement of employees for the decision making or idea generation and also implies whether the employee being respected, accepted and enjoy their job.	1. Felt obligation and normative commitment 2. Job involvement
Construct 6 – Communicating information and needs in the organisation (CINO)		Defines the proper communication of information that needs to continue the job such that communication of business information or project plans, targets, knowledge and procedures.	1. Access to organizational resources 2. Access to the org Information
Construct 7– Train employees to solve problems (TESP)		Defines the continuous improvement in business and positive encouragement that employee received from the organization	1. Training 2. Motivation
Construct 8 – Recognising employees' involvement and accomplishments (REIA)		Defines whether the employee is being recognized and rewarded for the performance.	1. Performance–reward expectancy 2. Approval 3. Self-Enhancement

Table 3.1 Definition of constructs to measure perception of employees

In this study success of IT startups as dependent construct will be measured against the above constructs. Measuring a company is a bit tricky from an employee perspective. When considering small scale organizations, many researchers highly prioritized financial aspects like Profitability, growth, Size, revenue attributes [Unger J.M. et al.,2011] [Laitinen, E. K.,2002]. The attribute, size of the company has been removed from the model since the size cannot be measured over a likert scale. Instead this attribute and the number of years that company has been operating, has been taken to validate the responses. This study identified four constructs to measure the success of IT startup as given below.

- Construct 1 – Growth
- Construct 2 – Profitability
- Construct 3 - Investment on R&D
- Construct 4 - Customers Satisfaction

Construct	Definition	Attributes
Construct 1 – Growth (GR)	Growth is defined as an annual growth revenue and future plan to expand the business with product/client base in next year (business plan)	1. Growth rate 2. Expansion
Construct 2 – Profitability(PRO)	Profitability is defined as the positive balance of income of the company. Since we use likert scale the outcome will be subjective.	1. Profitability
Construct 3 - Investment on R&D (RD)	Investment on R&D explains the investments on future/ongoing technology inventions, research and developments.	1. Investment on R&D
Construct 4 - Customers Satisfaction (CUS)	Customer satisfaction defines the	1.1 Customer Satisfaction

Table 3.2 Definition of constructs to measure success of IT startups

3.2.1 Model Development

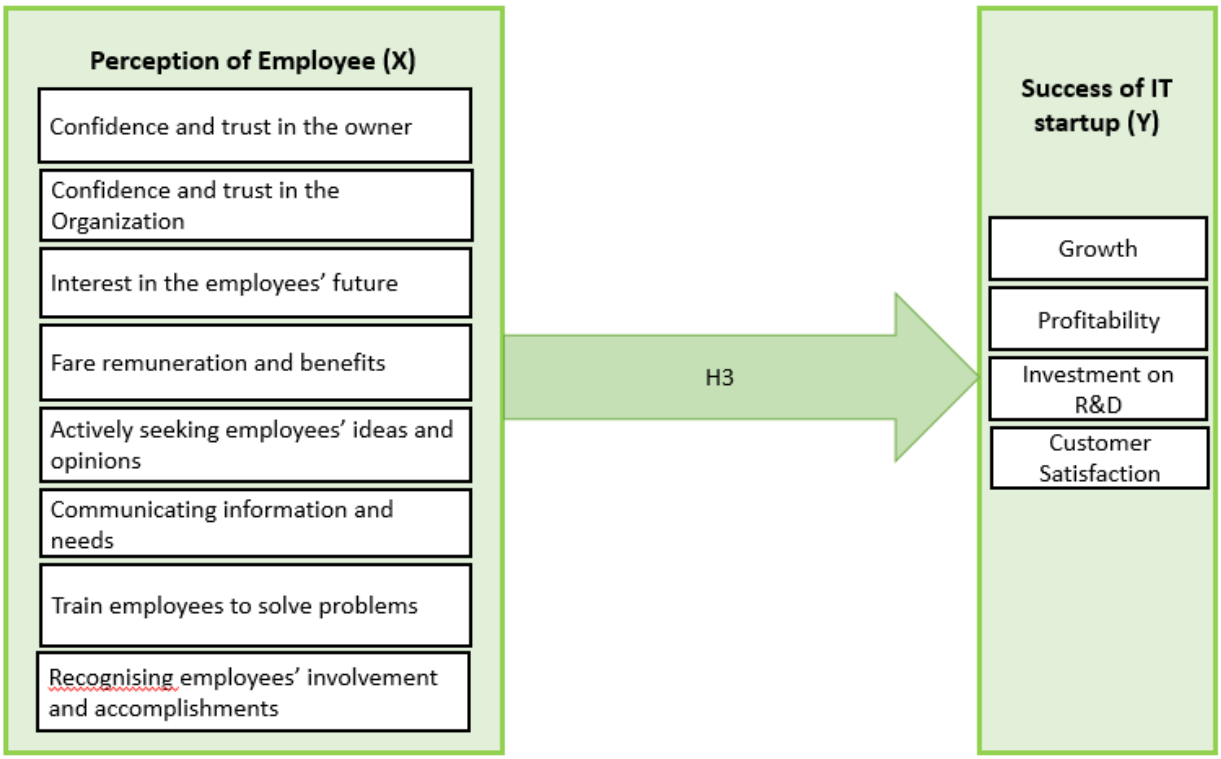

Figure 3.1 Conceptual model

3.2.2 Hypothesis development

- H1a: Confidence and trust in the owner or partners (CTOP) are positively related to perception of employees
- H1b: Confidence and trust in the organisation (CTO) are positively related to perception of employees
- H1c: Interest in the employees' future (IEF) are positively related to perception of employees
- H1d: Fare remuneration and benefits (FRB) are positively related to perception of employees
- H1e: Actively seeking employees' ideas and opinions (ASIO) are positively related to perception of employees
- H1f: Communicating information and needs in the organisation (CINO) are positively related to success of IT startups
- H1g: Train employees to solve problems (TESP)are positively related to success of IT startups

- H1h: Recognising employees' involvement and accomplishments (REIA) are positively related to success of IT startups
- H2a: Growth rate (GR) is positively related to success of IT startups
- H2b: Profitability (PRO) is positively related to success of IT startups
- H2c: Investment on R&D (RD) is positively related to success of IT startups
- H2d: Customers Satisfaction (CS) is positively related to success of IT startups
- H3: Perception of employees are positively related to Success of IT startups

3.3 Research Approach

Quantitative research approach is the main research approach of this research where data has been collected using likert scale considering conceptual model design.

Quantitative research is explaining meaningful phenomena by collecting numerical data that are analyzed using mathematically based methods and statistical evaluations. Quantitative approach is the main part of this research where the concept of Employee Perception is measured against the success of IT startups in which take on different quantitative variables based on predefined scale. The attributes naturally appear as qualitative measurable like perception, attitudes or beliefs.

In order to convert the qualitative form of data to the form quantitative data, we use the research instrument of likert scale that enables the statistical analysis of data in numeric format. Therefore it is going to develop a survey that inquires to be appraised a number of articulations as either 'agree strongly', 'agree', 'disagree' or 'disagree strongly', and give the answers a number (e.g. 1 for 'disagree strongly', 4 for agree strongly).

Further this approach will protect the anonymity of respondents, as some of the employees might not prefer to share the information about the startup that they are currently employed at.

3.4 Data Collection

The research uses a mixed method where it includes different methods of data collection techniques to collect primary and secondary data as described in table 3.3.

Primary data collection techniques	Secondary data collection techniques
Questionnaires Interviews with experts	Journal Case study Available information (surveys, Internet articles, Cloud standards)

Table 3.3 List of data collection instruments

Questionnaire – this study used a questionnaire as the primary data collection method in which written sets of structured questions are shared among target respondents to be answered based on the best of their knowledge and awareness. The main distribution channel of the questionnaire was sharing by email and all the instructions on how to answer the questions were clearly mentioned on the questionnaire. Apparently, the questionnaire has been structured based on the focus areas, and used a simple wording structure that allowed respondents to easily understand the questions and give appropriate responses within 10 minutes or less (see Appendix A). Finally, all the online reposes will be collected in csv format to further analysis.

An interview with experts - is another approach utilized to gather essential information. Collection method includes verbal addressing of respondents, either separately or as a group. In this research interview feedback of experts are counted to identify the real business problem, and later on few interviews were conducted with the target audience to study the background of the research.

Case study aims at investigating and examining the qualitative and quantitative findings of other studies including research papers, case studies journals etc. In this research, the identified resources are carefully evaluated, assessed and interpreted logically to develop the research model and design.

Available information- There is an expansive sum of information that has as of now been collected by others, in spite of the fact that it may not fundamentally have been analyzed or distributed. Finding these sources and retrieving the information may be a great beginning point in any information collection exertion. In this research reports published by authorized groups are used as secondary data.

3.5 Population and Sample Selection

The purpose of using sampling in the research is to provide statistical information of a qualitative and quantitative nature of data and to statistically validate the model by examining a target set of a selected group. The sampling analysis includes the analysis of associated margin of error that has to be considered within the selected group.

The target population of this research is the employees who are working in IT startups. Based on secondary (SLASSCOM report data) data we identified the size of population and population frame. In that case, the margin of error (Confidence interval) can be significant in target sampling.

The sampling frame of this research has been explained below;

- Labor force survey annual report 2016 showed that Sri Lanka IT workforce is approximately 280000 in 2016 and SLASSCOM Startup survey reported 225 tech startups actively in operation with 2-30 headcount per company. Therefore ~3,825 employees are estimated to be working at IT startups in 2018. This was taken as the target population for the study.

- Because of the heterogeneity of the target population this study is being used non-probability sampling method and consider an arbitrary means of selecting sampling units based on subjective considerations, such as personal judgment or convenience.

Considering 95% confidence level and 0.1% **confidence interval** (also called margin of error), then the estimated sample size would be 94 employees who are working on IT startups. The survey was anonymously conducted to collect data, as the sample size mentioned above was calculated based on rough estimation.

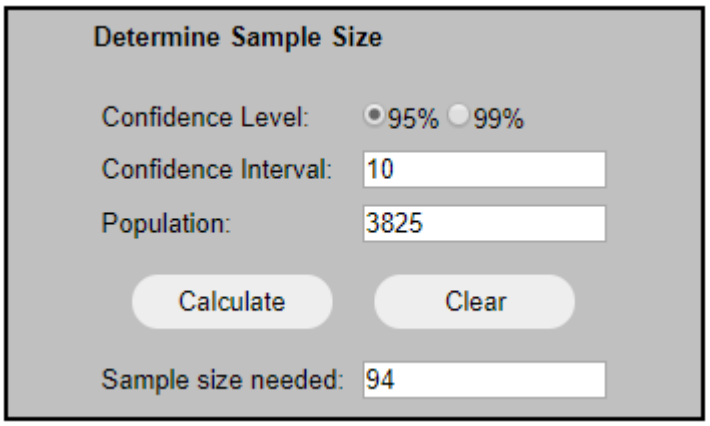

Figure 3.2 Calculation of sample size

3.5. Questionnaire design

Determination of variables and factors is the base step for the development of questionnaires. In this research the questionnaire is designed to identify the viewpoint of the employees on their organization over the success indicators. Questionnaire covers three major parts of the research.

Part 1	Basic information of the user with the educational backgrounds, working experiences, company name, Type of IT service.
Part 2	Answers will be collected by cross checking how the user has ranked identified independent attributes according to his/ her perspective, knowledge and experience
Part 3	Collect the answers to rank the level of success of the company (IT startup) based on his/her knowledge and understanding.

