# Knowledge Management Framework using Green IT to Implement Sustainable Entrepreneur Ecosystem

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**Abstract:** A strategy of ecosystem and green management practices to develop a sustainable entrepreneur ecosystem is at once an obliging and baffling pretend for growing enterprises. This strategy must be studied thoroughly to create a concern among stakeholders and dealing with composite impact of their practicalities on the ecosystem. The finding presented in this paper explores specific sustainability issue being confronted by stakeholders throughout globe to implement sustainable entrepreneur ecosystem by using eco-friendly techniques and practices. We highlight a deep and through analysis of different gainsays confronted by top business enterprises within the area of a knowledge management framework using green IT techniques, and shows how framework is targeted for specific goals. The suggested framework conceives the relationship between ecosystem and green IT to develop a sustainable entrepreneur ecosystem. The proposed framework includes the related models that will help to develop a conceptual framework of sustainable entrepreneur ecosystem.

**Keywords:** Entrepreneur ecosystem; Green IT; Knowledge management framework; Sustainable entrepreneurs

## 1 Introduction

Sustainable practices and policies in large multinational companies are driven and constrained by exceptionally complex global trends. Countries in the developing world, led by China, India and Brazil, are advancing rapidly and increasing the worldwide demand for goods and services [1]. The global industrial companies attempt to respond to global consumer and stockholder demands. The companies face a number of constraints, including environmental impacts, growing sensitivity of local communities to environmental impacts, and increasing energy costs [2].

Different multinational companies are facing pressures and challenges to consider environmental and societal impacts in their day-to-day activities and manage their businesses in the context of a complex competitive environment and the internal complexity of a distributed global company. Given the complexity of the sustainable environment, effective information management requires a greener approach that addresses specific aspects of global multinationals. The external reporting pressures from Global Reporting Initiative (GRI), and carbon management and submissions to the Carbon Disclosure Project (CDP) are pushing the frontier of Environmental Management Systems (EMS) and knowledge management. This requires a flexible and comprehensive green sustainability approach to managing these challenges.

The emergence of sustainable entrepreneurship has adopted a new attribute to the prediction of entrepreneurship. Enterprises with sustainability-driven approach contribute towards improving the environmental quality and social well-being in ways that are mutually

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supportive. Sustainable entrepreneurs handle to the "triple bottom line" by equilibrating economic growth, social equity and environmental resiliency through their entrepreneurial behaviour to implement an ecosystem with all major stakeholders responsible for sustainable business development. It has been suggested that these entrepreneurs can function as important catalysts to large-scale socioeconomic structural transformations toward sustainability. However, the actual mechanisms underlying such a role are empirically under-researched and theoretically underdeveloped. The progress in sustainable entrepreneurship has been powered by complex human personality, favourable cultures and strong national and innovative technologies [3].

Sustainable entrepreneurship is distinctly linked with the promise of more possible for both the environment and society. In today's rapidly changing world of innovation and technology, entrepreneurship is considered as the main driver of economic growth. This growth is contributed largely by a formal entrepreneurship structure in the country. Recent economic progress of developed nations is mainly attributed to an influx of green IT strategies and techniques and an increased inflow of graduate and educated entrepreneurs for entrepreneurship domains [4].

While there is a large body of research on various dimensions of entrepreneurship, there is a strong need to produce green IT entrepreneurs with sustainability skills and knowledge in their specific domains of research [5]. The struggle for developing entrepreneurial green IT strategies in under-developed countries is highly important for the development of a healthy society and ecosystem. The literature clearly shows that very little attention has been given to addressing the integration of environmental green practices, sustainability and knowledge management as contributing factors for developing sustainable ecosystems. Furthermore, many firms and multinationals are already implementing the infrastructure for an EMS system.

