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Digital Sustainability Outsourcing Assessment

An Investigation on the Factors Influencing Performance of Digital Sustainability Engagements

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ABSTRACT (MAX. 200 WORDS):
The growing interest in business environment for sustainable products and services coupled with regulatory mandates have led corporate to shift their focus towards sustainability as a vital part of organizational strategy. The intrinsic aspects handling the environmental, economic and social concerns, are now catalyzed with technology. Exploring sustainability through the digital lens is increasingly becoming the hot subject of discussion in multiple forums, better defined as the concept of digital sustainability. In parallel, digital transformation, led by advanced digital technologies like artificial intelligence, big data analytics and IoTs, is creating unprecedented disruptions in society, industry and organizations. This study aimed to explore whether organizations are ready to take up digital transformation to meet their sustainability challenges. And if yes, whether they collaborate with external service providers. A mixed-method approach was adopted to conduct semi-structured interviews with specialized sustainability experts supported by survey results acquired from sustainability and digitalization practitioners. Overall, the findings concurred with formulated research questions that most organizations are ready to incorporate digital sustainability but lack clear direction to proceed forward. A theoretical construct for managing any technology outsourcing projects could be extended to the collaborated outsourcing of digital sustainability-specific engagement as well.

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1 Introduction

In this chapter, the background of the specific topic has been presented. Following to that, the problem area in the given premise has been highlighted which presents as the basis of the research question. After establishing the fundamentals of the topic, the research question is defined and shortly explained. The later sections of this chapter describes the purpose and recognizes the delimitations of this research.

1.1 Background

Since many years, organizations have started to become more aware of the necessity to invest in sustainability and its three discourses of social responsibility, environmental management and business continuity (Giovannoni & Fabietti 2014). Studies suggest that the motivations behind the corporations' interests and responsiveness towards sustainability are influenced by the contextual conditions of legislation, stakeholders' pressure, economic opportunities and leadership embarking corporate values for ethical motives (Bansal & Roth, 2000). Additionally, the 17 Sustainability Development Goals (SDGs) laid out by United Nations (UN) coming to force from 2015 (Karbassi, n.d.), along with other government policies and arrangement, and many volunteering sustainability certification standards are being promoted as guidelines and targets for companies to set. These setups motivated business leaders and investors to align or try to align their organizations to fulfill and adhere to the placed metrics (Solomon & Bailis, 2013). Earlier, the motivations for incorporating sustainability measures were mostly geared due to legislative policies and societal pressures and less for market competitiveness. However, many scopes of business profits embarked with the help of sustainability concepts like circular economy (CE), net positive business models, Information and communication technology for sustainability (ICT4S, Environmental informatics (EI) and digital sustainability (digital sustainability) have been recently unfolded. These concepts have catalyzed many corporations' interests towards ecological responsiveness (Bradley, 2007; Hilty & Aebischer, 2015).

Sustainability is now being realized as one of the core pillars by many firms while formulating their organizational strategies and visions. Sustainability strategies and corresponding practices are measured for corporate performance in terms of social gains and ecological benefits (Cantele & Zardini, 2018). Nowadays, corporate financial performance is equally rewarding for sustainability initiatives. This is because of competitive gains acquired by enhanced corporate reputation, customer satisfaction and organizational commitment with the implementation of sustainability initiatives (Cantele & Zardini, 2018). Firms are now incorporating a proactive approach instead of a reactive approach by engaging in business strategies for becoming '*net positive*' rather than '*doing less harm*' (Cybercom, n.d.). These avenues have been immensely supported with the help of digitalization. Literature suggests that organizations can embark towards digital transformation with the overall objective to unlock avenues of value creation from revenue, cost, compliance and accountability perspectives (Stuermer, Abu-Tayeh & Myrach, 2017). The scope spans all functions ranging from customer experience, sales, finance, supply chain, procurement to sustainability. Digitalization helps generate valuable data and insights, which in turn presents opportunities to measure the true potential of the business values and

thus help in promoting and transforming the sustainability targets (Seele, 2016; Stuermer, Abu-Tayeh & Myrach, 2017).