Table 3.4 Content of questionnaire

Questionnaire Part 2: Independent variables

Construct	Attributes	Variable	Questionnaire
Construct 1 - Confidence and trust in the owner or partners (CTOP)	1. Experienced person and learn from experience	CTOP_E	1.1 How do you rate the owner (Entrepreneur) of your company considering below attributes? [Experienced person and learn from experience]
	2. Skillful and knowledgeable	CTOP_SK	3.6 How do you rate the owner (Entrepreneur) of your company considering below attributes? [Skillful and knowledgeable] [Score]
	3. Great leader	CTOP_GL	3.7 How do you rate the owner (Entrepreneur) of your company considering below attributes? [Great leader] [Score]
	4. Treat people well	CTOP_TW	3.8 How do you rate the owner (Entrepreneur) of your company considering below attributes? [Treat people well]
	5. A visionary person	CTOP_V	3.9 How do you rate the owner (Entrepreneur) of your company considering below attributes? [A visionary person]
	6. Disciplined	CTOP_D	3.10 How do you rate the owner (Entrepreneur) of your company considering below attributes? [Disciplined]
	7. Deterministic	CTOP_DE	3.11 How do you rate the owner (Entrepreneur) of your company considering below attributes? [courageous]
	8. Social skills-networking with the targeted audience	CTOP_SS	3.12 How do you rate the owner (Entrepreneur) of your company considering below attributes? [Social skills-

			networking with the targeted audience]
Construct 2 - Confidence and trust in the organisation (CTO)	1. Managerial commitment	CTO_MC	2.1 How do you rate your company considering below attributes? [I feel confident of managerial decisions]
	2. Loyalty over the org	CTO_LO	2.2 How do you rate your company considering below attributes? [I'm loyal to the organization]
	3. Leadership	CTO_L	2.3 How do you rate your company considering below attributes? [I confidently follow the leadership]
	4. Clear vision and mission	CTO_VM	2.4 How do you rate your company considering below attributes? [Company has clear vision and mission]
	5. Firms characteristics	CTO_FC	2.5 How do you rate your company considering below attributes? [Well organized] [Score]
	6. Employee satisfaction	CTO_ES	2.6 How do you rate your company considering below attributes? [I enjoy my job]
Construct 3 - Interest in the employees' future (IEF)	1. Job security	IEF_JS	3.1 Rate the below statements regarding your experience at workplace [I've the feeling of job security that my job will be there in the future]
	2. Career enhancement	IEF_CE	3.2 Rate the below statements regarding your experience at work place [Company provide the opportunity for growth/ advancement]
Construct 4 - Fare remuneration and benefits (FRB)	1. Incentives/ Bonuses	FRB_IB	4.1 Rate the below statements regarding your experience at workplace [Company offer

			other financial benefits like insurance and bonuses]
	2. Remuneration	FRB_R	4.2 Rate the below statements regarding your experience at workplace [I am well paid]
Construct 5– Actively seeking employees' ideas and opinions (ASIO)	1. Felt obligation and normative commitment	ASIO_FO	5.1 Rate the below statements regarding job involvement at your workplace [I'm taking my job as serious and countable]
	2. Job involvement	ASIO_JI	5.2 Rate the below statements regarding job involvement at your workplace [Actively seeking my ideas and opinion
Construct 6– Communicating information and needs in the organisation (CINO)	1. Access to organizational resources	CINO_AR	6.1 Rate the below statements regarding job involvement at your workplace [Company provides adequate resources to complete your work?]
	2. Access to the org Information	CINO_AI	6.2 Rate the below statements regarding job involvement at your workplace [I'm well aware of the operations of the company]
Construct 7– Train employees to solve problems (TESP)	1. Training	TESP_T	7.1 Rate the below statements regarding training and recognition at your work place [Are you given the opportunity to learn new skills]
	2. Motivation	TESP_M	7.2 Rate the below statements regarding training and recognition at your work place [Your colleagues and superiors always encourage you]
Construct 8 – Recognising employees' involvement and	1. Performance–reward expectancy	REIA_PR	8.1 Rate the below statements regarding training and recognition at your work place [Do you feel that your salary

accomplishments (REIA)			reflects your worth to the organization?]
	2. Approval	REIA_A	8.2 Rate the below statements regarding training and recognition at your work place [Do you feel appreciated for your work performance?]
	3. Self-Enhancement	REIA_SE	8.3 Rate the below statements regarding training and recognition at your work place [Do you feel a sense of achievement for your work efforts?]

Table 3.5 Part 2: Questionnaire design for independent variables

Questionnaire Part 3: Dependent Variables

Construct	Attributes	Variable	Questionnaire
Construct 1 – Growth (GR)	1. Growth rate	GR_R	1.1 Last year your organization experienced more than 2% of positive revenue growth?
	2. Expansion	GR_EX	1.2 Plan to expand the business in next year
Construct 2 – Profitability (PRO)	1. Profitability	PRO_B	2.1 Company has a positive balance of income
Construct 3 - Investment on R&D (RD)	1. Investment on R&D	RD_I	3.1 This year company has Invested on R&D
Construct 4 - Customers Satisfaction (CUS)	1. Customers Satisfaction	CUS_S	4.1 This year company increases its customer base

Table 3.6 Part 3: Questionnaire design for dependent variables

3.13 Process of Data Collection

Below steps have been followed In order to validate the survey before the distribution.

- Distribute a pilot survey and validate the questionnaire
- Identify the focus group

- Distribute finalized questionnaire to focused group
- Collection of data through the questionnaire

Data collection techniques - This research uses questionnaires where the answer should be in the form of likert chart. Likert scale can have the possible answers be scaled orderly from highest to lowest or most agree to least etc.

Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
5	4	3	2	1

Table 3.7 Likert scale of measurement

An example

"How do you rate the owner (Entrepreneur) of your company considering the level of experience and the ability of learning from experiences?"

Rank	Marks given
1	1
2	2
3	3
4	4
5	5

Table 3.8 Likert ranking format

As described in table 3.8, weight of scalable response is counted over each variable. Further the questionnaire uses nominal scale as well to collect general information of the respondents.

3.14 Data Analysis Technique

The distributed survey contains two type of data

1. General information
2. Data for model validation

Structural Equation Modeling (SEM)

Structural equation modeling (SEM) technique is a statistical modeling technique that use for model (structural relationships) validation and analysis to derive path relationships over the model. Partial least squares (PLS) path modeling is the variance structural equation modeling (SEM) technique that helps in deriving multiple inter -dependencies in a single analysis. This technique is mostly used in business and social sciences.

Statistically the calculation of PLS uses the combination of factor analysis and multiple regression analysis to evaluate the structural relationship between variables and constructs.

Consistent PLS algorithm is used to calculate scores of each attributes and the path coefficients can be calculated by ordinary least squares (OLS) where for each LV=ˆYg, g = 1, . . . ,g, the path coefficient is the regression coefficient on its predecessor set (indicators).

There are two types of models use in SEM Technique:

- **Measurement model** is the statistical calculation that represents the relationship between each variable and construct together to represent the theory.
- **Structural model** is the graphical model that represents related constructs and variables together to develop the conceptual theory.

SEM technique is an appropriate technique for both model validation (confirmatory modeling) and theory development (exploratory modeling). This study uses confirmatory modeling technique where the conceptual model will be validated using a collected set of ordinal data to examine how well the model fits the data.

SEM Process of data analysis can be described as below;

3. Evaluate the relevant theory and literature to develop model specification
4. Develop a conceptual model (e.g., diagram, equations)
5. Determine model identification (e.g., if unique values can be found for parameter estimation; the number of degrees of freedom, df, for model testing is positive)
6. Identify measures for the variables represented in the model
7. Collection of data
8. Refinement of data (e.g., scaling, missing data, collinearity issues, outlier detection)
9. Estimate parameters in the model
10. Evaluate the model fit
11. Re-specify the model if meaningful
12. Interpret and present results.

In this research, factors of employee perception and success of a startup are measured under latent variables (common variable) whilst multiple attributes are connected to each latent variable and each of them connected to themselves. Thus structural equation modeling is the most appropriate data analysis technique to be used for model validation [Henseler J. et. al., 2009]. Multivariate analysis methods include factor analysis, multiple regressions, structural equation modeling and cluster analysis.

4 DATA ANALYSIS

This section provides a summary of the data collection and analysis phase of the research. The statistical analysis of the survey results and research findings are discussed within this. Also this is supported by the company wise results obtained and how the overall results were estimated.

4.2 Data Preparation for Analysis

As described under chapter 3 (Research methodology) this research has been used questionnaire based survey to validate the proposed model. The questionnaire was distributed online over IT startups in Sri Lanka. Since the successful up and running IT startups are less, the total population is assumed to be undertrained and 122 respondents were responded for the survey. Basically the data collection procedure was handled in two phases

1. Pilot survey - 10 respondents
2. Based survey - 122 respondents

The pilot survey was conducted primarily to gain information to improve the efficiency of the main survey which was more focusing on the understandability, correctness and suggestions

Outcome of the pilot surveys;

- Added multiple options for expertise
- Validations for the questionnaire (Re corrected wordings)
- Some terms should be described as for more clearance

4.3 Reliability of the main survey

The main objective of this step was to validate and check the reliability and to cross validate the hypothetical model which was presented in the section 3.2. As described in 3.6, the main questionnaire was conducted in three parts. Part one gave priority to gather general information whilst from part 2 and 3 thoroughly focused on model validation. The analysis of Part 1 will be more helpful in acquiring the level of reliability of the survey and also the general background of the respondents.

Total 122 respondents of active industry participated in the survey and all were the employees of IT startups.

4.4 General Analysis

As given in the figure 4.1, there were a total 122 respondents who had shared their experience on their working environment. Cronbach’s alpha of the data set is 0.9538 reliability of dataset

is acceptable (see Appendix B - table 1). Usually the coefficient of reliability lies between 0-1 and higher the value the reliability of the dataset will be accepted as higher.

This section gives the overview of selected dataset/respondents which helps to further validate the reliability of selected dataset.

Figure 4.1 shows that majority of the IT startups are service related organizations, which are proportionately 55.4% out of all responses. Respectively 35.4% are IT product based, 10% counted as IT-Other and rest are Non IT related companies. Based on the results we can say that local IT startups tend to focus more on IT services than IT products. IT products also have a considerable proportion in the Market.

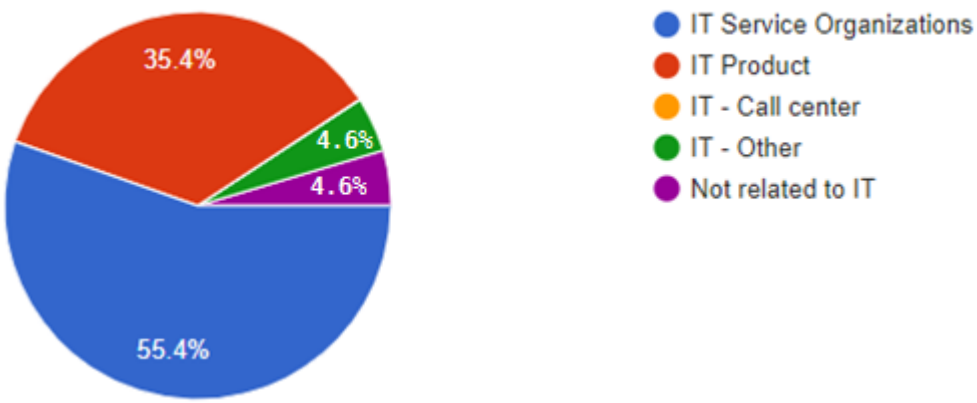

Figure 4.1 Primary working sector of respondents

The second attribute; size of the organization is significant to confirm the reliability of the dataset where the majority (49.2%) of the respondents are from companies with 10-30 employees. 27.7% has fewer than 10 employees, 15.4% has between 30-100 employees and 7.7 % has more than 100 employees. The results confirm the fact that startups are usually formed by less number of people in which more than 75% of respondents claimed that 1-30 employees worked for their companies.

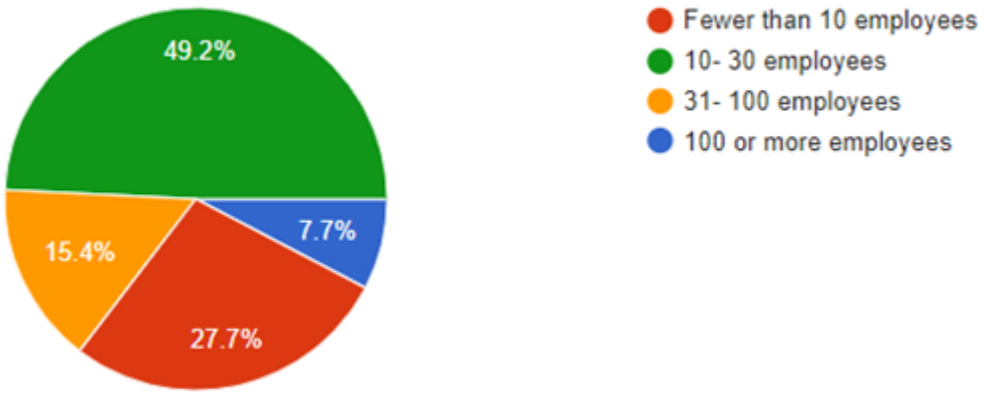

Figure 4.2 Size of the company

When considering the overall experience level, out of all the respondents most of them, 58.5% were in between 25-29 years of age.16.9% are at the age between 30-34 years, 15.4% are at the age between 20-24 years and 9.2% are 35 years or more. According to the result it shows that more than 90% of respondents are at the age between 20 -35 years. People who are young tend to take the risk of working for startups than experienced people.

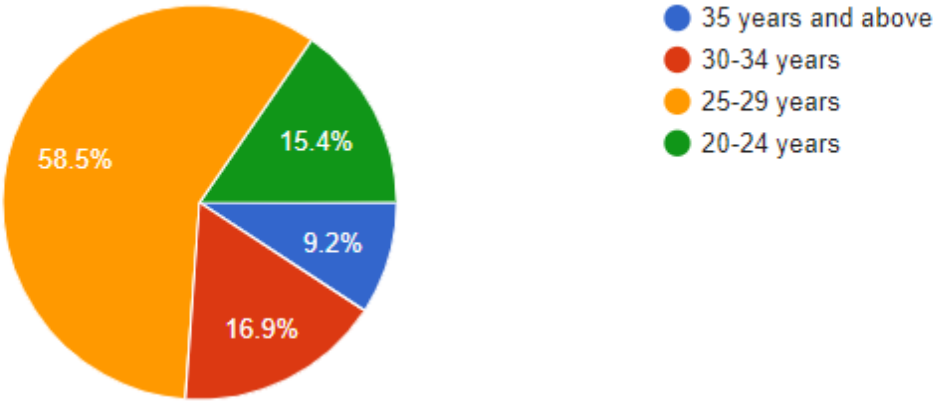

Figure 4.3 Age of respondents

If we consider the gender, the results show that males are taking more risks than female employees in IT sector. The numbers show 64.6% are male and 35.4% of respondents are females.

