

# Incorporating ChatGPT for Mega Project Benefits Reasoning

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The tangibility of project benefits is rather subtle in today's IT project environment despite manager's expectation of customers about project quality, cost, time and risk. Most of the project benefits, approximately more than 60% emerging from the projects are intangible in nature while the measurability is questionable and challenging. The potential of the project in post-modern times are costly because it is subjected to risks, quality-goals, time and cost. While the project costs are directly accountable, measurable and can be used for performance-oriented measure, the quality goals is part of Project Benefit, could be extrinsic or intrinsic in nature, the ability to achieve the Quality goals of the project is a complex approach and fuzzy, a major concern for the enterprise. The novelty and inventiveness of the projects in today's work environments have triggered the managers to develop an interest in adopting new emerging concepts of IT and technology and keep abreast with Artificial Intelligence, natural language and incorporating new methods of data analytics like ChatGPT. In the light of intangibility, the benefits are morphologically viewed as fuzzy, auxiliary and ambiguous in nature and nomenclature. The techniques of Computing with words, Computing with numbers and Dempster Shafer algorithm aids the managers to ascertain the fuzzy behaviors of the benefit at Mega Project of the organization. The question prolongs whether we can ascertain the total benefit realization at the end of the project whilst we use novel concepts in practice with the idea the project benefits that emerge over time are futuristically rarely measurable and difficult to quantify the uptake of benefits.

Keywords: tangible benefit, intangible benefit, ChatGPT, Mega Project Benefits

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## 1. INTRODUCTION

Megaprojects are defined as very large scale projects, often paid by the government and executed by large private companies or multinational corporates or joint ventures and are very costly ranging from millions of dollars to billions of dollars, and deliverable schedule is minimum 1 year, such as IT based project and up to 30–40 years, such as Defence capability projects, and track records showed that more than 30% are cancelled, over 60% are cost overrun, and average cost overrun is 178% for large companies, 182% for medium companies, and 214% for small companies and above 70% are schedule slippage from years and 10+ years (Ghildyal and Chang 2016, 2017).

To manage large complex projects, the organization often use divide and conquer into 3 levels know as PPP (Projects, Program and Portfolio). These seminal projects impact

on government services, millions of civilian's life and health, economics and environment and systematically derive both tangible observable deliverables and intangible future-oriented benefits, where the latter category is the focus of our study. The novel methodology of ChatGPT is the focus of measuring the intangible benefits yielding from mega projects of the government and the state (Atkinson, 1999).

The paper addresses the research problem of identifying and realizing intangible project deliverables incorporating ChatGPT for fuzzy benefit reasoning by combining fuzzy inference logic and novel AI technology. It aims to comprehensively and accurately identify and realize the intangible benefits emerging from the project particularly Mega Projects by incorporating ChatGPT to support fuzzy inference, linguistic interpretation of benefits and crisp value generation for end state benefits.

The definition of ChatGPT oriented fuzzy benefit reasoning is a linguistic platform that allows managers and scholars to logically identify, measure and realize intangible project

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deliverables. These platforms provide an open and flexible medium to quantify the end state benefits of qualitative nature in a project, program or portfolio. ChatGPT oriented fuzzy benefit reasoning combines fuzzy logic such as CWW and CWN with modern novel AI technologies like ChatGPT. By considering both fuzzy benefit reasoning and ChatGPT technique the IT project benefit managers can comprehensively and accurately identify and realize the intangible benefits emerging from the project in compliance with mega project benefit management (Wu et al. 2015).

## 2. SEMINAL LITERATURE

Aubry et al. (2017) in their seminal work has explained with congruence with other studies that project benefits are either direct benefits that are ascertainable or indirect benefits that are unascertainable (Shenhar et al. 2001). On the other hand has explained financial tangible benefits and non-financial intangibles. (Young et al. 2017). The combination of long-term, indirect benefits with long-term non-financial benefits from a project viewpoint is the focus of the current debate. There are profits/losses incurred in the project, but the measurability is subtle because the IT project losses incurred are resulting in negative financial returns progressively in the future. Futuristically, the benefit or dis-benefit cannot be measured in a concrete, crisp manner but rather indirectly from a fuzzy perspective. The other notion is that the project is incurring different intangible benefits that are emergent, imminent and auxiliary in nature (Hill, 2004). These are subsequent benefits that are latent in nature that emerge over time and sometimes after the project has ended; at the post-project governance phase (Zwikael et al. 2018). Good will, image, sentimental value, reputation on organization by project value may impact financial goals, RoI, profit and cost savings, It is an intangible cost. Time, HR, stakeholders, operation automation are project components that are intangible in nature with futuristic value that will decide the ultimate success of achieving the project goals, organizational mission and objective of the enterprise (Badewi, 2016).