This paper explores about our primary research question that addresses how knowledge management framework using green IT will be developed and will leverage existing technologies to enable sustainability decisions for implementing sustainable entrepreneurship. A sustainable eco-entrepreneur is defined as one who creates green-green businesses in order to drastically change economic sector with existential form of business behaviours committed to sustainability. The proposed framework creates relationship between an Ecosystem, Green IT techniques and knowledge management. It also provides different practical suggestions for business people to implement eco-entrepreneurial strategy including: green brainstorming, cost reductions, stimulation of innovation through green design and networking (interaction with stakeholders), attraction of interest of overwhelmed consumers in an emerging 'attention economy' through green marketing and through green start-ups (green-green businesses), and providing

energy efficient computing. The remaining sections of the paper are structured as follows. We begin with a review of the relative literature, which highlights a gap in the research providing the focus of this study and the outline of an integrated framework based on prior work. We then describe the field study context and methods, data analysis, and findings. Having laid both the theoretical and empirical groundwork, we then posit our knowledge management framework showing opportunities for information sharing and behavioural change. Finally, we conclude with a discussion of the importance of complex systems as enablers of change, opportunities for business. In addition, we provide insight regarding how practitioners and researchers can design, develop, and manage these evolving systems.

Secondary research questions explore the role and interaction of knowledge agent (stakeholder) in developing a sustainable entrepreneur ecosystem.

Who are the applicable stakeholders or knowledge agent? What sorts of knowledge are required of these stakeholders? And How stakeholders can contribute to the development of sustainable entrepreneur ecosystem?

## 2 Problem Background

Today environmental and sustainable challenges have multifarious effect on global world potentially causing negative consequences for global warming and environmental health. Aggregate unemployment and challenges are encounter by industrialist countries aroused from emerging globalized economies and societies. Resulting challenges could be linked to negative externalities or other developments described in the classical economics literature, such as the tragedy of the commons [6]. In today's economy, sustainability plays a crucial role for the evolution of societal as well as environmental gainsays. According to the Brundtland commission United Nations in 1980's, sustainability can define as to fulfilling their current need without sacrificing future benefits of the next generation" [7]. The governmental contribution is critically important about the potential for the development of sustainability where there is only possibility of governmental organization. This highlights that the role of private enterprises are equally important as governmental services. A group of researchers have indicated the association of overall economic demeanour, management and sustainability [8, 9,10]. From entrepreneurship research point of view, researchers have commented to how concepts of entrepreneurship theory can guide us about sustainable economic behaviour. Particularly, the idea of entrepreneurial opportunities has proved to be fully beneficial. This is since the revolutionary invention, which has possibility to lead to sustainability development, mostly arises from entrepreneur venture. Thus, sustainable entrepreneur is specifically worthy from

social welfare point of view as compared to end-of-pipe activities [11].

Finding on sustainable entrepreneurship has mostly carried purely with environmentally oriented entrepreneurship [12,13,14,15,16] these studies emphasises on alleged envirocapitalists, "are individual entrepreneurs using business tools to maintain distance, develop wildlife habitat, save endangered species, and generally improve environmental quality". Some authors suggest categorizations of eco-entrepreneurship, distinguish it from other forms of corporate environmental management activity [17]. In addition, the findings on social entrepreneurship are inconsistent with case analysis of productive non-profit enterprises and the consequences of globalization on opportunities for social entrepreneurship [18]. What is famous about these classications is the absence of the dimension of innovativeness. e.g., radical versus incremental or original versus imitation, which seems to be of substantial relevance for entrepreneurial rents as well as opportunity fruition [19]. The Holocene literature on sustainable entrepreneurship has accordingly performed to incorporate environmental and social aspects. At the same time associates the process of entrepreneurship to the concept of opportunity recognition that is in legion respects intimately pertained to innovativeness [20,21]. Cohen and Winn, in [22], determine research on sustainable entrepreneurship as the probe of "how opportunities to bring into existence future' goods and services are discovered, created, and exploited, by whom, and with what economic, psychological, social, and environmental consequences". Dean and McMullen, in [23], take up a similar position. They highlight the requirement of adjusting a process perspective with their denition of sustainable entrepreneurship as "the process of discovering, evaluating, and exploiting economic opportunities that are present in market failures which detract from sustainability, including those that are environmentally relevant".

Despite distinctively determine the eld, findings have associated sustainable entrepreneurship to market imperfections and in doing so, have provided a much more taxonomic classification of entrepreneurial opportunities that simultaneously lead to sustainable development. Isaak, in [14], describes the reduction of negative (environmental) externalities as a dening criterion for environmentally oriented entrepreneurship. In theory, researchers from this field indicate that particular market failures are the fundamental root cause for entrepreneurial activities aimed at recognizing social objectives as well as environmental improvements and bring with them significant economic potential [22,23,24]. Furthermore, sustainable entrepreneur ecosystem could be clarified by distinguishing between traditional entrepreneur ecosystem and green entrepreneur ecosystem.