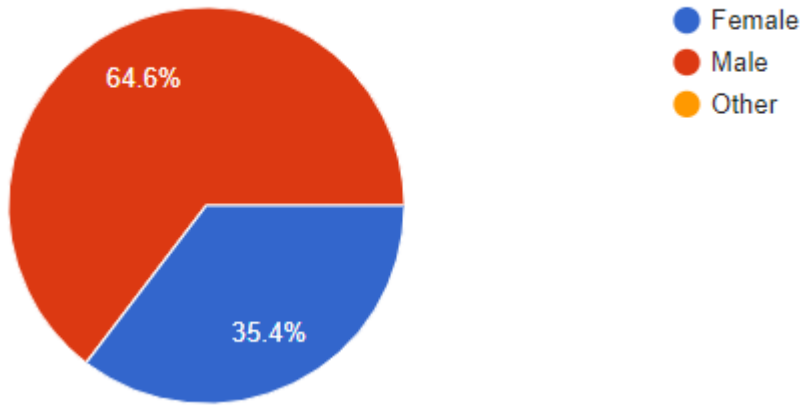

Figure 4.4 Gender of the respondents

Figure 4.5 The cross analysis of Age range vs gender of respondents shows that the age between 25-29 has the highest involvement of females in IT startups which is 37.68%. Overall male involvement in IT startups are higher than female employees. As the age range is increased, the approximate proportion of female employees are gradually reduced as depicted below.

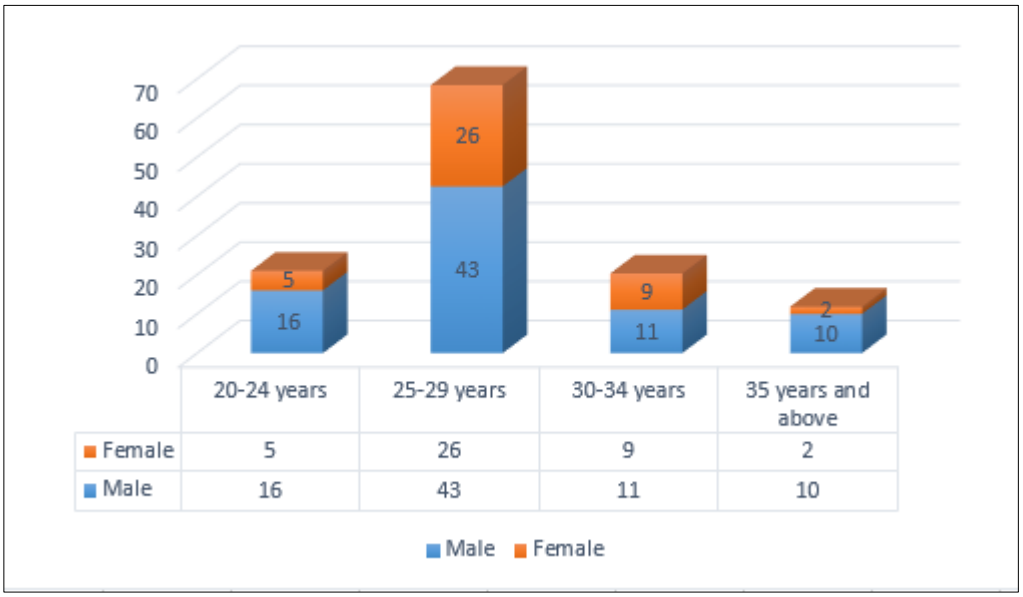

Figure 4.5 cross analysis of age range vs gender of respondents

Education is another indicator that shows the validity of the dataset. Majority of the sample is degree holders which is 78.5%.

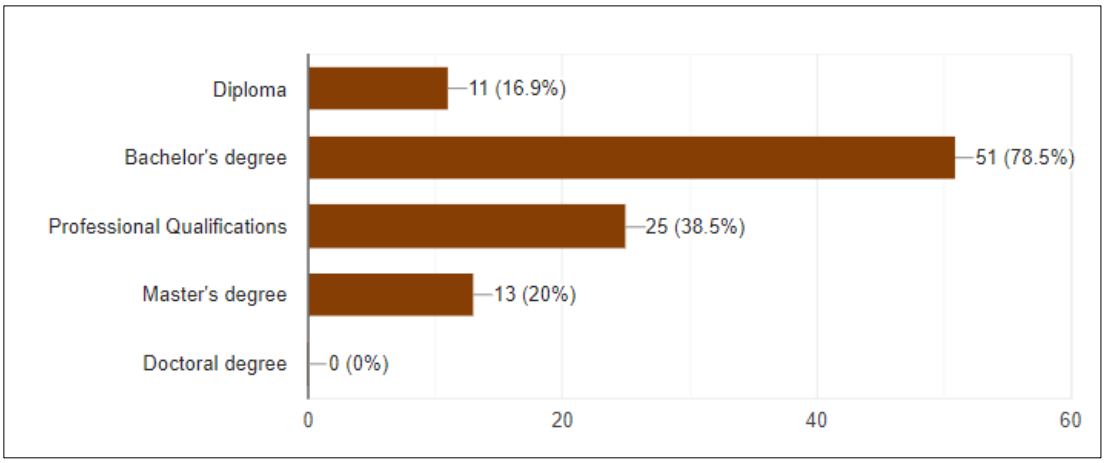

Figure 4.6 Education level of respondents

The graph 4.7 shows whether the respondents have any relationship with company owners. This question was introduced to the questionnaire because of the feedback form target audience where many of them explain that when an employee has a relationship with the owner of the company caused unwanted troubles and which creates an unnecessary grudge among colleagues in moving forward to the success of the company. Results show that the majority (86.2%) of the respondents does not have any personal relationships with the owners of the company.

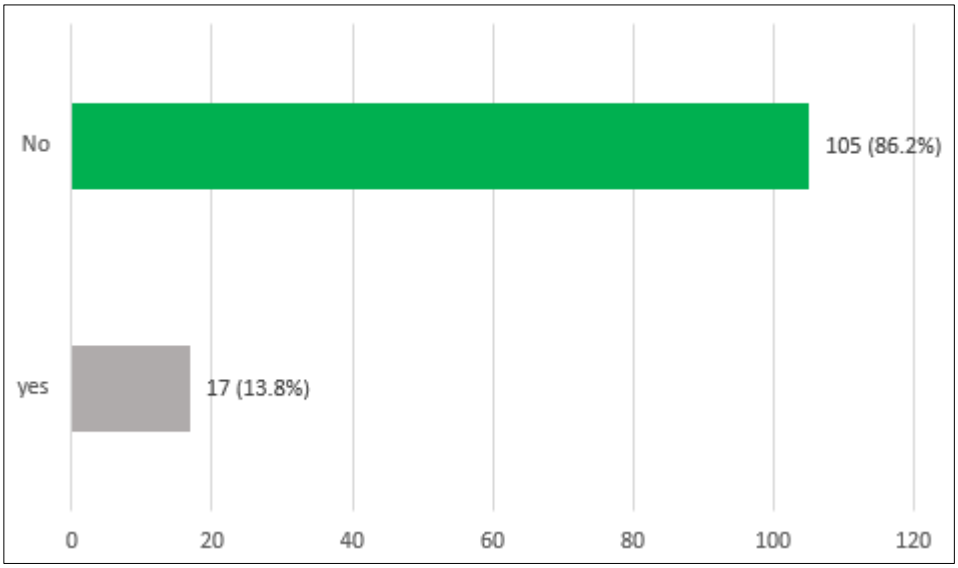

Figure 4.7 Does the respondent has any personal relationship with the owner of your company

4.5 Statistical model for Data Analysis

As described in Chapter 3, (section 3.7) we have selected Partial Least Squares (PLS) method as the analytical technique in this research.

PLS is a path model that contains two types of variables as latent variables (LVs) and manifest variables (MVs). Manifest variables are the indicators of LVs and the path model consists of three components, the **structural model**, the **measurement model** and the **weighting scheme**.

Structural Model is represented by the inner model of a model structure in which LVs can be either related with predecessor or LVs. A LV in a model that does not have any predecessor connected with are called exogenous and all others LVs are called endogenous.

Measurement Model represents the outer model of model structure where it refers to the connections between LVs and MVs. In the PLS context each MV is only allowed to be connected to one LV and in one direction.

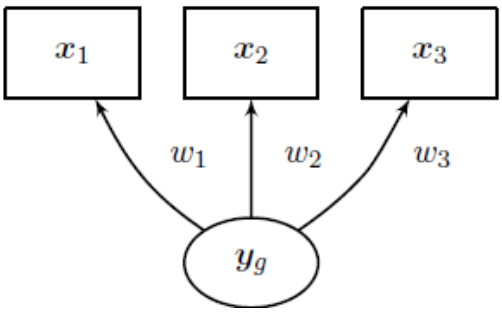

Figure 4.9 Reflective measurement model

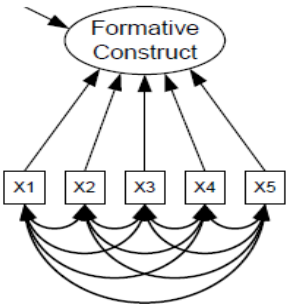

Figure 4.10 Formative measurement model

If the all arrows are pointing outward of LVs, then it is called reflective measurement model (Figure 4.9). Similarly if all arrows are pointing inwards of LVs, then it is called formative measurements model (Figure 4.10). Also If both formative and reflective LVs in a structured model are called mode C model. This study will be using mode C model evaluation to validate the conceptual model.

Weighting scheme

The weighting scheme is used for the estimation of the inner weights of the PLS algorithm. In the inner approximation we estimate each LV as a weighted sum of its neighbouring LVs. The weighting depends on the used scheme such that Centroid weighting scheme or Factorial weighting scheme etc. Again we are scaling the recomputed LVs to have unit variance.

Tool: Smart PLS

SmartPLS is an enterprise software that is standardized for PLS modeling techniques. This software allows users to load data and graphically design the structural model in the canvas. After structuring the model accurately, then statistical calculation can be easily done as per the

requirement. Consistent PLS algorithm, Bootstrapping Blindfolding and PLS predict few of algorithms available to use.
The PLS data analysis was done using the software package SmartPLS (Version: 3.2.8 M3).

4.5.1 PLS Model

In this study main dimensions (Perception of employee vs success of IT startups) can be conceptualized as second order hierarchical component models in which the first order components (measured by reflective factors) formed the second-order components. In this PLS model perception of employees will be measured at two levels of abstraction where the first order model contains eight constructs which reflect the perceived value of employees. Similarly success of IT startups will be measured at four first order constructs which are growth, profitability, and Investment and Customer satisfaction. Finally the higher-order model is adopted by establishing a formative relationship between these two second order constructs.
PLS model was developed to test the research model based on a two order construct model. Dimensions of perceived value of employees (Independent) and the dimensions of success of startups are the constructs of the developed PLS model as below (figure 4.11).