## 3. THE CASE STUDY

Defence Innovation Group Incorporation Ltd is a novel technology driven entity that executes the following projects in compliance with the COBIT framework and the Project benefit approach.

- a) Strategic corporate project for overhaul of military equipment
- b) Supply chain and procurement programme for inventory management
- c) Finance, IT, Customer engagement & HR automation project for technological (ICT) facilitated project

The three project aspects are associated with the project benefit approach. The benefit that is derived from the

different a) b) c) can be categorized into project, program, and portfolio. The project as depicted in theory is pitched as an organizational asset that is strategically aligned with the project goals of the organization (Zwikael et al. 2018). The overhaul of the military equipment is associated with the Army, Navy & Air Force can be regarded as a project as the defence equipment of the tri-services must be periodically maintained to attain the higher-order the goals of the military institution. The stated benefits can be disseminated among the Army, Navy and Air Force in order to attain the ultimate objectives of innovation, strategy, competitive advantage and customer value. Thereafter, the program is a combination of logically associated related projects in the defence institution. The tactical functions of inventory, supply chain, material management and associated aspects collectively connote the programs of the defence institution. Thirdly, the effective benefit management of the defence project is possible with the interrelated functionalities whether related or otherwise. The operational functions such as finance, IT, HR related or non-related functionalities of the defence project, known as portfolio(s). At each stage of mega project the derivable benefit can be either tangible or intangible. The challenge is of measuring the intangible project benefits. While the project benefit is being traced the issue arise as to who is responsible for the benefit realization. The following illustration draws a connection between project tier, benefit and responsible party in the project team to establish the realization under the project benefit approach.

In the defence innovation project there are eight target sets namely; performance, HR cost, capability, operation automation, customer, RoI, value for money and stakeholders that are intangible in nature. The different project variables represent diverse strata in the organization namely, portfolio, program, project, enterprise and hybrid portfolio in the context of benefit realization. In a context of benefit realization, the project variables reach the mature benefit state resulting in tangible, measurable and calculable project benefits.

## 4. PROJECT BENEFITS STRATIFICATION

Tangible benefits are monetary-oriented project deliverables of the mega projects that are measurable and calculable in terms of profit, returns and financial equity (Zwikael, 2015). The non-financial, non-profit project benefits are rather fuzzy in nature, non-measurable and not calculable. This is a salient feature of project benefits of mega projects because it has a futuristic value (Thiry, 2015).

The following tabulation explains the different categories of the benefit underpinned by the literature relating to the mega project benefit approach.

## 5. INCORPORATION OF CHATGPT THE CASE STUDY

In this section, we provide ChatGPT output for the Benefit dimensions. These include:

**Table 1** Target Set/Tier Association with Fuzzy Logic

Target set-s	Tier of the strata	Author nomenclature	Rationale for fuzzy logic coupling
t1: performance t3: capability	Project level	Aubry et al. 2017	CWW, CWN
t2 HR Cost	program	Zadeh, 2016	CWW
t4 Operation automation t5 customer	portfolio	Zwikael et al. 2018	CWW, CWN
T6 RoI T7 Value for money	enterprise	Dwivedi et al. 2013	CWW, CWN
T8 stakeholders	Mixed portfolio	Young et al. 2017	CWW

- 1) Quality of the project
- 2) Cost
- 3) Performance
- 4) Human resource
- 5) Operation automation
- 6) Value for money
- 7) Stakeholders
- 8) Capability
- 9) Customers

The following approach implicate the incorporation of ChatGPT to intangible benefit analysis.

The benefit dimensions include quality of project, cost, time, HR, performance, operation automation, capability, customer, value for money, stakeholder. For each benefit dimension there are three key questions identified, chat GPT answers are generated from the programmed system and stored systematically as a ChatGPT output.

In the context of AI technologies, the emerging new domain is the method of ChatGPT. It is a systematic computer based methodology that computes scenarios expressed by language into human intelligible words and ideas. Typically, this mechanism is processing computer intelligent data into human intelligent expression. The output of ChatGPT is the computing with words that can be user friendly for business managers, employees and customers.