In this booming era of digital transformation, many industries, firms, governmental organizations, social communities, or the general public, are dependent on smart and digital technologies. To facilitate these demands of generating meaningful data or manufacturing digital devices, by extracting resources, or energy consumption for data preservation of digital communication and other consequences of digitalization causes an unsustainable world for the current and future generation (Kuntsman & Rattle, 2018). This creates a '*digital ecosystem*' comprising of digital artifacts like hardware devices, program files, and data files along with the social elements in order to process data (Stuermer, Abu-Tayeh & Myrach, 2017). Over-consumption, underproduction, under-use are some of the key attributes that hamper organizations in gaining their maximum potential (Bradley, 2007). Self-harm cannot be overlooked, as the technology lifecycle which includes design, manufacture, operation and disposal of toxic wastes, evidently causes environmental contamination and occupational hazards (Elliot & Binney, 2008). The main aim of any digitally enabled sustainability methodology is not just providing digitally optimized solutions to reduce other organizations' and societies' production and consumption capabilities, but also monitoring its footprints while incorporating its digital capabilities (Hilty & Aebischer, 2015).

Hence, with the gaining traction and consciousness of sustainability, associated with its three pillars of social, economic, and environmental dimensions, the concept of '*digital sustainability*' has also earned a place in academic, legislative, and business ventures (Seele, 2016), which is the amalgamation of digitalization and sustainability. It comprises of software, hardware and social machine to create a digital system with an end goal of achieving sustainability by engaging primarily with i) *automation*, that generates artificial capabilities, ii) *guidance* that informs and influences an organization's behavior, generating augmented capabilities and iii) *connectivity* between various nodes of the organization, generating collective capabilities (Townsend, 2015). Some studies envisage that disruptive innovations related to smart infrastructure, mobility, and consumption, implemented using digital sustainability can help in narrowing the "sustainability gap" and attain "true sustainability" (Seele, 2016).

Companies either invest their own resources and manpower or they try to hire consultancy firms to propose or lay out a plan and carry out their sustainability objectives, based on weighing their internal capabilities and the capabilities offered by the suppliers (Shishank & Dekkers, 2013). Big organizations and digitally mature firms have created separate cross-functional teams and units, which employ the companies' digital capabilities to work on innovative solutions to gain digital sustainability. Nevertheless, there are many big as well as niche companies that are entering the market offering digital sustainability consultancy to companies, who lack these competencies but do not want to be left behind in achieving their sustainability targets. There could be organizations that have not started with the journey of digital sustainability and realized its true potential. The heart of this research was assessing the readiness of firms to incorporate digital sustainability. Moreover, the decision for sourcing the resources for the sustainability initiatives needs to be given strategic importance (McIvor, Humphreys & McKittrick, 2010).

Over the years, the concept of outsourcing has evolved immensely (Vagadia, 2012a), and many outsourcing models have been proposed in academic literature to help establish aligned, innovative and cooperative outsourcing arrangements and relationships between clients and vendors. Hence, choosing one process for outsourcing can be overwhelming (Johansson & Persson, 2019). Factors like strategic evaluation and management planning, information flow,

communication and discussion with vendors, variance in client and vendors perspective, and user participation and collaboration are essential in determining the success of outsourcing performance (Jun, Qiuzhen & Qingguo, 2011). Taylor (2007) also suggests that risk and threats also remain equally prevalent for outsourcing suppliers, since an unsuccessful consultancy or delivery could lead to customer dissatisfaction and hamper their competitive advantage and cause potential damage to their business reputation. To avert these risks, it is especially important for clients and vendors to adhere to strategic outsourcing models and relationships for the smooth performance of the business projects (Pearlson & Saunders, 2013; Claver, González, Gascó & Llopis, 2002). The outsourcing performance is strongly influenced by extensive strategic evaluation and proactive relationship management practices (Handley & Benton, 2009). According to Nam, Rao & Rajagopalan (1996), outsourcing relationships between clients and vendors are diverse and complex. With avenues of digital sustainability growing, it was believed that the need for outsourcing digital sustainability will increase even more. This became the base of the research to focus on analyzing the perception and capability of organizations to involve digital sustainability. And as an extension to the first the researcher wanted to analyze the organizational collaboration with third party service. As relevant framework and processes specific to this analogy are missing and unclear in the academic literature, this research also attempts to identify the critical success factors and risks involved in the outsourcing frameworks implemented in the context of digital sustainability, and understand if, or how much, it varies from traditional outsourcing frameworks.