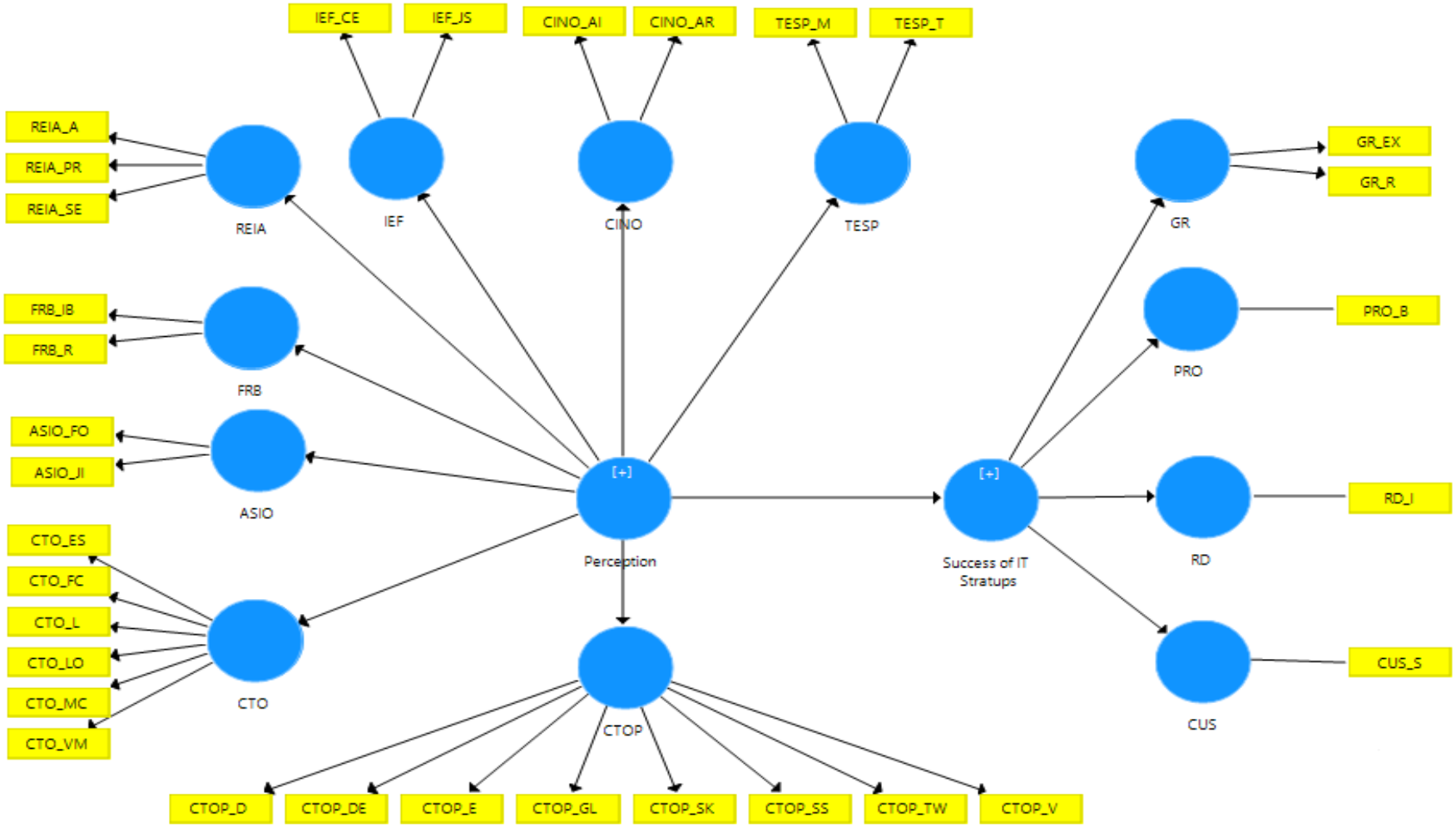

Figure 4.11 PLS Graph of the conceptual model

4.5.2 PLS Statistics

Once the factor scores are estimated by PLS algorithm, the path coefficients can be estimated by ordinary least squares (OLS), according to the structural model. For each LV=ˆYg, g = 1, . . . ,g, the path coefficient is the regression coefficient on its predecessor set (indicators) .

If coefficient is described more deeply it means the strength of a relationship which ranges from -1 to +1.

If the Coefficient of Correlation is equal to;
-1 then it has a perfectly negative correlation. As one asset moves in a direction, the other asset will move in a perfectly opposite direction.
0 then it has no correlation, positive or negative.
1 then it has a perfectly positive correlation. As one asset moves in a direction, the other asset will move perfectly in the same direction

The SmartPLS software automatically standardizes the empirical raw data on a scale from 1 to 5 in our dataset for the PLS path model estimation (if the data is a 1 – 7 scale the software will adjust the standardization approach). The PLS-SEM algorithm stops when the maximum number of 300 iterations has been reached, or the stop criterion of 0.00001 (i.e., 1.0E-5) has been reached.

Consistent PLS algorithm can be used to evaluate the reliability of the measurement model and outer loadings, residual covariance, R2 and AVE (Average Variance Extracted) are estimated within the calculation. Consistent PLS Bootstrapping algorithm evaluates the path coefficients and correlations among the latent variables (T-values) in the structural model. The values above acceptable thresholds for significant path coefficients, R2 and internal consistency (construct reliability) being above 0.70 for each construct will be considered as valid fit model [Thompson et. al., 1995].

Further convergent validity and discriminant validity can be evaluated to test the strength of correlation between each construct in the structured model.

4.6 Reliability and Significance of the Research Findings

In the first step, estimation of the first order constructs for perceived value for employees and success of IT startups were conducted and followed by saving the latent variable scores. Reflective measurement models should be assessed with regard to their reliability and validity. Usually, the first criterion uses Cronbach's alpha (Cronbach, 1951) to check the internal consistency reliability and the reliability based on the indicator inter correlations [Henseler J. et. al.,2009].

According to the guidelines, the approach of reliability assessment is the Cronbach α coefficient, which ranges from 0 to 1. Cronbach‟s should be above .60 for exploratory research and above .70 for confirmatory research [Nunnally, 1978]. So in this research relationship

between first order constructs should be above 0.7 for perception of employees in IT startups and the success of the companies.

Four methods of assessment are adopted to assess the adequacy of the measurement which are indicator reliability, internal consistency reliability, convergent validity and discriminant validity. If AVE value is greater than 0.5 then it is said to be more than half of the variance of its indicators on average and it is an indicator of sufficient convergent validity [Liehr-Gobbers, & Krafft,2009].

First Assessment

The results of the assessment (measurement model) are shown in Table 4.1. In the first method, it is found that composite reliability (CR) for reflective constructs of perception of employee and success of IT startups exceeds the condition of 0.6. As the composite reliability is a measurement of internal consistency it must not be lower than 0.6. [Henseler J. et. al.,2009]. Therefore we can say that CR is at acceptable level.

Lower AVE values mean the variance of data is at a higher level. According to the AVE value of main constructs 0.45 and 0.504, we can say the variance of the data set is average. Further the both constructs show higher CA (Cronbach's Alpha) values respectively 0.956 and 0.834. The acceptance of CA is, if CA is greater or equal to 0.9 then the internal consistency of the dataset is excellent, but some studies claim that if CA value is greater than 0.9, then it is said to be that some of the attributes are redundant and imply the same meaning in different forms, if CA is in between 0.9 – 0.8, then the internal consistency of the dataset is said to be good. The normal interpretation of CA for likert scale questions is said to be acceptable if alpha value is greater or equal to 0.7 [Streiner, D. L., 2003].

The R square (Squared Multiple Correlation) values should be in a greater value. No official guidelines exist to mention R square need to be greater than this, but, clearly, the larger these values, the better. As mentioned below (table 4.1) the R square value shows smaller values.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	R Square
Perception of employees	0.956	0.96	0.957	0.457	0
Success of IT Startups	0.834	0.837	0.835	0.504	0.373

Table 4.1 Scale reliability and composite reliability measurements for the sample

According to the standards, the correlation (Outer loadings) between constructs and manifest variables should be more than 0.7 ($= \sqrt{0.5}$). Besides, some psychometrics (e.g., Churchill, 1979) recommend eliminating outer loadings of **reflective** variables less than 0.4. The

underline explanation of eliminating indicators is removing indicators with low reliability that cause drastic increase on other reliability measures like composite reliability [Henseler J. et. al., 2009].

Since the observed outer loadings for individual indicator for first order constructs and endogenous constructs are at the (Composite Reliability) the standard reliability level, Therefore 0.6 is counted as the minimum threshold value, instead of the confirmatory minimum threshold of 0.7, and ignoring indicators less than 0.4 is acceptable as a threshold value of outer loading indicators, based on the recommendation of [Henseler J. et. al., 2009].

Outer loadings of assessment 1

Attributes	Outer Loadings for its own construct	Perception of Employees	Success of IT Startups
ASIO_FO	0.633	0.628	
ASIO_JI	0.605	0.633	
CINO_AI	0.361	0.405	
CINO_AR	0.655	0.680	
CTOP_D	0.745	0.661	
CTOP_DE	0.687	0.581	
CTOP_E	0.663	0.579	
CTOP_GL	0.844	0.743	
CTOP_SK	0.705	0.611	
CTOP_SS	0.667	0.578	
CTOP_TW	0.899	0.795	
CTOP_V	0.776	0.671	
CTO_ES	0.813	0.746	
CTO_FC	0.722	0.686	
CTO_L	0.768	0.712	
CTO_LO	0.682	0.640	
CTO_MC	0.863	0.797	
CTO_VM	0.771	0.718	
FRB_IB	0.491	0.472	
FRB_R	0.783	0.694	
IEF_CE	0.905	0.852	
IEF_JS	0.774	0.718	
REIA_A	0.878	0.788	
REIA_PR	0.687	0.608	
REIA_SE	0.758	0.663	
TESP_M	0.849	0.715	
TESP_T	0.811	0.690	
CUS_S	1		0.764

GR_EX	0.585		0.691
GR_R	0.558		0.676
PRO_B	1		0.747
RD_I	1		0.665

Table 4.2 Outer loadings for the whole sample

By observing the table 4.2 ,we can investigate the indicator loadings are dispersed within a large range; From – values to + values; where those indicators with loading greater than 0.5 are accepted since the reliability of independent dimension is less. As a result, seven items with outer loadings less than the minimum threshold of 0.6 should be removed as listed below. Even if some of the attributes have outer loadings greater than 0.6, those have been removed in order to strengthen the model validity.

- CINO_AI, FRB_IB, CTOP_DE, CTOP_E, CTOP_SS of Perception of Employees
- GR_EX and GR_R of Success of IT startups

Based on the statistics seven indicators are not reliable in the model as given in the table 4.2.

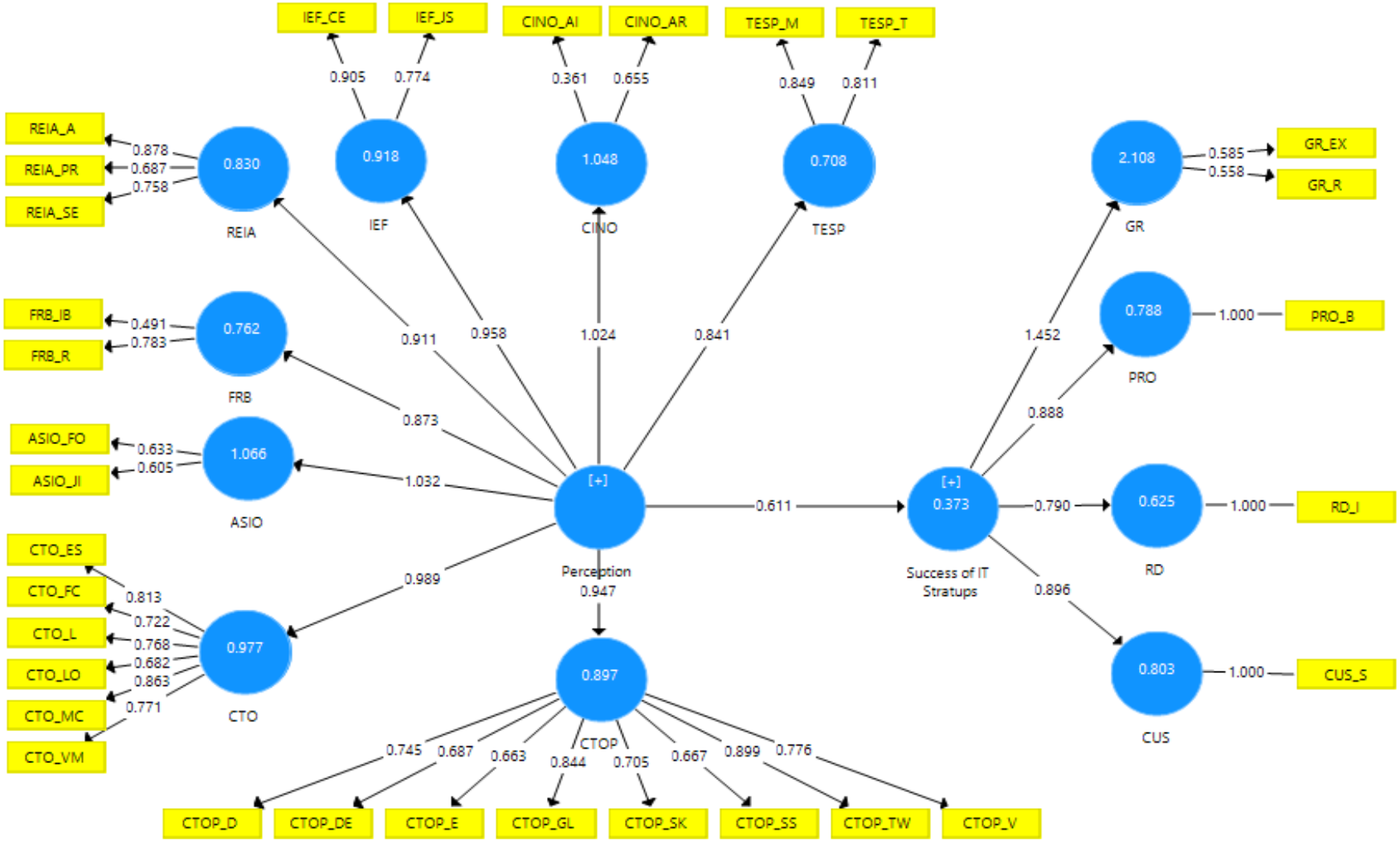

Figure 4.12 Consistence PLS values of assessment 1

Bootstrapping procedure was adopted with 1000 bootstrap samples in 300 iterations to obtain the statistical significance of path coefficient estimates. Table 4.11 shows the path coefficient estimates and the level of statistical significance in our empirical model. The bootstrapping technique is used in this research. At the 0.05 significance level, the hypothesized paths of the constructs are considered to be significant (T-Value (two-tailed): +/- 1.967903), according to the calculated data.