Our paper implies that this AI approach has a utility value for benefit approach of mega project benefit as it helped to compute benefits and execute the process of benefit modelling for the project, program, portfolio or enterprise. There is an identified interoperability between benefit modelling in ChatGPT and fuzzy inference as depicted in table.

Artificial intelligence (AI) as an advanced theory is a novel application to many enterprise projects. AI as connoted in conceptual and empirical view point is the ability of a computer to do functions typically performed by humans, as the activities require human intelligence and cognitional power to solve complex analytical issues (Zwikael et al. 2018). The advanced techniques constituting AI can be aptly utilized in the mega project benefit approach. The technologies of AI such as natural language generation, decision management, robotics, biometrics and cyber defence among many other utility approaches of AI can be used to

identify, measure and realize benefits emerging from projects (Koutroumpinas et al. 2021).

The fuzzy inference is illustrated from a reasoning perspective that incorporates both natural languages and crisp numerical aspects constituting a logic of new fuzzy rule. This is premised on the seminal norms of the scholars such as Deshpande et al. (2016) & Zadeh et al. (2016) and applied to the practical settings of the defence project of non-profit orientation.

While fuzzy logic explains the mechanism to facilitate the qualitative, non-measurable benefits into quantified terms, this logic is sound approach to impute computer driven language to the ChatGPT method. The crisp value that is fuzzified in the model of fuzzy inference is intelligent to be expressed in terms of numeric as discussed in the computing with numbers approach.

The natural language generation is a multimodal approach that would use AI to convert data to readable content. The language generation will enable the transfer of CWN which is machine readable data into CWW which is human intelligible information (Lad et al. 2008). This is a benefit computational approach that requires AI intervention because it helps to resolve benefit issues of intangible measurability, accountability, performance and investment in organizational change (Aubry et al. 2014; Ward et al. 1996).

Initiative for addressing challenges associated with benefit identification in the defence innovation project are:

- a) Establish the realistic nature of the benefit including what is a benefit and the form it takes.
- b) The computational approach of using AI to generate meaningful benefits aligned with the total benefit realization.

In the natural language generation there is a conversion of Computing with Numbers into Computing with Words (Zadeh, 2016). Therefore, the systematic approach will generate fuzzy benefit descriptive rather than crisp evaluative project benefit measures. However, AI is a generative application that can diagnose the benefit, classify and identify in order to achieve benefit realization. There is a notion that intangible benefits are more fuzzy rather than crisp in nature (Young et al. 2017; Kock et al. 2013). The following diagram represents the tabulation of computational benefits for AI application engine in Fuzzy Inference System.

**Table 2** Adopting Chatgpt in Mega Project Benefit Evaluation

Intangible benefit dimension	As input to Chat GPT	Chat GPT output
Project Quality Goals	Are there any measuring technique of project quality that you are aware of?	<ol style="list-style-type: none"> <li>1. Iron triangle approach: the methodology of interconnecting cost, time, scope to measure the project quality.</li> <li>2. Agile project management approach: a combination of intrinsic quality, extrinsic quality and project iron triangle to measure the project quality.</li> <li>3. 360 degree approach: a holistic approach of combining people, systems, technology and processes to measure the project quality.</li> </ol>
Cost	In your opinions on what areas of the project should the cost investment focus on?	<ol style="list-style-type: none"> <li>1. Ordering of the infrastructure for the project to be initiated: Pre project stage with benefit identification and planning</li> <li>2. Training and user friendliness of the project software applications for employees and customers: benefit monitoring and realization</li> <li>3. Post monitoring of the project and its deliverables: post project benefit governance</li> </ol>
Performance	In your opinion on what areas should the project focus in order to improve its performance?	<ol style="list-style-type: none"> <li>1. Tangible deliverables including monetary budget investment, strategic financial goals</li> <li>2. Intangible deliverables including futuristic value, future sustainability and post project goals</li> <li>3. Quasi-tangible deliverables including best interest of stakeholders, employees, sponsors, future investors and project clients.</li> </ol>
Human Resources	How you will justify that HR is capitalized in the optimum manner under the project?	<ol style="list-style-type: none"> <li>1. Periodical assessment of employees technical skills in using the system and its functionalities</li> <li>2. Feedback and review of the project by evaluating external users views and opinions</li> <li>3. Periodical evaluation of managerial insights and views of system usage and benefits.</li> </ol>
Operation Automation	What are the benefits of operation automation in a project	<ol style="list-style-type: none"> <li>1. Effective Cost reduction from administrative, employee and infrastructure</li> <li>2. Improving the process speed of operational activities</li> <li>3. Enhanced operational excellence as expected by stakeholders</li> </ol>
Value for money	In your opinion in a project what are the key indicators of value for money	<ol style="list-style-type: none"> <li>1. The capability to measure the value for investing in the asset</li> <li>2. The effective contribution to the society, environment and wider stakeholders</li> <li>3. The achievement of organizational objectives through the project goals</li> </ol>
Return on Investment	In your opinion what could be done to improve return on investment of the project?	<ol style="list-style-type: none"> <li>1. Provide a mechanism to monitor the achievement of project goals</li> </ol>