1.2 Problem

Establishing the concept of digital sustainability and why it could be important for firms who are interested in reaping the benefits of digital sustainability, the question arises, whether or not the organizations perceive digital sustainability to provide social-economic benefits. There is empirical evidence highlighting the conceived benefits of using digital technologies as an enabler for fulfilling sustainability goals, yet the perception of organizations towards this construct is missing from the literature (von Kutzschenbach & Daub, 2021). The maturity levels of organizations to achieve sustainability targets and their perception towards the use of digital transformation in a global setup, needs more research to understand and predict the future direction for a sustainable world. Also, while it is known that some pioneers have embarked upon a digitally sustainable journey, the cost of initial investments could be huge before realizing the true potential in the long run (Barbier, Markandya, Pearce, 1990; Du, Wu & Zhao, 2018). There might be other companies who do not have the luxury to invest in separate physical and intellectual resources for looking over their sustainability goal, or do not have the core competency to incorporate digital sustainability, yet wanting to remain ahead in terms of capturing the paybacks of digital sustainability. This construct might open ways for more collaborative involvement from third party vendors, which could help organizations get the required resources and competencies for embarking on digital sustainability.

There have been considerable outsourcing frameworks established in past academic works of literature, with various perspectives and viewpoints laid with respect to many industry sectors. The critical success factors applicable for outsourcing projects must be analyzed from time to time based on current trends for ensuring favorable project deliveries (Gianom, 2020). In some cases, inconsistency in communication may lead to collaboration failure in an outsourcing environment, while in other cases incorrect cost estimation or inefficient strategies incorporated impact the completion and performance of the projects negatively. Hence, efficient strategies

and a collaborative environment are the major attributes that ensure a successful outsourcing strategy. However, whether these factors will be applicable in the context of digital sustainability has not been addressed in previous researches. The '*sustainability gap*' mentioned by Lubin and Esty (2014) refers to the difference between the need for transformation towards sustainability and the actual work done in this regard. This gap can be filled by incorporating digital avenues for constructive achievements (Seele, 2016) and the world is driving towards this transformation by challenging old business models and experimenting with innovative and agile ideas in ethical and responsible ways (Osburg & Lohrmann, 2017). With the difference in the project environment, there may or may not be variations in the contributing factors of successful outsourcing. This uncertainty has led the researchers to investigate the factor affecting the success or failure of implementing digital sustainability when outsourced.

1.3 Research Question

In current times, many organizations are investing hugely in technologies to realize the true potential of sustainability, which will in turn benefit their business ecosystems (Osburg & Lohrmann, 2017). But not much academic research based on case studies exists currently for supporting this construct (von Kutzschenbach & Daub, 2021). Also, the know-how of planning, execution and monitoring of such engagements is not entirely structured and researched. The challenges possessed like social structures, political decision-making, general economic trends, and technological development, influence their operations and hence need to be properly addressed (von Kutzschenbach & Daub, 2020). Collaborating with sustainability consulting experts is a viable solution. As a result, it becomes necessary to understand the intricacies of these collaborative initiatives through the lens of the outsourcing frameworks. This leads the researchers to analyze and provide academic insights to the research questions of:

RQ1: Are organizations ready to embark on exploring digital transformation to solve sustainability-specific challenges?

RQ2a: If organizations are exploring digital technologies to meet sustainability goals, are they considering engaging with external partners to help them in this journey?

RQ2b: If organizations are engaged with external partners, are the standard outsourcing frameworks applicable in understanding digital sustainability-specific engagements?