Significance level: 0.05

Under this, the dimensions are considered to be valid for the t value > 1. 967903 only.

	Original Sample (O)	Sample Mean (M)	Standard Deviation...	T Statistics (|O/STDE...	P Values
Perception -> ASIO	1.032	1.042	0.145	7.130	0.000
Perception -> CINO	1.024	n/a	n/a		
Perception -> CTO	0.989	0.992	0.024	40.776	0.000
Perception -> CTOP	0.947	0.947	0.025	37.526	0.000
Perception -> FRB	0.873	0.870	0.124	7.041	0.000
Perception -> IEF	0.958	0.955	0.043	22.165	0.000
Perception -> REIA	0.911	0.914	0.052	17.588	0.000
Perception -> Success of IT Startups	0.611	0.611	0.101	6.058	0.000
Perception -> TESP	0.841	0.856	0.065	12.956	0.000
Success of IT Startups -> CUS	0.896	0.895	0.043	20.770	0.000
Success of IT Startups -> GR	1.452	n/a	n/a		
Success of IT Startups -> PRO	0.888	0.889	0.060	14.739	0.000
Success of IT Startups -> RD	0.790	0.784	0.098	8.080	0.000

Table 4.3 Total Effects (Mean, STDEV, T statistics) of the model (Assessment 1)

The above statistics proves that even without removing unreliable indicators the major paths of the models are statistically valid except below two path in model

- Perception -> CINO
- Success of IT Startups -> GR

Assessment 2

The target of the assessment 2 is to improve the reliability of the model as to meet the standard level. Therefore the PLS model is assessed again after removing the less significant indicators and constructs identified from the first assessment, which are CINO_AI, FRB_IB, CTOP_DE, CTOP_E, CTOP_SS, GR_EX and GR_R respectively.

The assessment 2 focuses on the items that significance in the model as figure 4.13 shows the adjusted model after removing insignificant indicators. The rationale is the deletion of aforementioned items increases composite reliability (CR) or average variance extracted (AVE) in the first order component of Perception of employee dimensions (Figure 4.13).

The results of the measurement are shown in Table 4.4. In the first method, it is found that composite reliability (CR) for reflective constructs for Perception of employees increased by 0.001 and AVE has a slight increase, yet it is at threshold which is 0.5.

Since we accepted the outer loading threshold value as 0.6 based on the reliability of data. The R square (Squared Multiple Correlation) values should be in a greater value. As mentioned below (table 4-9) the R square value shows smaller values. The consistency reliability was further supported by relatively high Cronbach's Alpha (CA) in which both values are greater than 0.7 and the reliability of the adjusted model is at the standard level in terms of CA and CR.

In fact the values for CR, CA and AVE of Success of IT Startups (SITS) indicate a drastic reduction after removing GR construct. Therefore the GR construct should be added in the third assessment since the Average Variance Extracted (AVE) is still below the standards.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	R Square
Perception of employees	0.958	0.961	0.958	0.5	0
Success of IT Startups	0.733	0.738	0.735	0.481	0

Table 4.4 Scale reliability and composite reliability measurements for the adjusted model

The table 4.5 indicates the reliability of all constructs in assessment 2. It shows that the indicators of construct, ASIO are not reliable and also the formative indicators of main constructs, Perception of Employee and Success of Startups have lower AVE values.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance...
ASIO	0.554	0.557	0.555	0.385
CINO	1.000	1.000	1.000	1.000
CTO	0.896	0.902	0.898	0.596
CTOP	0.895	0.905	0.896	0.636
CUS	1.000	1.000	1.000	1.000
FRB	1.000	1.000	1.000	1.000
IEF	0.824	0.842	0.830	0.711
PRO	1.000	1.000	1.000	1.000
Perception	0.955	0.958	0.956	0.500
RD	1.000	1.000	1.000	1.000
REIA	0.821	0.830	0.820	0.605
Success of IT Startups	0.733	0.738	0.735	0.481
TESP	0.815	0.816	0.816	0.689

Table 4.5 Scale reliability and composite reliability measurements for the adjusted model (Assessment 2)

The next target should be improve the reliability of below 3 construct

- ASIO
- Perception of Employees
- Success of IT startups

According to the composite reliability it shows that composite reliability of path Success IT startup has **drastically** reduced. Therefore the removed GR construct should be added to the model and the indicators below 0.6 such that ASIO_JI and CTOP_SK should be removed from the model because the outer loading for these indicators are less than 0.6 (Table 4.6).

	Outer loading for its own construct	Perception	Success of IT Startups
ASIO_FO	0.649	0.631	
ASIO_JI	0.590	0.604	
CINO_AR	1	0.707	
CTOP_D	0.751	0.667	
CTOP_GL	0.843	0.745	
CTOP_SK	0.679	0.581	
CTOP_TW	0.925	0.819	
CTOP_V	0.768	0.661	
CTO_ES	0.820	0.753	
CTO_FC	0.740	0.696	
CTO_L	0.765	0.709	
CTO_LO	0.664	0.623	
CTO_MC	0.873	0.811	
CTO_VM	0.754	0.705	
FRB_R	1	0.718	
IEF_CE	0.914	0.847	
IEF_JS	0.766	0.697	
REIA_A	0.878	0.802	
REIA_PR	0.699	0.699	
REIA_SE	0.746	0.659	
TESP_M	0.844	0.713	
TESP_T	0.815	0.697	
CUS_S	1		0.724
PRO_B	1		0.715
RD_I	1		0.640

Table 4.6 outer loadings for adjusted model (Assessment 2)

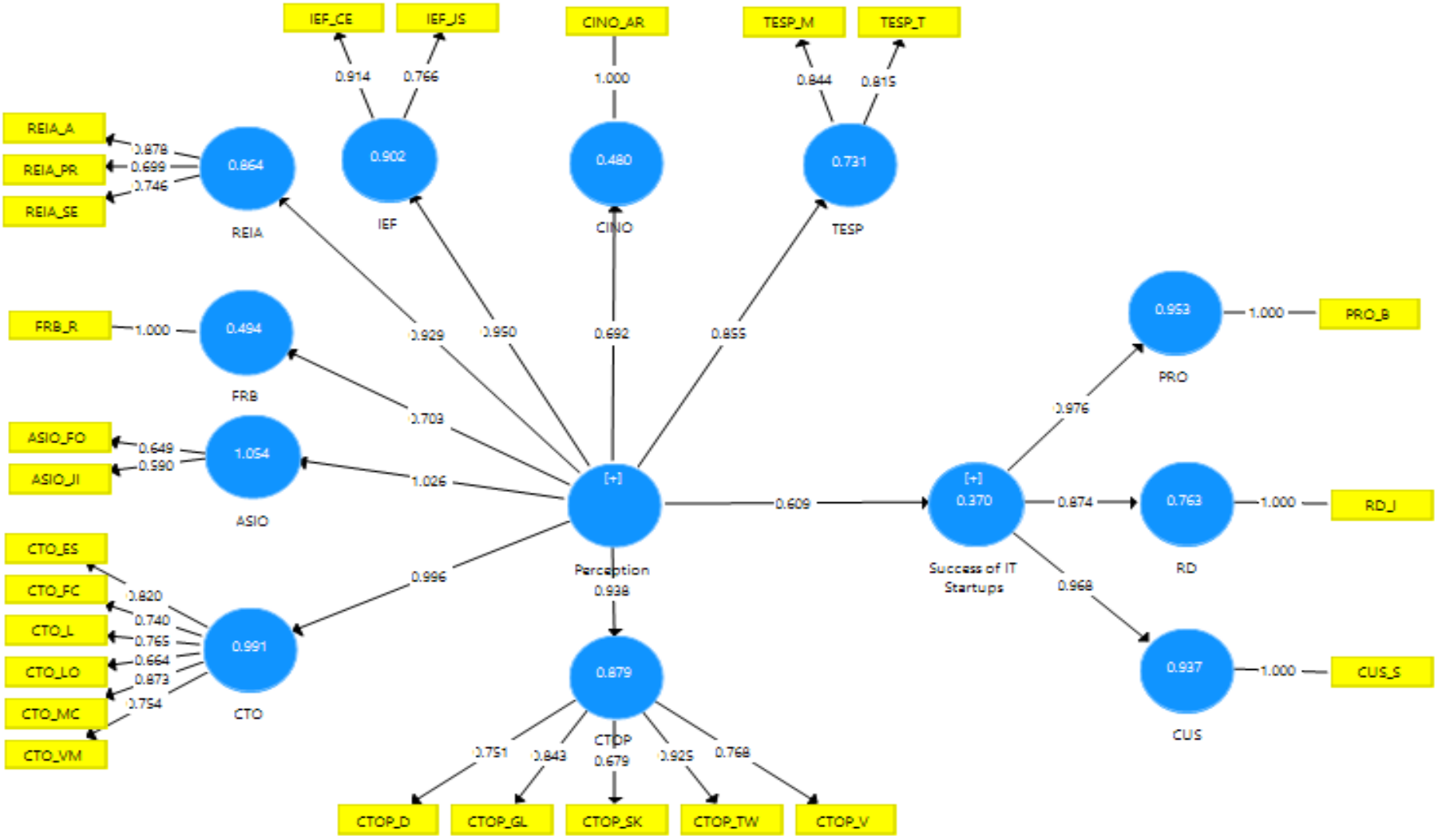

Figure 4.13 PLS values for the assessment 2

Assessment 3

The assessment 3 focuses on further improving the reliability of the model. Figure 14.14 shows the adjusted PLS model based on the assessment 2. The rationale is the deletion of aforementioned items increase composite reliability (CR) and average variance extracted (AVE) in the first order component of Perception of employee dimensions and success of IT startups (Figure 4.14).

The results of the assessment 3 are shown in Table 4.7. It indicates that composite reliability (CR), Cronbach's Alpha (CA), rho_A and Average Variance Extracted (AVE) for main constructs; Perception of employees and Success of IT startups are increased to up to the accepted level. Specially, the AVE for both constructs were at below the threshold from assessment 2 and now both AVE values are greater than 0.5.

Since we accepted the outer loading threshold value as 0.6 based on the reliability of data.
The R square (Squared Multiple Correlation) values should be in a greater value. As mentioned below (table 4.7) the R square value shows smaller values. The consistency reliability was further supported by relatively high Cronbach's Alpha (CA) in which both values are greater than 0.7. Therefore the reliability of the adjusted model is at the standard level.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	R Square
Perception of employees	0.954	0.957	0.955	0.516	0
Success of IT Startups	0.799	0.811	0.805	0.509	0.379

Table 4.7 Scale reliability and composite reliability measurements for the adjusted model of assessment 3

Further the table 4.8 shows the reliability of all constructs are at acceptable level. Hence we can guaranteed the validity of the whole model.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted...
ASIO	1.000	1.000	1.000	1.000
CINO	1.000	1.000	1.000	1.000
CTO	0.896	0.902	0.898	0.596
CTOP	0.898	0.906	0.898	0.689
CUS	1.000	1.000	1.000	1.000
FRB	1.000	1.000	1.000	1.000
GR	1.000	1.000	1.000	1.000
IEF	0.824	0.845	0.831	0.713
PRO	1.000	1.000	1.000	1.000
Perception	0.954	0.957	0.955	0.516
RD	1.000	1.000	1.000	1.000
REIA	0.821	0.831	0.820	0.605
Success of IT Startups	0.799	0.811	0.805	0.509
TESP	0.815	0.816	0.815	0.688

Table 14.8 Reliability of variable of final assessment

The table 4.9 indicates that outer loadings of each indicator in the final model are greater than 0.6. Even if the outer loading of manifest variables (Indicators) has values more than 0.6. It shows weak path correlation. In order to improve the model validity we removed the GR_EX indicator which improves the model validity as in Table 4.8.