**Table 2** Continued

		2. Ascertain a mechanism to maintain the project deliverables
		3. Enhance user awareness on the intangible project returns that are not directly measurable.
Stakeholders	In your opinion, who are the classes of interest groups that impact the project and are impacted in return by the project	1. Direct parties who are internal employees 2. Direct parties who are contractual customers 3. Third parties who the project owner may not have effective control upon.
Capability	In your opinion on what capabilities should the project focus on?	1. Technical capability to strengthen the architecture of the project 2. Soft capability to enhance the user friendliness in the system 3. Future capabilities to anticipate on upcoming needs of the project and to facilitate it.
Customer	In your opinion what are the important aspects the project could capitalize on?	1. Customer Satisfaction achieved through extrinsic quality 2. Input of customers that is utilized to develop the project/product 3. Value for customers that results in enhanced demand for the project by future investors

## 6. ANALYSIS THE NEXUS BETWEEN CHATGPT & FUZZY LOGIC APPROACH

There is a similarity that can be perceived among the two approaches of ChatGPT and fuzzy logic. The fuzzy logic input the qualitative benefit variables from the view point culmination of qualitative coupled benefits that can be thereafter processed into the system as a crisp benefit attributed to a linguistic quantifier. This process is used to quantify qualitative benefits. In this sequential process the computing with words (CWW) are transformed into computing with numbers (CWN) in order to generate a crisp value that is measurable, accountable and tangible.

In Chat GPT in similar terms, the benefit dimension is felt by the system as a computed word that is human intelligible and is tokenized for the system to ascertain the meaning that can be easily converted into the combination of probability distributions and possible output variations based on algorithms. The final tangible output is the crisp linguistic specific response to the input data that is once again human intelligible. The process is underpinned by the computing with words and transformed into the computing with numbers which in turn is transformed into computing with the words.

However, there are comparisons between the two approaches in the context of project benefit management. Firstly, the variables are computed into the system in order to generate a sequence of rules for benefit realization and variants for benefit measurement. But on the contrary there are probability distribution of different responses that are generated in the ChatGPT engine. Secondly, the fuzzy system resulted in the emergence of the extent to which the benefit is realized,

while on the contrary, the Chat GPT is focused on deriving the benefit responses for the intangible project benefits under the benefit process.

The benefit process is incomplete without the benefit realization process that requires the project to effectively reap its strategic value. In the backdrop of AI, there are initiatives for addressing challenges associated with benefit realization.

- a) Establish a reliable single source of enterprise data
- b) Deliver awareness of inventories for the troops of the tri-services
- c) Measure enterprise performance with quality information from the AI techniques
- d) Educate and harness the IT/IS practices among staff to execute contemporary practices of Information Management
- e) Establish clear accountability for information which is an asset for the defence project.