Moreover, numerous western institutions have declared programs and plans that place green entrepreneurship at the acme of their economic policy making and priorities green entrepreneur. It has an important factor in the development of new employment and higher economic growth rate [25]. Likewise, various scholars have argued that green entrepreneurship can be a drive for a new economic start for modern economies [26]. However, scholars have not corresponded on the entailing and terms of the concept green entrepreneurship. Finding represents various meaning for green entrepreneurship as follows; sustainable entrepreneurship, eco-entrepreneurship green, ecological, environmental, and eco-preneurship. Thus, green entrepreneur could define as "To combine the economic, social and environmental components of sustainability in a holistic manner". Green entrepreneur possess different systematic and organising logic comparing to conventional or traditional entrepreneurs [27]. Thus, green entrepreneurs may employ in satisficing behaviour in order to encounter the "triple bottom line" instead of profit maximisation [28].

The recapitulation of extant work brings out that the literature on entrepreneurship for sustainable development has grown valued over time. As it has often been released in mainstream business journals and has become more accommodating qualitatively, it still has not fully integrated the extensive literature on conventional entrepreneurship. Specifically, there exists an extensive theoretical, conceptual and empirical body of work concerning with the factors that explore entrepreneurial behaviour and purposes, such as attitudes, education or situational aspects. This literature we will link to entrepreneurship for sustainable development in the subsequent paragraphs.

# 3 Proposed Knowledge Management Framework

This paper proposes a knowledge management framework for implementing a sustainable entrepreneur ecosystem using green IT (Fig. 1). The framework helps entrepreneur, businesses, and stakeholders to disseminate and transfer information with the support of green IT among stakeholders without compromising the benefit of the society and environments now and in the future. The framework is developed by using two prior proposed frameworks namely "The knowledge city" framework adopted from [29] and "G-readiness" framework adopted from [30,31]. Where major components are as follows: Green IT and Entrepreneur Ecosystems.

## 3.1 Green IT

In sustainable entrepreneurship, Green IT plays a key role in the dissemination of information among stakeholders that is the practice of using computing resources
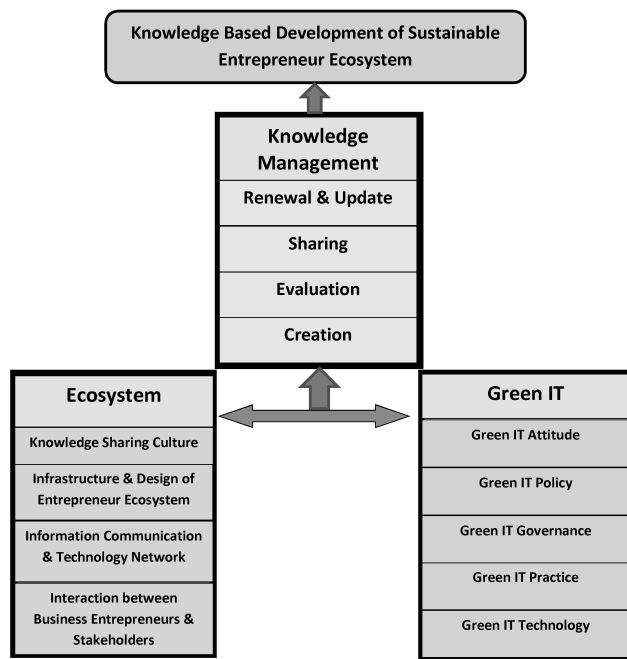
**Fig. 1:** Sustainable Knowledge Management Entrepreneur Framework