	Outer loading for its own construct	Perception	Success of IT Startups
ASIO_FO	1	0.652	
CINO_AR	1	0.712	
CTOP_D	0.751	0.661	
CTOP_GL	0.847	0.742	
CTOP_TW	0.941	0.825	
CTOP_V	0.767	0.654	
CTO_ES	0.820	0.762	
CTO_FC	0.740	0.702	
CTO_L	0.762	0.714	
CTO_LO	0.666	0.633	
CTO_MC	0.872	0.815	

CTO_VM	0.755	0.715	
FRB_R	1	0.714	
IEF_CE	0.920	0. 851	
IEF_JS	0.761	0. 698	
REIA_A	0.880	0.787	
REIA_PR	0.701	0.615	
REIA_SE	0.742	0.644	
TESP_M	0.838	0.709	
TESP_T	0.821	0.705	
CUS_S	1		0.699
GR_R	1		0.742
PRO_B	1		0.788
RD_I	1		0.614

Table 4.9 outer loadings for final model

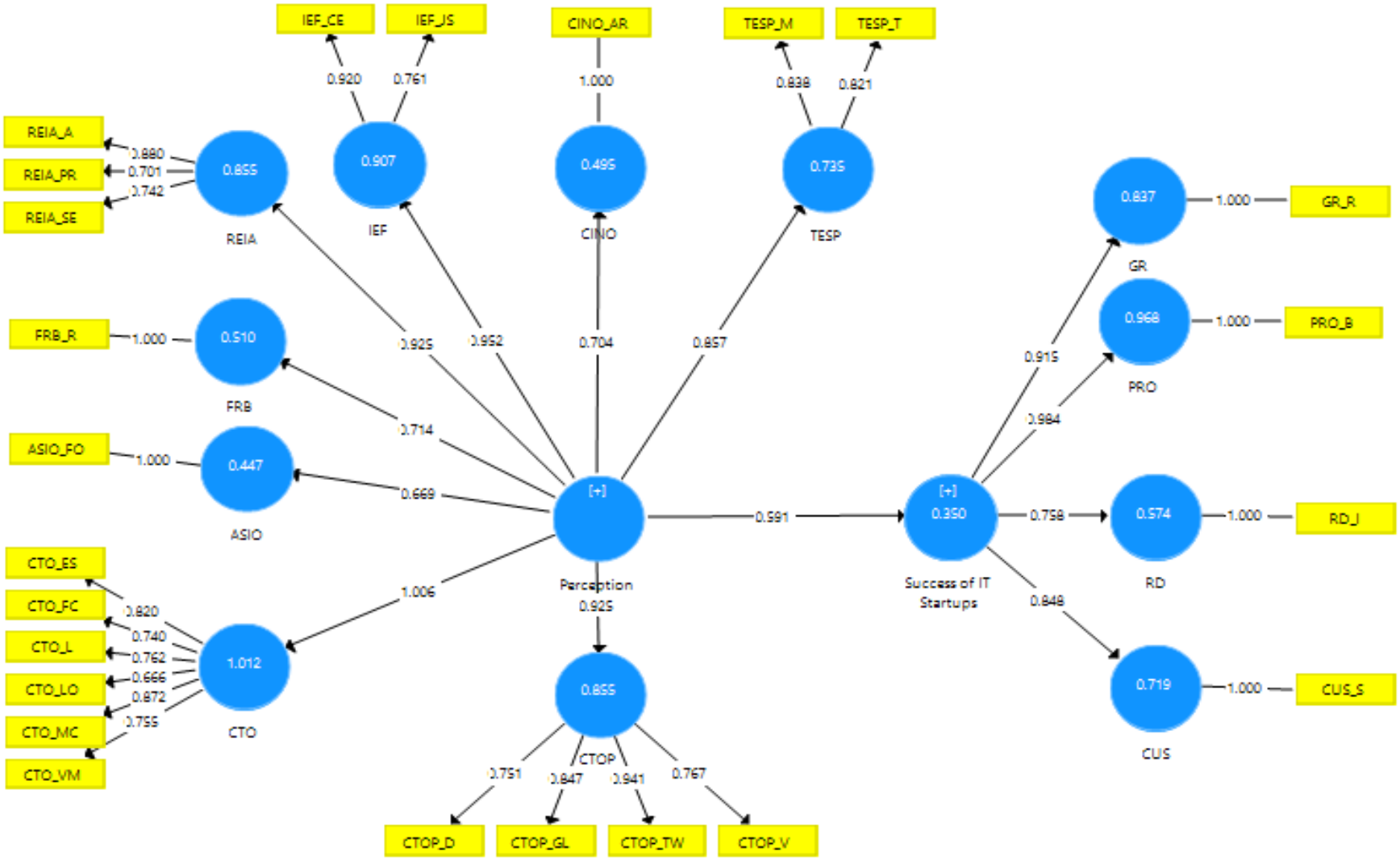

Figure 4.14 PLS values for the final model (Assessment 3)

Cross-loadings of variables is an evaluation criteria to determine the discriminant validity of the dataset. If an indicator has a higher correlation with another latent variable than with its respective latent variable, the appropriateness of the model should be reconsidered [Henseler J. et. al., 2009]. By examining the cross-loading as in the below table, we can see whether the measurement items actually correlate with the constructs.

All the depicted measurement items in the model have positive correlation with its constructs as represent in the table 4.10.

	Perception	Success of IT Startups
ASIO_FO	0.652	0.228
CINO_AR	0.712	0.416
CTOP_D	0.661	0.476
CTOP_GL	0.742	0.667
CTOP_TW	0.825	0.509
CTOP_V	0.654	0.569
CTO_ES	0.762	0.430
CTO_FC	0.702	0.390
CTO_L	0.714	0.384
CTO_LO	0.633	0.394
CTO_MC	0.815	0.413
CTO_VM	0.715	0.528
FRB_R	0.714	0.238
IEF_CE	0. 851	0.561
IEF_JS	0. 698	0.466
REIA_A	0.787	0.503
REIA_PR	0.615	0.157
REIA_SE	0.644	0.268
TESP_M	0.709	0.411
TESP_T	0.705	0.409
CUS_S	0.488	0.699
GR_R	0.435	0.742
PRO_B	0.406	0.788
RD_I	0.360	0.614

Table 4.10 cross loadings for the final model

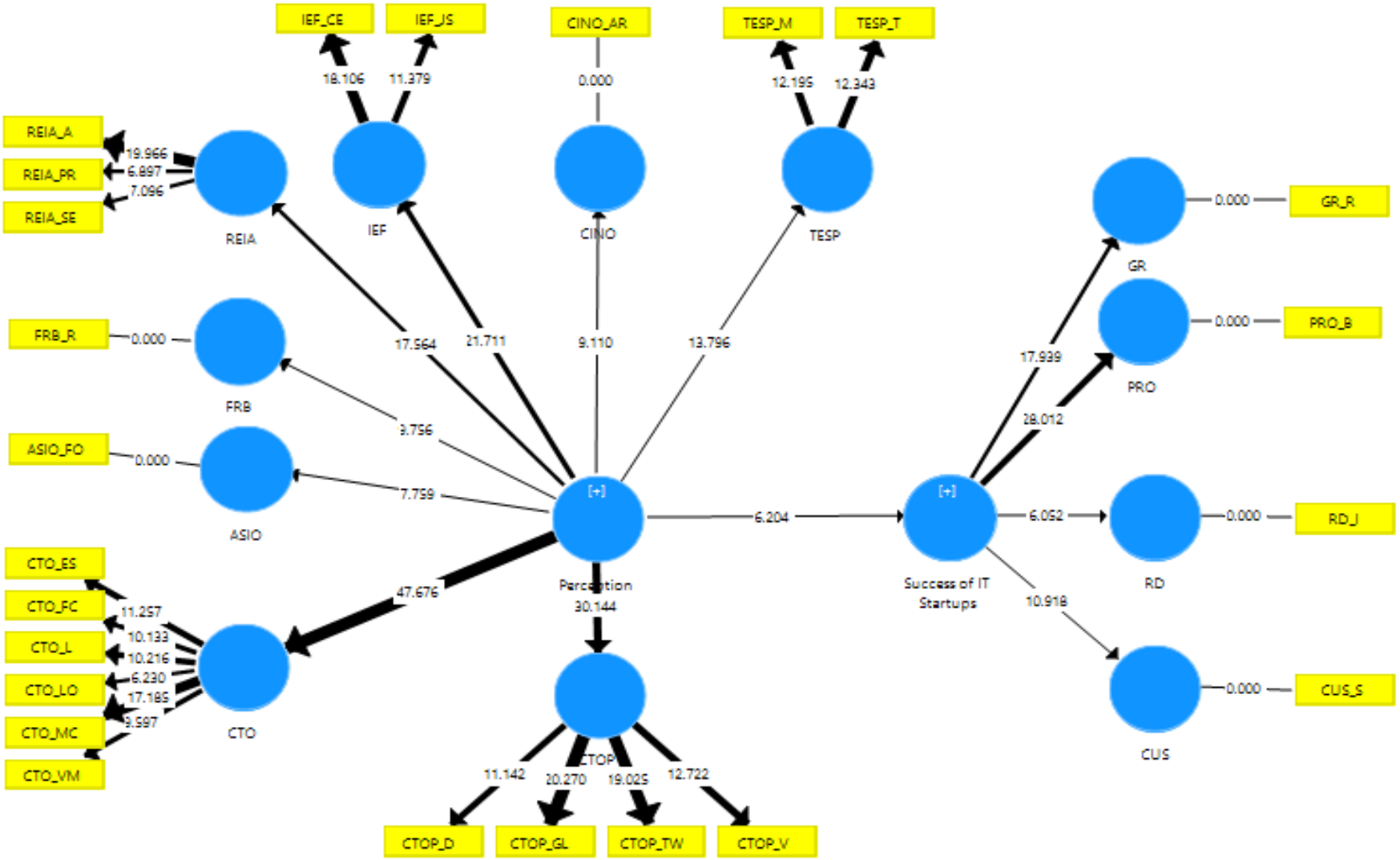

Figure 4.15 T values for the final model

In the next step Bootstrapping procedure was adopted with 1000 bootstrap samples to obtain the statistical significance of path coefficient estimates. As depicted in Figure 4.11 the path efficiency of the overall model is proven between the 95% confidence levels. Hence we accepted the hypothesis that has been derived as below: (significance P value <0.05).

At the 0.05 significance level, the hypothesized paths of the constructs are considered to be significant if the T-Value (two-tailed) is greater than +/-1.967903.

As depicted in table 4.11, T statistics for the all the paths are greater than 1.967. Therefore we can claim that Perception of Employees has a positive relationship with Success of IT startups.

	Original Sampl...	Sample Mean (M)	Standard Devia...	T Statistics (|O/S...	P Values
Perception -> CINO	0.704	0.702	0.077	9.110	0.000
Perception -> CTO	1.006	1.009	0.021	47.676	0.000
Perception -> CTOP	0.925	0.926	0.031	30.144	0.000
Perception -> FRB	0.714	0.711	0.073	9.756	0.000
Perception -> IEF	0.952	0.951	0.044	21.711	0.000
Perception -> REIA	0.925	0.926	0.053	17.564	0.000
Perception -> Success of IT Startups	0.591	0.583	0.095	6.204	0.000
Perception -> TESP	0.857	0.866	0.062	13.796	0.000
Success of IT Startups -> CUS	0.848	0.838	0.078	10.918	0.000
Success of IT Startups -> GR	0.915	0.911	0.051	17.939	0.000
Success of IT Startups -> PRO	0.984	0.984	0.035	28.012	0.000
Success of IT Startups -> RD	0.758	0.741	0.125	6.052	0.000

Table 4.11 Total Effects (Mean, STDEV, T statistics) of final model (Assessment 3)

According to the Path coefficient estimates all the paths in the finalized model is significant and all the Hypothesis will be accepted as display in Table 4.12. Further we can claim that the relationship between Perception of Employees and Success of IT startups is not a strong relationship.

	Hypothesis	path coefficient estimates (T value)	
H1a.	H1a: Confidence and trust in the owner or partners (CTOP) are positively related to perception of employees	30.144	Accepted
H1b.	H1b: Confidence and trust in the organisation (CTO) are positively related to perception of employees	47.676	Accepted
H1c.	H1c: Interest in the employees' future (IEF) are positively related to perception of employees	21.711	Accepted
H1d.	H1d: Fare remuneration and benefits (FRB) are positively related to perception of employees	9.756	Accepted
H1e.	H1e: Actively seeking employees' ideas and opinions (ASIO) are positively related to perception of employees	7.759	Accepted
H1f.	H1f: Communicating information and needs in the organisation (CINO) are positively related to success of IT startups	9.110	Accepted
H1g.	H1g: Train employees to solve problems (TESP)are positively related to success of IT startups	13.796	Accepted
H1h.	H1h: Recognising employees' involvement and accomplishments (REIA) are positively related to success of IT startups	17.564	Accepted
H2a.	H2a: Growth rate (GR) is positively related to success of IT startups	17.939	Accepted
H2b.	H2b: Profitability (PRO) is positively related to success of IT startups	28.012	Accepted
H2c.	H2c: Investment on R&D (RD) is positively related to success of IT startups	6.052	Accepted
H2d.	H2d: Customers Satisfaction (CUS) is positively related to success of IT startups	10.918	Accepted
H3.	H3: Perception of employees are positively related to Success of IT startups	6.204	Accepted

Table 4.12 Hypothesis analysis based on path coefficient

5 RECOMMENDATIONS AND CONCLUSION

This chapter provides the conclusion of the research, recommendations for Startups in IT and IT service sector, limitations of the research and suggestions for future research that can be pursued in this area.