This EIM 2025 strategy (Ghildyal A., et al 2018) implementation is guided by the five imperatives:

1. Enterprise oriented
2. Trust, agility and protection
3. Intelligent and innovative
4. Strategically align benefit with business goal
5. Interoperable and standardized

**Table 3** Chatgpt Method for Fuzzy Benefit Approach in Mega Projects

ChatGPT coding	FUZZY IMPLICATION FIS Rules	BENEFIT MODELLING: reasoning with 9 fuzzy rules and 5 benefit realization degree
<p>Computing with words In your opinion is there enhanced operational automation as expected by stakeholders? As given by Chat GPT</p>	<p>Rule1: stakeholder expectation is ‘low’ &amp; Operation automation is ‘high’ then we can linguistically express the level of total benefit realization of ‘sometimes’</p>	<p>The degree of benefit realization is “sometimes” and quantified as = 3 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 2: stakeholder expectation is ‘low’ &amp; Operation automation is ‘medium’ then we can linguistically express the level of total benefit realization of ‘seldom’</p>	<p>The degree of benefit realization is “seldom” and quantified as = 2 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 3: stakeholder expectation is ‘low’ &amp; Operation automation is ‘low’ then we can linguistically express the level of total benefit realization of ‘never’</p>	<p>The degree of benefit realization is “never” and quantified as = 1 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 4: stakeholder expectation is ‘medium’ &amp; Operation automation is ‘high’ then we can linguistically express the level of total benefit realization of ‘on most occasions’</p>	<p>The degree of benefit realization is “on most occasions” and quantified as = 4 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 5: stakeholder expectation is ‘medium’ &amp; Operation automation is ‘medium’ then we can linguistically express the level of total benefit realization of ‘sometimes’</p>	<p>The degree of benefit realization is “sometimes” and quantified as = 3 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 6: stakeholder expectation is ‘medium’ &amp; Operation automation is ‘low’ then we can linguistically express the level of total benefit realization of ‘seldom’</p>	<p>The degree of benefit realization is “seldom” and quantified as = 2 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 7: stakeholder expectation is ‘high’ &amp; Operation automation is ‘high’ then we can linguistically express the level of total benefit realization of ‘always’</p>	<p>The degree of benefit realization is “always” and quantified as = 5 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 8: stakeholder expectation is ‘high’ &amp; Operation automation is ‘medium’ then we can linguistically express the level of total benefit realization of ‘on most occasions’</p>	<p>The degree of benefit realization is “on most occasions” and quantified as = 4 on the continuum of benefit realization from 1 to 5.</p>
	<p>Rule 9: stakeholder expectation is ‘high’ &amp; Operation automation is ‘low’ then we can linguistically express the level of total benefit realization of ‘sometimes’</p>	<p>The degree of benefit realization is “sometimes” and quantified as = 3 on the continuum of benefit realization from 1 to 5.</p>

In the light of AI technologies, the benefit identity and its realization are effectively achieved. Furthermore, AI is augmented by the different methods that support the operationalization of over and above artificial intelligent practices in defence enterprise. The methods are Learning, reasoning, problem solving, perception, and language (Zadeh, 2016). However, we focus on the application of the AI methods to the benefit approach. The following table illustrates

the methods and its application in the benefit process of overcoming the issue of benefit quantification.

However, from a practical point of view, defence is perplexed on how to implement the AI methods along the five imperative. The primary barrier is the fact that most benefits are difficult to quantify and therefore the AI techniques and methods would be a facilitator to better realize the stated benefits.

**Table 4** The Fuzzy Reasoning for Stakeholder Value & Operation Automation in Order to Impute for ChatGPT

<b>Project 1 (Project relating to overall organizational objectives)</b>	<b>Operational Aspect</b>
Fuzzification	T8 (Stakeholder value) & t4 (operation automation) by IT expert opinions
Inference Rules	There are nine (09) rules Computing with words gives a qualitative combined aggregate effect Computing with numbers deterministically gives interpretative meaning to realized words
Output	Temporarily processed information as to how a project element is performing in terms of benefit realization
<b>Addictive aggregation</b>	<b>Project 1 produces 5 possible degrees of benefit realization Project 2 produces 5 possible degrees of benefit realization</b>
Aggregated Output	Benefit realization is perceived from an enterprise benefit point of view of the project. Ex: e-governance of a military authority
De-fuzzification	Computing with Numbers (CWN) is translated to Computing with Words (CWW)
Final output	The benefit is denoted by a qualitative notification corresponding to a coded quantified value. Transforming fuzzy output to crisp values

**Table 5** Benefit Computation for AI Engine

Component variable	Fuzzy	Crisp	Computation AI value
<i>Financial goals</i>		X	Binary, 1 or 0
<i>Cost saving</i>		X	Binary, 1 or 0
<i>Profit/loss</i>		X	Binary, 1 or 0
<i>Time</i>		X	Binary, 1 or 0
<i>HR cost</i>	X		Qualitative data
<i>Performance</i>	X		Qualitative data
<i>Capability</i>	X		Qualitative data
<i>Operation automation</i>	X		Qualitative data
<i>Customer</i>	X		Qualitative data
<i>RoI</i>	X		Qualitative data
<i>Value for money</i>	X		Qualitative data
<i>Stakeholder</i>	X		Qualitative data