eco-friendly and efficiently. It has become prevalent given recent concerns about global climate change and energy crisis. It considers the triple bottom line of people, planet and profit. It differs from traditional or standard business activities that focus primarily on the economic viability of computing solutions [32]. Green IT is depicted as optimal use of Information Communication Technology (ICT) for managing environmental sustainability of the enterprise, its operations, products, services, and resources [33]. It entails the study and practice of designing, manufacturing, and using computer hardware, software, and communication systems efficiently and effectively with no or minimal impact on the environment. It spotlights on strategic deployment of operations and information technology to dynamically, sustainable, and responsible align business-oriented goals with green objectives for the entire duration of operations. It entails applications of environment-friendly IT activities with business oriented organizational goals and creates functional bridge between corporate motivations and environment to create mutually satisfactory benefits [34]. It also refers to meeting the requirements of today generations without interrupting the ability of future generations to minimize the environmental footprints. In addition of using the technologies to reduce the use of polluting materials and develops environmentally friendly competencies [35]. Green policies provide cost reductions through consolidation, virtualization, and improved

utilization of computing and storage resources [36]. This research explores Green IT as means of implementing energy efficient techniques to data centre mangers to implement green energy efficient data centres.

The eco-sustainability perspective depicts Green IT as an organization's ability to systematically apply environmental sustainability criteria. The criteria such as pollution prevention, product stewardship, and use of clean technologies to the design, production, sourcing, use and disposal of IT technical infrastructures [37]. It includes hard technologies and soft systems, business policies and practices spanning IT lifecycle from production, sourcing, building and disposal. Environmental considerations should also be embedded in policy frameworks along with operational routines, IT design features and information systems as well as values and norms of the IT human infrastructure and managerial considerations and practices [38]. The adoption of green IT technologies addresses two overarching and interrelated goals. Firstly, it helps businesses to mitigate ITs direct contribution towards $CO2$ emissions. Secondly, it helps businesses tackle their overall footprint, using IT as part of the solution to reduce business's environmental footprint [39]. To further explore, Green IT is subdivided into five elements:

### 3.1.1 Green IT Attitude

An attitude refers enduring positive or negative belief about some issue or object [40]. Attitudes are discovered tendency and are frequently a consequence of experience. On the concern of global warming, two attitudes can be institute. Research indicates that the main concerns for the climate changing are an activity of human also includes business [41]. This group upholds that climate changing is ever, and the effect is not as most would have liked us to believe. Correspondingly, administration probable to adopt very different posture collectively for conducting with eco-sustainability, in addition their different behaviour and attitude will affect their prospect of Green IT [42,43]. Green IT attitude depicts emotive features of entrepreneurs, IT specialists and other professionals. Cognizant and sake of business and IT are assessed at a certain level about the strategic, economic, social, environmental, and regulatory pertain associated to the IT use. An individual brings together green movement, is dependent on immanent motivation and subjective capability [44]. Although looking into the kinship environmental behaviour and attitude [45], discover that to promote individual to behave environmentally, emotional charm has heavy effect compare to logical reasoning or actual description of destructive consequence from environmental pollution. Individual knowledge in somehow feeble associated to self-reported actual environmental behaviour. Grounded on this scenario organization whether or not consider Green IT issue severely will dependent on (at least

partially), business and IT leader persuasion to the environmental concern.

### 3.1.2 Green IT Policy

It represents the area where eco-friendly and sustainability plan of action are established across the organization and pervade the value chain. Almost all IT related companies do not have a policy endorsing the doctrine of eco-friendly. Three areas namely IT sourcing, operation and services, and the level of policy facility.

Sourcing: describes the area where organization has adjusted an environmentally preferable purchasing policy (EPP) [46]. In addition, enunciated authorize eco-friendly road map for purchasing IT product and services. EPP facilitates the organization to adjust a sustainable souring scheme, e.g., a scheme privileges buying laptops over computer evidence a dedication to Green IT. Research, in [30], shows that electing the productive electronic apparatus, such as laptop, can decoct vitality use by 98-99% of the roadmap of eco-friendly. It could support to conventional as well as advanced IT related product and services.

Operation and services: explains the area where services furnished via IT infrastructure covers issue related to business sustainability. PC power management [47], policy on staff computer usage [30] and environmental policy [48] are some of the policy concern regarding Green IT to develop a sustainable entrepreneur ecosystem.