1.4 Purpose

The primary objective of this research work was to validate the role and involvement of digital sustainability in supporting the business strategies of firms. This research investigated the perceptions of organizations towards considering digital sustainability as a core pillar for their business strategy at present and its course of direction in the future. In addition to that, the possibility of organizations to drive internally or collaborate with third party sustainability experts, to achieve their set sustainability targets, were also examined. The applicability of technology outsourcing principles was tested for sustainability-specific engagements, since there was a gap for such research in the academic literature. The expected investigation was intended to provide evidence on how firms engage with digital sustainability specific service providers

(technologies, consulting assistance etc.) and whether desired results are obtained through such engagements. By analyzing the gaps between planning and execution of the sustainability-specific initiatives, meaningful insights were gained which helped in understanding the outsourcing relationship between firms and vendors for digital sustainability projects, as well as the impact and critical success factors associated with the same. The identified results were hoped to provide insights from both academic as well as organizational perspective to either validate the outsourcing relationship management or recommend new aspects to engage with stakeholders involved in project management in the context of digital sustainability. Also, this research could be used as a base to facilitate for further elaborate and extensive academic researchers in the contextual digital sustainability readiness and building a conceptual framework of outsourcing specific to digital sustainability.

1.5 Delimitation

The scope of this research was to analyze the readiness of organizations towards digital sustainability and identify the critical factors affecting the strategic evaluation and collaborative engagements between the stakeholders in an outsourcing environment. Since, it was identified in the research that the firms are still exploring the concept of outsourcing digital sustainability, and due to the time limitations, the contractual completeness of the outsourcing model was left out of scope of this research work. As both clients and vendors play equally important roles in the success of outsourcing relationships, it would have been ideal to capture the perspectives of both parties through interviews. However, with non-disclosure agreements between vendors and clients along with the time limitations, it was a challenge for the researchers to convince more participants of outsourcing firms for a qualitative interview study and present a broader analysis regarding the strategies incorporated for vendor selections and contractual elements involved during all phases of outsourcing. Although, it was compensated from the clients perceptions, as some of the approached professionals were convinced to participate in the survey, among other participants engaged or related to sustainability initiatives. The survey analysis helped to get some high-level insight of these aspects. The scope of this research thus can be considered as a stepping stone. Further research and studies can be based on this with more industry and organization specific participation, and conclusion can be drawn based on decided industry or geographic locations.

2 Literature Review

An academic overview has been presented regarding the concepts of sustainability, digital transformation and outsourcing framework along with their importance and risks in the following sections. Further, the overlapping of each of the discussed concepts with the others has been discussed in Section 2.5. Section 2.6 highlights the researchers' understanding of how digitalization acts as an enabler to sustainability initiatives and discusses the involvement and requirement of outsourcing digital sustainability.

2.1 Sustainability

The concept of sustainability has a long history, and it has evolved over time (Kidd, 1992). Ordway (1956) presented *the theory of the limit to growth* which discusses every dimension of sustainability without mentioning the word "sustainability" itself. The theory of the limit to growth is based on two premises: 1. Levels of human living are constantly rising, with mounting use of physical resources. 2. Despite technological progress more resources are spent than are created and as the cycle continues, demand and supply will become disproportionate leading to production unprofitability, cease of industrial expansion and growth (Ordway, 1956). In the book, *The Limits to Growth*, Meadows, Meadows, Randers & Behrens (1972) instruct the world about the exponential growth of economy & population and the resultant collapse through population growth, depletion of resources, pollution, degradation of the environment, etc. within a few decades. The 1972 UN Stockholm Conference on the Human Environment played a pivotal role in changing the world opinion to the view that environmental degradation is a serious threat to the development process and the well-being of hundreds of millions of the poorest people (Kidd, 1992).