## 7. RESEARCH FINDINGS

The ChatGPT integrated fuzzy benefit reasoning system combines fuzzy logic in project benefit with modern technologies to accurately ascertain the benefit realization. In measuring the project where the system incorporates features such as natural language, fuzzy reasoning, neural networks among others. The performance of the ChatGPT based benefit reasoning system is evaluated on the Fuzzy logic benefit model and compared against the global ranking benchmarks of IT projects of PMI by the IT project managers of public and private sectors. The results demonstrate that ChatGPT based fuzzy benefit reasoning accurately identifies and comprehensively realizes the intangible benefits in the mega project benefit approach.

Limitations include the reliance on the public sector, non-profit oriented benefits and its realization. Moreover, the incomplete and desperate nature of the fuzzy reasoning techniques that may hinder the effective benefit realization in light of the inherent difficulty to quantify the benefits and the need to explore the impact of socio-fuzzy consensus on ChatGPT

fuzzy benefit system. The existing system has its limitations in scholarly domains, such as limited utilization among the academic communities as wider application is evidenced in practitioner communities. The proposed ChatGPT system aims to address these limitations by combining fuzzy logic with AI novel technologies.

## 8. CONCLUSION AND FUTURE DIRECTIONS

ChatGPT is an underpinning arrangement where the mega project benefits approach is sustained as the fuzzy logic benefit realization is actualized with apt pertinent chat bots of technological background. Today AI has impacted IT managerial decision across enterprises and stakeholders are accounting the benefit- risk through supportive technological arrays like language, machine learning and perceptual views. However, the challenge continues to indulge as to whether novel technologies like AI and its counterpart can effectively measure benefit realization while the fact remains

**Table 6** Artificial Intelligence Oriented Benefit Approach for ChatGPT Modeling

METHOD OF AI	ILLUSTRATION	APPLICATION TO BENEFIT REALIZATION	BENEFIT EXAMPLE
<b>LEARNING</b>	Learning by trial and error approach. The later phase of generalization is the application of past experiences to analogous past experiences.	The system will memorize the behavior of 12 benefits known as ‘rote learning’ and will recall the behaviors in the next occurrence when the computer encounters a new project scenario.	The benefit of crisp nature and benefit of fuzzy nature like profit and stakeholders respectively how it impacts benefit realization.
<b>REASONING</b>	The logical process of drawing inferences most appropriate to the situation.	The computer system will generate reasons either deductive or inductive in order to justify the benefit realization using both mathematics and logic. In deductive-the truth of the premises guarantee truth of the conclusion. In inductive the truth of the premise lends support to the conclusion without giving absolute assurance.	The IT Manager reasons that “the benefit-PC3 profit can be realized at project-level or portfolio-level. It is not observed in the project; therefore it is realizable at the portfolio-level”  “Previous project loss was caused by failure to quantify the benefit; therefore this year’s project loss was also caused by failure to quantify the benefits”.
<b>LANGUAGE</b>	System of signs having meaning by convention.	Productive language can develop and sustain variety of sentences. Large systems like ChatGPT can respond fluently in human language to questions and statements.	If operation automation is high & profit is high what is the level of benefit realization?

that majority of social oriented non for profit benefits are rarely measurable and difficult to quantify.

The future directions include implementing ChatGPT on big data networks using fuzzy benefit reasoning, incorporating socio-fuzzy consensus approaches to benefit realization in the light of AI technologies and in the light of AI to enable the use of natural language- based algorithms in effectively measuring intangible benefits.

The benefit realization from the intangible benefit perspective is a future researchable area not only for the project manager but also for the other stakeholders who are rather potential users of IT projects. The project, program and portfolio are fallen short of the value of ChatGPT and its inherent features that could be explorable in the future in light that the benefit of quality goals, cost, time and risk are rarely measurable and emerging benefits that must be realized.

**ACKNOWLEDGMENT**

The study pledges its thanks to the Department of Defense of the Government of Australia and the Ministry of Defence of the Government of Sri Lanka.

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