IT end of life policy: pertains the ordinance and policies concerned with the administration as well as the colony of IT equipment's in organizations. In various parts, end-of-life recycling is postulated via the provision of law [49]. Encouragement of recycling scheme by the ministry of trade and industry in Japan promotes a sustainable society impress the equilibrium of environment and economy. Generally, there is a lack of awareness to implement the policy of Green IT fully throughout the regions.

### 3.1.3 Green IT Governance

The development of sustainable entrepreneur ecosystem requires the direction and control of infrastructure of Green IT. It is a prototype that refers the governing the Green IT initiatives [50]. Analysis exposes that the Green IT necessitates" well-grounded management infrastructure to realize the effect, prioritize action and supervise the endeavours response". To establish the sustainable entrepreneur ecosystem, Green IT initiatives need to be obviously institutes the role, responsibility, accountability, and control. Here some questions can consider for a particular business for suitability such as should an enterprise allot the obligation to Chief Information Officer for the green IT or it should

undergoes to the environmental department? Should IT department be concerned for the energy saving? Solution to these queries indicates the governance proportion of the Green IT that will assist to implement the sustainable entrepreneur ecosystem.

### 3.1.4 Green IT Practice

Policy of eco-friendly concerns with intellection dimension of Green IT, while not in practical all policies are enforced smoothly, and companies might diverge in the practicality of their policies. In other words, Green IT practice can be stated as the actualization of sustainable entrepreneur ecosystem which consists of procedures, disposals, and sources related to the infrastructure of IT. The administrations are diverse in practicality of eco-friendly in term of IT system [42,51,47,46]. In addition, diverge practicality in the operation of IT as well as network-critical physical substructure in the data centre and beyond the data centre across the organization in greenery style [52]. Here are some examples that refer how organizations diverge from eco-friendly. In 2005, IBM USA's telework program concerned over 20,000 employees, preserving of over 5 million gallon of fuel and averting of exceeding 50,000 tons of $CO_2$ emanation. However, number of organization reprocess their IT components at maturity or cast away it is an environmentally friendly way [42]. e.g., to sustain an entrepreneur ecosystem, the practically of Deloitte's is to replace the traditional computer with thin laptops, hugging Leadership in Energy and Environmental Design for new data centre , as well as introducing application centralization and platform standardization. Advanced Configuration and Power Interface to decelerate processor retiring energy efficient system and screen saver has banned by ANZ servers [47].

### 3.1.5 Green IT Technology

Green IT assumes the eco-friendly technology; the fundamental segment of sustainable entrepreneur ecosystem is to develop the infrastructure of technology with support of greenery. Green IT admit NCPI (power supplies) and IT infrastructure [53,54]. Some of the indexes avail to assess the sustainability of entrepreneur ecosystem by using Green IT is the extent of eco-friendly business standards, integration, virtualization, and infrastructure such as green rated building and power sources. Additionally, the extent of policies and technologies retreat to eco-friendly as well as the degree of solution to defend the enterprise wise green inaugurals [30]. The power to the computer requires billions of dollars throughout globe. Being energy squander enlightens nasty paradigm for IT and environment.

## 3.2 Entrepreneur Ecosystems

Traditional entrepreneurial would be to undertake an innovative idea, to plan, organise, take risks and invest in it in order to create value out of it [55]. While entrepreneur ecosystem is defined as the elements-individuals, organizations, or institutions- apart from the individual entrepreneur that are conducive to, or inhibitive of the choice of a person to became an entrepreneur, or the probabilities of his or her success following launch. It consists of following key components: policy, finance, culture, supports, human capital, and markets [56].

### 3.2.1 Knowledge Sharing Culture

The prosperity of a business endeavour and other entities is contingent and minimally the part on the sharing of a common culture. The prosperity includes the practice of shared belief, behaviour, and interaction or reciprocal action. To develop a sustainable entrepreneur ecosystem, it is essential to nurture knowledge sharing culture/environment. Frequently knowledge sharing is alleviated by the use of technology while some would debate that this is not inevitable the most significant factor. However, the development and sustainment of the respect, reciprocity, the sound relationship and trust between stakeholder and business entrepreneur will likely prove to be critical in enhancing the knowledge sharing culture. Some would comment that developing trust symbolize the starting point in this process. A sensible approach in acquiring the trust that leads to knowledge sharing is for the entrepreneur to provide confidence to the individual. This can be done by expressing the honour of knowledge sharing, explicate why their involvement is precious, and continually soliciting their feedback.