5.2 Conclusion

The research outcome can be concluded as there is a positive relationship between perception of employees and the success of IT startups. Further analysis shows that the owners' attributes and company attributes have a highly significant impact over the success of IT startups. Smart PLS tool has been used to validate the model. The conceptual framework is validated with the 0.05% level of significance. The final research outcome prioritized the distinguishing factors as briefly described below.

Confidence and trust in the owner or partners (CTOP) Confidence and trust in the organisation (CTO), Interest in the employees' future (IEF), Recognising employees' involvement and accomplishments (REIA) are consequently prioritized attributes of perception of employee dimensions. Similarly Growth rate (GR), Profitability (PRO) and Customer Satisfaction (CUS) are the significant attributes of success of IT startups. The figure 4.16 depict the strength of each path as in the model.

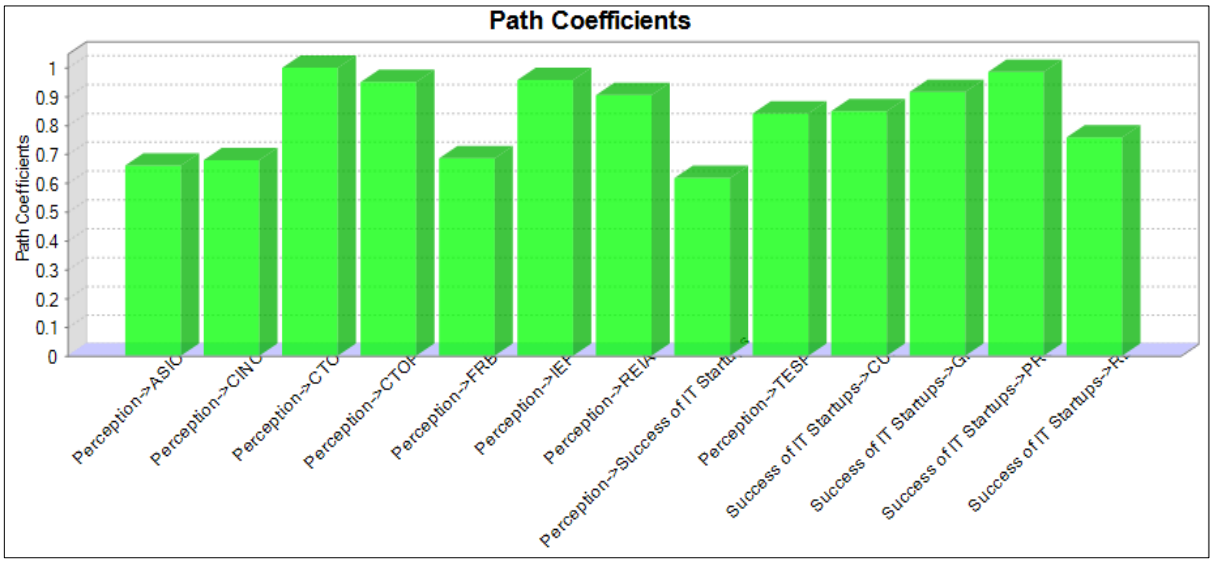

Figure 5.1 Path coefficients of the model

The main hypothesis of this model is proven in this research study. In fact, Perception of employees is a not a strong critical factor towards the Success of IT startups. But below factors have respectively higher correlation towards the perception of employees in IT startups.

- Confidence and trust in the owner or partners (CTOP) are positively related to perception of employees
- Confidence and trust in the organisation (CTO)

- Interest in the employees' future (IEF)
- Recognising employees' involvement and accomplishments (REIA)

Consideration of above facts regarding employees in IT startups can help owners to create loyal and strong human power within the organization.

Apart from the model validation, analysis of general information of the respondents' shows that 55.4% of startups are serviced based and 35.4% are product based companies. If considering the size of the startup, the majority (49.2%) of the respondents are from companies with 10-30 employees. 27.7% has fewer than 10 employees. 92.3% respondents confirm that between 1-100 employees are working in their startups. Out of the respondents 58.5% were in between 25-29 years of age. According to the result it shows that more than 90% of respondents are at the age between 20 -35 years. So it shows mostly the younger generation tend to choose jobs in IT startups as a career. Further, the age between 25-29 has the highest involvement of females in IT startups which is 37.68%. Although the overall male involvement in IT startups are considerably higher than the female employees which is 64.6%.

5.3 Recommendation

There are cases when IT startups fail while all the success factors are available. The factors identified in this model helps entrepreneurs or managers to create a right environment for employees to positively manipulate their perceived value towards the IT startups. For that, the employer and the company should showcase themselves as confident and trustworthy towards the employees. Similarly, having interest in the employees 'future and well-being, recognizing, involving them in decision making and listening to their opinion can make a huge impact to improve the perceived value of employees in IT startups.

All the factors identified in this research are based on the perspective of employees who are working on IT startups and also it is more essential to verify the expectation of employees frequently in startups, since the employees play a critical role in the company. Furthermore this framework can be used as a benchmark to assess the level of perceived value of employees' in both perspectives; owner and employee over the process of success.

5.4 Research Limitation

The impact of perceived value of employees towards the success of IT startups are measured in a more generalized context of IT startups. Therefore the responses can be different from each spectrum of the business such as IT product, service, support etc. The target population of the research is the employees who are working in IT startups in Sri Lanka which can be enterprises or small groups and the dataset can be biased in geographical aspects. Furthermore the population of employees who are working on IT startups in Sri Lanka has been identified as uncertain and frequently changing. Similarly measuring success of the IT startups from the perspective of employees become more challenging when some of the IT employees do not acknowledge the financial status of their companies.

5.5 Future Work

Possible directions on future research can be done mainly by increasing the sample size which can lead the analysis considering other business domain such that development, manufacturing, service sector…etc. Then the prioritization of variables can be attributed based on the specific business domain.

Future research can also consider to extend the framework to analyse the gap of perceived value between owners and employees, working on IT startups. In which employer can assess the areas that needs to be improved for continuous performance and improvement of the business.

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APPENDIX A: QUESTIONNAIRE

A Study on the Impact of Employee Perception on the Success of IT Startups

This survey is conducted as the final project of MBA in IT - University of Moratuwa. Main purpose of the survey is to identify the impact of Employee Perception on the Success of IT Startups (New IT ventures).

This questionnaire will approximately consume 5 - 10 mins from your valuable time.

The survey has questions to examine your personal view point of your organization.

Thank you for the participation in the survey!!

Best regards
Madushi Rathnayake

*Required

1. Which of the following categories best describes the IT (Information Technology) sector you primarily work in? * *

Choose

2. What is the size of your organization? * *

Choose

3. Age * *

Choose

4. Gender *

Choose

5 Education

- [ ] Diploma
- [ ] Bachelor's degree
- [ ] Professional Qualifications
- [ ] Master's degree
- [ ] Doctoral degree

1. Do you have any personal relationship with the owner of your company? 1 point *

- ○ No
- ○ Yes

If "Yes" please specify 1 point

- ☐ A Friend
- ☐ A Relative
- ☐ Other

2. How do you rate the owner (Entrepreneur) of your company considering below attributes? 8 points *

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Experienced person and learn from experience	○	○	○	○	○
Skillful and knowledgeable	○	○	○	○	○
Great leader	○	○	○	○	○
Treat people well	○	○	○	○	○
A visionary person	○	○	○	○	○
Disciplined	○	○	○	○	○
courageous	○	○	○	○	○
Social skills-networking with the targeted audience	○	○	○	○	○

3. How do you rate your company considering below attributes? *

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I feel confident of managerial decisions	○	○	○	○	○
I'm loyal to the organization	○	○	○	○	○
I confidently follow the leadership	○	○	○	○	○
Company has clear vision and mission	○	○	○	○	○
Well organized	○	○	○	○	○
I enjoy my job	○	○	○	○	○

4. Rate the below statements regarding your experience at work place *

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I've the feeling of job security that my job will be there in the future	○	○	○	○	○
Company provide the opportunity for growth/ advancement	○	○	○	○	○
I am well paid	○	○	○	○	○
Company offer other financial benefits like insurance and bonuses	○	○	○	○	○

Section 2

The survey has questions to examine your personal view point of your organization.

5. Rate the below statements regarding job involvement at your work place *

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Actively seeking my ideas and opinions	○	○	○	○	○
I'm taking my job as serious and countable	○	○	○	○	○
I'm well aware of the operations of the company	○	○	○	○	○
Company provides adequate resources to complete your work?	○	○	○	○	○

6. Rate the below statements regarding training and recognition at your work place *

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Are you given the opportunity to learn new skills	○	○	○	○	○
Your colleagues and superiors always encourage you	○	○	○	○	○
Do you feel that your salary reflects your worth to the organization?	○	○	○	○	○
Do you feel appreciated for your work performance?	○	○	○	○	○
Do you feel a sense of achievement for your work efforts?	○	○	○	○	○

7. How long have you been working for this organization?

Choose ▾

8. How many years your organization has been operating?

Choose ▾

9. This section evaluates the financial position of your company

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Last year your organization experienced more than 2% of growth?	○	○	○	○	○
Company has a positive balance of income	○	○	○	○	○
This year company has Invested on R&D	○	○	○	○	○
Plan to expand the business in next year	○	○	○	○	○
This year company increases its customer base	○	○	○	○	○

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APPENDIX B: ANALYSIS

Partial Least Squares Algorithm

The PLS path modeling method was developed by Wold (1982). In essence, the PLS algorithm is a sequence of regressions in terms of weight vectors. The weight vectors obtained at convergence satisfy fixed point equations (see Dijkstra, 2010, for a general analysis of these equations).

Consistent PLS

The consistent PLS (PLSc) algorithm performs a correction of reflective constructs' correlations to make results consistent with a factor-model (Dijkstra 2010; Dijkstra 2014; Dijkstra and Henseler 2015; Dijkstra and Schermelleh-Engel 2014). In principle, the correction builds on Nunnally's (1978) well-known correction for attenuation formula.