The impact of the report was heightened by the fact that it was based upon a world model stated in the form of equations that provided the basis for computer simulations of different scenarios (Kidd, 1992). The authors (Meadows, Randers & Meadows, 2004) published another book 30 years later '*The limits to Growth: The 30 year update*' wherein they have shown concern that the preservation targets they had projected in order to ensure a sustained world, has not been met and the consumption rate has been overshooting in the past years. Studies asserted that failure to address the long-term consequences of these developments on the environment and recognizing the limit of growth would lead to disastrous effects in this finite world (Kidd, 1992). The growing world population, relentless exploitation of natural resources, looming signs of the greenhouse effect, and air, water and soil pollution causing biodiversity loss, all are accelerating the damage to the already deteriorating world (Chen, Boudreau & Watson, 2008). Along with the growing concerns for environmental concerns, there are other issues like poverty, mass starvation, increasing disparity, inequality and tension between societies, combinedly questioning the sustainability of the world for the future (Giovannoni & Fabietti, 2014).

Humankind has been exploiting the planetary boundary and the need for sustainable development in every aspect has become crucial importance for the future (Osburg & Lohrmann, 2017). Sachs (1977, p2) coined the term '*ecodevelopment'* which establishes "*an approach to development aimed at: harmonizing social and economic objectives with ecologically sound management, in a spirit of solidarity with future generations*". With the necessity to respond to

environmental and societal concerns, researchers and practitioners, national and international institutes, policymakers and organizational communities have been getting involved more and more thus evolving the concept of sustainability (Giovannoni & Fabietti, 2014). The concept of sustainability can be multi-dimensional and researchers address it with various definitions, perceptions and interpretations (Kuhlman & Farrington, 2010). The most common definition of sustainability is the "development that meets the needs of the present without comprising the ability of future generations to meet their own needs" (Brundtland Commission, 1987; Elliot & Binney, 2008; Hultz, 2011). While a sustainable global economy refers to the capability of the planet to sustain and support life indefinitely (Hart, 1997), a sustainable organization is the one "whose characteristics and actions are designed to lead to a desirable future state for all stakeholders over the longer term" (Funk, 2003).

As sustainable development focuses on the harmony of social, economic, and environmental development, John Elkington proposed a framework '*Triple Bottom Line (TBL)*' to measure sustainability (Slaper and Hall, 2011). The TBL dimensions are commonly called 3Ps, people, profit and planet. This triple bottom line underlines the importance of businesses embracing sustainability in order to achieve a sustainable world. The TBL sustainability framework provides businesses, non-profit organizations and governments, a method to evaluate their performance. The significance of sustainability is now being recognized and acknowledged by companies and are thus adjusting or trying to mold their corporate strategy to address the sustainability dimensions (Lekakos, Vlachos & Koritos 2014). Cross-country initiatives and policies have been set as guidelines for companies and firms to follow. One prominent example of such initiatives is the 17 Sustainability Development Goals (SDGs) declared by the UN in 2015 which acts as a blueprint for building strategies for the betterment of the people and planet now and in the future. The goals are related to the alarming threats of poverty, hunger, health, water, cities, climate, oceans, and land (Division for SDG, n.d.). Sustainable entrepreneurship exhibits prosocial choices into its core strategies, practices, and processes with goals of reducing environmental impact and going '*green'* (George, Merrill & Schillebeeckx, 2020).

Organizations follow these laid metrics while responding to the growing environmental concerns in society, regulatory imperatives and market pressure and thus tackle the economic, societal and environmental challenges possessed in today's world (Tjoa, & Tjoa, 2016). And to achieve such goals and build a sustained society and planet, innovative digital avenues are being established as significant contributors (Elliot & Binney, 2008; Tjoa, & Tjoa, 2016). Business reports suggest, companies are launching or trying to incorporate '*green'* products so as to ensure less harm to their surroundings (Dangelico & Pujari, 2010). However, in practice, it is difficult to measure and assess the economic implications and gains (Slaper and Hall, 2011), as ICT applications and practices themselves cause environmental degradation if not incorporated meticulously (Elliot & Binney, 2008). Along with the uncertainty of how, when and where to use the digital avenues, sometimes divulging in sustainability aspects disorients businesses from their core values propositions (Karnani, 2011).