### 3.2.2 Infrastructure and Design of the Entrepreneur Ecosystem

Where business entities want to develop a sustainable entrepreneur ecosystem, they often lack knowledge, expertise, skills, finance, and human capital to make organizational infrastructure fully developed [57]. Generally, enterprise is facing hard to practice environmental management actions due to lack of design of organizational structure [58]. Sustainable entrepreneur ecosystem requires innovation practice, sufficient knowledge, and expertise of using its financial and technological resources inconsistently eco-friendly. In addition, employee's inspiration, empowerment, and awareness play a key role in the development of sustainable entrepreneur ecosystem.

### 3.2.3 Information Communication and Technology Network

More than ever, the sharing of knowledge and information is attained via ICT. This includes products that take into account the user(s) together, maintain, recover, manipulate, transmit and/or receive information electronically in a digital format. The role of ICT network is to empowering business entrepreneur and stakeholder to collaborate, access knowledge, engage in research, analyse data, and solve problems. Knowledge management systems, which employ technology, trust on the system that permit efficient classification and disclose of knowledge. The fundamental is to enforce the most effective and efficient manner to allow the business entrepreneur and stakeholder to cooperate and contribute the knowledge. One such method to encourage the sustainable entrepreneur ecosystem is the internal knowledge sharing within enterprises would be the intranet. Among other things, feasible use for an intranet would be to dilute the redundancies across business entities, share best practice in sustainable entrepreneurship development, provide progress update, and solicit cross-functional input.

The use of ICT network is also important in knowledge sharing among the government enterprises and other knowledge agent. ICT network developments the sustainable entrepreneur ecosystem it must consider continually formulating and employing the most effective manners to utilize technologies such as blogs, email, video-sharing websites, and podcast and wikis to facilitate knowledge management as it pursue its sustainable entrepreneur ecosystem goals.

### 3.2.4 Interaction between Business Entrepreneurs and Stakeholders

This facet of framework is fundamental, as knowledge only became fruitful when it is shared among the business enterprises or knowledge agents and potential contribution they can make a sustainable entrepreneur ecosystem. Previous research proposed that local community members' (business enterprises) participation in matters related to entrepreneur ecosystem be essential [59,60]. These stakeholders are of particular importance, as they possess first-hand knowledge about the very business which support entrepreneur ecosystem and will do so in the future. In addition, bridging the gap between what occurs within the walls of businesses and how that knowledge is best applied in practices is a significant challenge. However, it is one that must be defeat through increased interaction and sincere desire on the part of all to significant collaboration, and the desired outcomes are achieved. Finally, knowledge agents who collaborate on a specific project. Existing ecosystem entrepreneurs should freely interact and share knowledge of best practices with others on a nation-wide basis.

## 4 Knowledge Management Framework for Entrepreneur Ecosystems

The knowledge management plays a similar role like information management that to captivating, storing and allocation of resource when accompanied systemically, in return benefits the environments or societies to attain a particular goals of the organization. It can be separated from information management that is not exclusively dependent on the data, documentation or related information, but with a liberal category of "intellectual assets" [61]. The difference is made obvious when determining the role and potential of knowledge management. For firms, a definition is given by Brooking: "The role of knowledge management is to protect and grow knowledge possessed by individuals, and where possible, channel the asset into a form where it can be more easily shared by other employees in the company" [62]. Brooking's definition proposes an organic, bottom-up approach to the creation and effective practice of knowledge management roles. By accommodating a knowledge management framework, managers reposition from patterns of controlling information and towards building and changing systems that induce knowledge workers to smooth and dynamically interact with, disseminate, and meliorate knowledge. The strategy holds the potential to automate the procreation of intellectual resources in a firm with exponentially springing up outcomes.

## 5 Knowledge Management

### 5.1 Creation

A substantive prospect of knowledge management is generating the right knowledge. This involves identifying the appropriate knowledge agent and ensuring these knowledge management agents (entrepreneur) generate the appropriate knowledge required to address particular issue and to allow certain strategy to be pursued. The business entities and another stakeholder must accept an aligning role in this area and promote knowledge agent to participate in "divergent thinking" for the development of sustainable entrepreneur ecosystem.