	CTOP_E	CTOP_S	CTOP_G	CTOP_TW	CTOP_V	CTOP_D	CTOP_DE	CTOP_S	CTO_MC	CTO_LO	CTO_L	CTO_VM	CTO_FC	CTO_ES	IEF_JS	IEF_CE	FRB_R	FRB_IB	ASIO_J	ASIO_FO	CINO_AI	CINO_A	TESP_T	TESP_M	REIA_P	REIA_A	REIA_S	GR_R	PRO_B	RD_I	GR_EX	CUS_S
CTOP_E	1																															
CTOP_SK	0.753	1																														
CTOP_GL	0.548	0.587	1																													
CTOP_TW	0.427	0.52	0.767	1																												
CTOP_V	0.531	0.592	0.758	0.585	1																											
CTOP_D	0.39	0.484	0.671	0.644	0.708	1																										
CTOP_DE	0.588	0.444	0.656	0.575	0.612	0.558	1																									
CTOP_SS	0.406	0.362	0.508	0.499	0.473	0.478	0.633	1																								
CTO_MC	0.395	0.444	0.663	0.741	0.598	0.539	0.501	0.48	1																							
CTO_LO	0.376	0.263	0.468	0.512	0.415	0.458	0.467	0.509	0.517	1																						
CTO_L	0.479	0.409	0.444	0.588	0.422	0.423	0.443	0.462	0.646	0.639	1																					
CTO_VM	0.432	0.441	0.51	0.599	0.446	0.306	0.552	0.58	0.612	0.502	0.63	1																				
CTO_FC	0.238	0.432	0.46	0.615	0.372	0.305	0.314	0.326	0.67	0.298	0.54	0.748	1																			
CTO_ES	0.495	0.506	0.579	0.66	0.604	0.442	0.408	0.345	0.747	0.528	0.64	0.618	0.51	1																		
IEF_JS	0.449	0.499	0.539	0.546	0.505	0.416	0.443	0.558	0.556	0.591	0.48	0.649	0.6	0.456	1																	
IEF_CE	0.453	0.449	0.626	0.708	0.532	0.552	0.495	0.527	0.652	0.63	0.62	0.676	0.65	0.626	0.7	1																
FRB_R	0.208	0.228	0.39	0.543	0.278	0.384	0.311	0.355	0.578	0.438	0.45	0.478	0.426	0.531	0.458	0.604	1															
FRB_IB	0.297	0.334	0.206	0.195	0.219	0.205	0.104	0.03	0.2	0.327	0.23	0.338	0.352	0.266	0.454	0.486	0.385	1														
ASIO_JI	0.474	0.494	0.455	0.452	0.41	0.487	0.328	0.426	0.425	0.364	0.4	0.293	0.311	0.297	0.405	0.434	0.377	0.272	1													
ASIO_FO	0.414	0.378	0.41	0.546	0.385	0.468	0.371	0.239	0.54	0.479	0.59	0.47	0.428	0.513	0.512	0.515	0.332	0.181	0.383	1												
CINO_AI	0.347	0.394	0.228	0.067	0.266	0.142	0.125	0.182	0.263	0.257	0.23	0.222	0.144	0.278	0.214	0.195	0.152	0.242	0.489	0.161	1											
CINO_AR	0.251	0.306	0.474	0.611	0.308	0.378	0.285	0.333	0.596	0.415	0.53	0.465	0.596	0.457	0.325	0.564	0.549	0.216	0.306	0.372	0.236	1										
TESP_T	0.284	0.295	0.499	0.604	0.369	0.431	0.321	0.399	0.496	0.345	0.42	0.462	0.486	0.474	0.424	0.624	0.458	0.313	0.401	0.494	0.112	0.545	1									
TESP_M	0.339	0.438	0.469	0.575	0.524	0.594	0.363	0.388	0.454	0.387	0.41	0.403	0.493	0.528	0.493	0.642	0.457	0.376	0.457	0.488	0.205	0.429	0.688	1								
REIA_PR	0.257	0.332	0.465	0.431	0.369	0.435	0.24	0.155	0.617	0.292	0.51	0.267	0.415	0.56	0.27	0.431	0.677	0.281	0.414	0.328	0.27	0.501	0.254	0.306	1							
REIA_A	0.362	0.467	0.631	0.665	0.543	0.512	0.362	0.427	0.674	0.38	0.48	0.525	0.557	0.624	0.471	0.635	0.627	0.268	0.506	0.363	0.316	0.578	0.588	0.569	0.592	1						
REIA_SE	0.425	0.432	0.356	0.443	0.475	0.324	0.305	0.356	0.636	0.348	0.54	0.46	0.418	0.699	0.393	0.492	0.576	0.225	0.468	0.401	0.434	0.355	0.376	0.377	0.644	0.578	1					
GR_R	0.418	0.433	0.505	0.432	0.39	0.335	0.397	0.256	0.285	0.371	0.33	0.431	0.331	0.32	0.401	0.428	0.056	0.362	0.24	0.26	0.235	0.259	0.38	0.29	0.006	0.235	0.146	1				
PRO_B	0.366	0.245	0.408	0.315	0.387	0.335	0.439	0.256	0.278	0.325	0.26	0.408	0.243	0.369	0.315	0.364	0.12	0.371	0.229	0.238	0.425	0.235	0.303	0.321	0.039	0.294	0.239	0.737	1			
RD_I	0.252	0.206	0.424	0.256	0.293	0.221	0.304	0.261	0.222	0.17	0.26	0.274	0.323	0.108	0.323	0.393	0.212	0.34	0.208	0.092	0.283	0.429	0.215	0.188	0.281	0.346	0.113	0.385	0.445	1		
GR_EX	0.27	0.18	0.406	0.254	0.428	0.421	0.345	0.354	0.262	0.196	0.2	0.246	0.084	0.123	0.218	0.334	0.237	0.112	0.38	0.041	0.222	0.202	0.179	0.273	0.097	0.319	0.107	0.327	0.378	0.6	1	
CUS_S	0.386	0.315	0.576	0.445	0.55	0.46	0.467	0.405	0.392	0.239	0.26	0.382	0.229	0.402	0.293	0.425	0.313	0.169	0.363	0.039	0.287	0.295	0.26	0.362	0.161	0.581	0.259	0.436	0.567	0.42	0.717	1

Table 1- Correlation

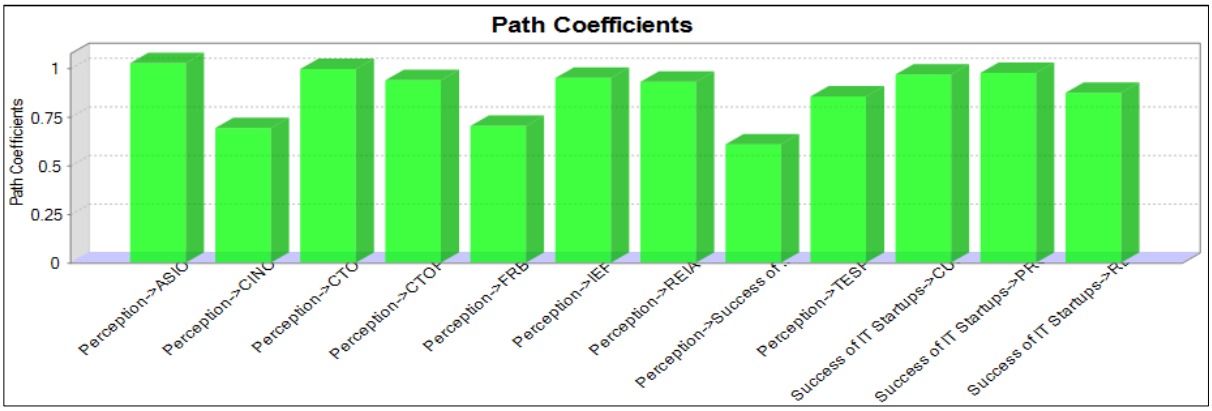

Figure 1-Path coefficient- Assessment 2

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Perception -> ASIO	1.026	1.048	0.283	3.619	0.000
Perception -> CINO	0.674	0.671	0.084	8.018	0.000
Perception -> CTO	0.991	0.994	0.025	38.865	0.000
Perception -> CTOP	0.951	0.951	0.024	40.057	0.000
Perception -> FRB	0.684	0.676	0.080	8.512	0.000
Perception -> IEF	0.953	0.952	0.044	21.544	0.000
Perception -> REIA	0.909	0.906	0.053	17.143	0.000
Perception -> Success of IT Startups	0.629	0.621	0.109	5.769	0.000
Perception -> TESP	0.841	0.858	0.072	11.731	0.000
Success of IT Startups -> CUS	0.968	0.965	0.054	17.953	0.000
Success of IT Startups -> PRO	0.976	0.975	0.059	16.429	0.000
Success of IT Startups -> RD	0.873	0.863	0.105	8.286	0.000

Table1- T statistics Reliability of variable – Assessment 2

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted...
ASIO	1.000	1.000	1.000	1.000
CINO	1.000	1.000	1.000	1.000
CTO	0.896	0.902	0.898	0.596
CTOP	0.898	0.906	0.898	0.689
CUS	1.000	1.000	1.000	1.000
FRB	1.000	1.000	1.000	1.000
GR	1.000	1.000	1.000	1.000
IEF	0.824	0.845	0.831	0.713
PRO	1.000	1.000	1.000	1.000
Perception	0.954	0.957	0.955	0.516
RD	1.000	1.000	1.000	1.000
REIA	0.821	0.831	0.820	0.605
Success of IT Startups	0.799	0.811	0.805	0.509
TESP	0.815	0.816	0.815	0.688

Table 2- Construct Reliability of Final assessment 3

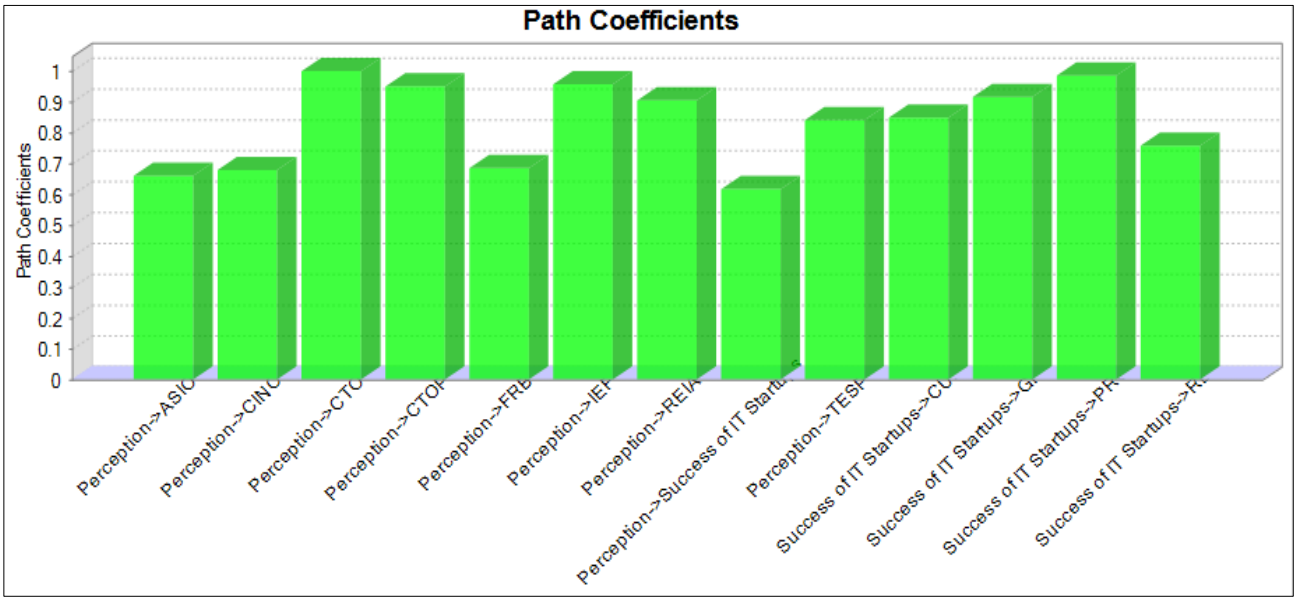

Figure 2- Assessment 3 path coefficient - final model

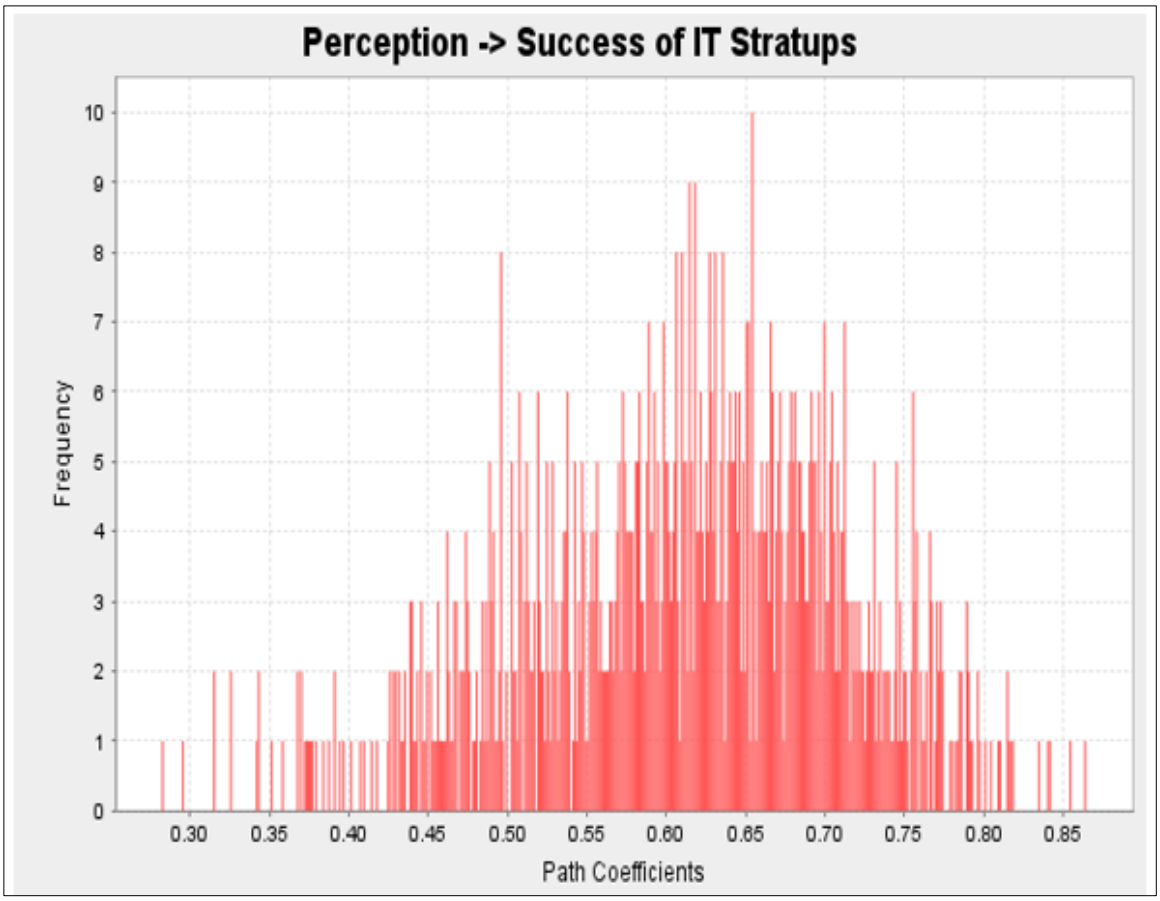

Figure 3- Path coefficients distribution of main hypothesis; Perception Vs Success