2.2 Digital Transformation

Westerman, Bonnet & McAfee (2014a) suggest that the business world is moving towards digital transformation (DT). With the increasing magnitude of disruptive innovations in the digital world, the opportunity to attain a competitive advantage and reap the true benefits of digitalization is expanding. "*The elements of the digital world—software, hardware, networks, and*

data—are pervading the business world, and they're doing so quickly, broadly, and deeply" (Westerman, Bonnet & McAfee, 2014a p5). Digital transformation can be defined as a cultural change that integrates various digital technologies within all areas of an organization, by reconceptualizing the foundational operations and core values with experimentation and agility, so as to give the organization a competitive advantage (Rudder, 2020). It can be summarized as involving strategic changes in organizations' structure, processes and culture with the help of information, computing, communication, and connectivity technologies (Vial, 2019).

Since digital transformation is changing the business landscape, strategic investments in innovative technologies and business processes using digital transformation have been seen to increase revenue and improve stock value (Clark, 2020). Moreover, keeping up with the pace of customers' expectations, companies understand the crucial significance of digital transformation. Compelling customer experience with digital storytelling, scaling organization engagements, reinventing or remodeling business process for efficiency, branding and rebranding and many other aspects are contributed with the help of digital avenues. Due to its innovative offerings of immense opportunities to the business world, it can be said that '*software is eating the world*' (Andreessen, 2011). Frequent technology-driven disruptions become a major driving force for companies to lean towards digital transformation for increasing productivity and value creation (Ebert & Duarte, 2018). On the contrary, that companies that are failing to adapt to the fast-changing business environments and sticking to traditional business setup are struggling to survive in this digital era. Studies suggest that since the start of digitalization around 2000, around 50% of the traditional companies of the fortune 500 have disappeared (Gillior, 2018).

Irrespective of the industry, or the size and scale, organizations that are driving towards digital transformation are not only surviving but also thriving in today's business landscape. Automation, accuracy, informed business decisions using analytics, and improved connection with the clients have helped even small and medium businesses (SMBs) progress towards success (Rana, 2021). Successful enterprises are incorporating digital transformation of their business with the latest digital capabilities and strong leadership capabilities, and are considered as Digital Masters in this competitive market (Westerman, Bonnet & McAfee, 2014a). Advanced digital offerings like analytics, mobility, social media, microservices, and many more innovative avenues are utilized by business executives to shift their traditional business model towards a digital transformation that would ensure better customer relationship, value propositions and internal operational processes (Westerman, Bonnet & McAfee, 2014b). Companies are trying to utilize even more recent technologies like the internet of things (IoT), artificial intelligence and machine learning (AI/ML), virtual and augmented reality, blockchain and 5G.

With the start of Industry 4.0, even non-IT industries are collaborating with ICT companies, local suppliers, and governmental and academic institutions to utilize the maximum potential benefits of the innovative digital avenues and enhance their productivity and efficiency, reduce operational costs and improved safety (Sánchez & Hartlieb, 2020). One such example is Codelco. The Chilean mining company has developed a project named the '*Continuous Mining System*' to strengthen the concept of '*Digital Mine*' that applies numerous innovative technologies to its entire value chain of exploration, extraction, processing, and smelting and refining (Sánchez & Hartlieb, 2020). The tools brought by the digital transformation include analytics AI/ML, augmented and virtual reality, digital twinning, autonomous equipment, integrated remote operation centers, robotics, smart sensors and blockchain, that helps provide automation, safety, remote working environment, and authenticity (Sánchez & Hartlieb, 2020).

Similarly, the fintech revolution has compelled the banking industry to implement innovative solutions catering to their customers' needs (Sia, Soh & Weill, 2016). The growing demand for '*interact', 'transact*' and '*avail'* secure banking services on laptops, tablets or phones, rather than visiting branch offices, has led many banks to incorporate strategic transformations of their business models. DBS Bank made huge investments in its leadership and IT infrastructure growth and has now grown from a Singaporean bank to become the largest bank in Southeast Asia by providing various financial services like institutional banking, consumer banking and wealth management (Sia, Soh & Weill, 2016). Another example that can be cited is the postal services of Denmark and Sweden which are catching up to speed by exploring diversification into e-services (Westerman, Bonnet & McAfee, 2014a). Many other companies from various industries, by either outsourcing or insourcing digital capabilities, have started their journey of digital transformation within the past few years and the rate of transformation is only increasing with time.