### 5.2 Evaluation

An essential expression of employing in knowledge management consist assuring whether the creation and sharing of knowledge will be fruitful in dealing the problem(s), fulfilling the project or reaching desired goal(s). There might be a possibility of uncertainty that part of knowledge developed is flawed. Participation of stakeholder emerge some well-grounded idea; another idea will have to be "cast away" after their property has been a measure. Fundamentally, stakeholders should participate at a policy to establish an assessment process, with predetermined standard for evaluating the knowledge created, that will result in the development of sustainable entrepreneur ecosystem.

### 5.3 Sharing

A fundamental circumstance of knowledge sharing is to whom the knowledge be shared as well as how will be shared. As mentioned above, the utilization of ICT networks can promptly alleviate knowledge sharing. Nevertheless, research shows estimation for internet use at approximately 54% of the population in 2008. Some stakeholders lack access to technological instrument that assist in the distribution of knowledge. Hence, a conjunctive attempt is require implementing alternative ways to reach stakeholders. Such ways consists of mass meeting in the central location as well as travelling to a remote location to allow stakeholder to become involved in implementing sustainable entrepreneur ecosystem.

### 5.4 Renewal and update

Once the knowledge creation, sharing, and evaluation process achieved the resulting knowledge is put to use. The knowledge generated on the part of several stakeholders would be to employ the sustainable entrepreneur ecosystem. Finally, the appropriate parties should measure the outcome of the process. However, to attain the desired goal entrepreneur and stakeholders should examine the knowledge generated was indeed fruitful. In addition, stakeholder should inform how the knowledge affected result, find out where is the lack, and develop a different version of knowledge, for the future period, to develop the sustainable entrepreneur ecosystem.

## 6 Material and Method

Interviews were conducted to collect the data to test and evaluate the proposed framework. The data was collected from top entrepreneurs in University Putra Malaysia and other experts regarding the components of proposed frameworks and their relationship to comprehend the overall feasibility and effectiveness of framework. The qualitative data was collected and NVIVO was used to evaluate data collected from the 30 respondents of stakeholders from various Small and Medium Enterprises (SMEs) of Serdang areas Selangor, Malaysia. By interview respondents were asked on the importance of sustainable entrepreneur ecosystem by taking consideration of three main variables: Green IT, knowledge management and sustainable entrepreneur.

Ergazakis et al., in [63,64] advanced as a framework for following some of the key questions as mentioned below paper contest. According to Erazakis [63], knowledge management where SMEs and entrepreneurship value knowledge, nurture knowledge, on supporting knowledge dissemination and discovery and harness knowledge to add value in the developmental wealth of a sustainable entrepreneur ecosystem [29]. The analysis performed showed that proposed framework is complete and comprehensive to achieve sustainable businesses. However, few components were revised and added to make the framework more clear and acceptable to the industries.

How knowledge management enhance and improve entrepreneur ecosystem? How the workers/ stakeholder process the knowledge management to build a sustainable entrepreneur ecosystem? How the worker can process the knowledge and spread the information by using green IT? What is the role of stakeholders' interaction in the perspective of sustainable entrepreneur? In the context of knowledge management how to keep up to date stakeholders about Green IT? What is the importance of green IT in climate change and sustainability? How green governance process can monitor, assess and measure the green IT in the area of sustainable entrepreneur ecosystem? How ICT can play an important role in the implementation of entrepreneur ecosystem? What kind of policies should enhance to improve the green IT practices in sustainable entrepreneur? Performance of green IT attitude in the development of sustainability entrepreneur?

## 7 Result and Discussion

Sustainability is gaining highest ranking for IT sector, there is very limited no of companies who have been entitled as green IT producers. Companies such as Sony Ericsson have developed the label. However, still there is a lack to assure the quality. According to green peace ranking renders some guidance "the guide to greener electronic" assesses top IT companies (Hewlett Packard, Apple, and BlackBerry) for their products in the perspective of environmental. These companies performance entitle good remarks for recycling but still there is dilemma of energy consumption.

From the viewpoint of respondents, we can make our IT sector more sustainable by identifying trends on looking at the basement of servers. The servers which are old and consume high energy without efficiency and require air condition to make their system cool. Therefore, based on the finding, there is a course to setup few but highly efficient servers. Experts suggest virtualization so the large companies can save a significant amount of energy by using the suggest method. Knowledge management keeps organization from constant inducting the wheel; minimize the supply of talent, the retiring boomers, and the employee turnover. To practice the sustainable entrepreneur ecosystem,

knowledge management is phased under following steps; collect, use, enrich, share, assess, and build or sustain. Green IT play a key role for sustainable entrepreneur ecosystem, the joint use of virtual space, and digital sharing. The respond highlighted by Center for Office Automation, Information Technology and Telecommunication (CeBIT); IT fair in Hanover and the largest computer show in the world.

Sharing of ideas by video conferences is designed to take unnecessary flight and to be climate friendly by shifting business meeting to their desk. There are many ideas of green IT to be considered to make entrepreneur ecosystem sustainable such as usage of laptop rather than large desktop computer at office premises. In addition, the use of LCD monitors in contract of traditional CRT monitor that consumes high energy. Lastly, green IT tips is to desert the power gulping standby mode. Bring the concept of green IT, we have wide range of electrical socket with on-off switches that could be positioned when using electronic device for longer period of time. Green IT is and should be part of every company's sustainability strategy. Sustainability goes beyond Green IT or increasing a company's energy efficiency. Sustainability puts the spotlight on the IT department's ability to track and measure every objective and component of the company's sustainability strategy. Shareholder practices environmental management system which is comparatively new and innovative management practices that allow firm with an additional source of information and leverage over their environmental and business process and performance.

## 8 Conclusion

The proposed knowledge management conceptual framework is intended to facilitate the entrepreneur and firms with opportunities to allocate resources more effectively as well as efficiently and meet sustainability goals more effectively. The entrepreneurs takes a knowledge management approach inconsistent with green IT and conceptualize sustainability as a complex adaptive system. This can organically generate leverage and create upward mobility towards changed individual action, organizational behaviours, and social or environmental outcomes. We conceive this approach is the next generation in sustainable business management. This evolution, from environmental health and safety systems to environmental management systems, a hybrid, social-network-based systems of the future, furnishes a guideline for the consolidation of sustainability and information systems. To implement sustainable entrepreneur, ecosystem managers have been pursuing two goals: better consolidating sustainable practices into firm activities and better leveraging sustainability to create value. The proposed framework determines that how businesses meet the sustainable entrepreneur

ecosystem by correlating knowledge management by using green IT and entrepreneur ecosystem.

Firms must perform to push the bounds of knowledge management as issues grow more complex and force to report and/or reduce impacts grow stronger. Reporting concerned with the environment is considerable more commonplace among firms and is growing more standardized as a cadre of respected third-party organizations has emerged as both drivers of environmental reporting and repositories for information. Some early trends show the integration of financial and sustainability reporting [65]. In the meantime, U.S., European, and regulatory authorities for carbon and other eco-friendly activities continue rapidly, expecting firms to have a clear understanding of their impacts operations as well as a more arrant toolkit for measurement, accessibility, automation, management, and consistency to better avoid risks related with palliation and remediation. These are challenges faced by firms and entrepreneur. Our vision is a mobilized, cybernetic entrepreneur that facilitates the transfer of information to make sustainable entrepreneur ecosystem, reporting more robust and eco-friendly. As mentioned earlier, the interaction between stakeholders can be used to motivate sustainable behaviours of employees through continuous feedback of ideas and behaviours. This benefit can be leveraged through enlightened management approaches to traditional employee incentives.

For entrepreneur's, scholars, and other practitioners pursuing an understanding of sustainable entrepreneur ecosystem and green' management practices, there is an unlimited abundance of firm and plant level data waiting for exploration, analysis and dissemination. For those already assembling these issues head on, the reality and complexity of the task should provide a proving platform for value creation and performance. The consolidation of sustainability within any firm is at once an obliging and baffling venture. We indicate that while a lack of quality data is a handicap to organizational sustainability management, certain leading-edge technologies, practices, and frameworks, properly framed and implemented, will be highly useful in sharing knowledge eco-friendly and implementing sustainable entrepreneur ecosystem.

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