With the new demands of digital capabilities, associated risks are also brewing up, which needs to be kept in check (Westerman, Bonnet & McAfee, 2014a). Cybercrimes and fraudulent activities are increasing with businesses going digital. Social media is becoming addictive and one negative post can create an immediate negative influence. The release of sensitive and confidential data leads to serious concerns about data privacy (Osburg & Lohrmann, 2017). Advanced AI-based algorithms sometimes result in discriminated outcomes based on the fed data. One example is Amazon's employee recruitment algorithm, which was biased against female applicants because of the partial data fed to the machine learning applications (Kim & Routledge, 2020). Hence to monitor and manage these associated risks and challenges, proper security and governance systems become a requirement.

2.3 Digital Sustainability

Many studies define digital sustainability from varied perspectives, yet the main aim of digital sustainability is for efficient and effective utilization of traditional or latest digital avenues to cater to the three pillars of sustainable development, i.e., people, planet and profit. Figure 2.1 showcases the table created by Wut, Lee, Ip and Lee (2021) discussing the various perceptions and definitions of digital sustainability by various authors. Bradley (2007) defines digital sustainability as a means to preserve the infrastructure that supports all functions of digital objects. From a different perspective, Cybercom Group (n.d. p3) defines digital sustainability as "*an approach that harnesses one of the most powerful forces for societal change, namely digitalization, to deliver what we need and want in a sustainable way"*. digital sustainability can be also defined as "*the organizational activities that seek to advance the sustainable development goals through creative deployment of technologies that create, use, transmit, or source electronic data"* (George, Merrill & Schillebeeckx, 2020, p2). It involves organizational activities at both internal and external levels. Accumulation, accessibility and exploitation of knowledge, or data, acquired through the new and innovative digital artifacts and technologies become a crucial factor or input means for achieving sustainable developments (Stuermer, Abu-Tayeh & Myrach, 2017). Although knowledge itself might have certain downsides and should be sustainably attained and preserved for sustained utilization. All these aspects contribute to the composition of digital sustainability.

Table 1. Definition on digital sustainability.

Author (Year)	Context	Perspective	Definition	Considerations
George et al. (2020) [10]	Organizational activities	Entrepreneurial	Digital sustainability as the organizational activities that seek to advance the sustainable development goals through creative deployment of technologies that create, use, transmit, or source electronic data	Codifying Observations, Improving Liquidity, Facilitating Attention, Embedding Verification, Empowering People, Fortifying Infrastructure
Konstantelos and Hughes (2019) [11]	Community-generated content	Preservation of culture and history	"as encompassing the wide range of issues and concerns that contribute to the longevity of digital information [. . .] and provides the context for digital preservation by considering the overall life cycle, technical, and socio-technical issues associated with the creation and management of [a] digital item." [8]	Content, Technology, Preservation, Promotion
Stuermer et al. (2017) [4]	Digital artifacts and their ecosystem	Knowledge management	the sustainability of digital artifacts and their ecosystem is achieved by producing, developing, maintaining and ensuring access to digital artifacts in a way that ensures their creation and facilitates their use	Elaborateness, Transparent Structures, Semantic Information, Distributed location
Stüermer (2014) [7]	Technical longevity of digital information	Cultural heritage and digital humanities	How to create, use, and regulate digital resources in order to maximize their value for our society today and in the future	Intergenerational justice, regenerative capacity, economic use of resources, risk reduction, absorptive capacity, ecological and economic added value
Bradley (2007) [8]	Preservation and maintenance of digital content	Digital Repositories (library)	The concept of digital sustainability is defined as encompassing the wide range of issues and concerns that contribute to the longevity of digital information. Digital sustainability, it is demonstrated, provides the context for digital preservation by considering the overall life cycle, technical, and socio-technicalissues associated with the creation and management of the digital item.	Viability, renderability, understandability, authenticity, identity

Figure 2.1: Definitions of digital sustainability (Wut, Lee, Ip & Lee, 2021)

2.3.1 Sustainable Technologies and Services

With the digital world revolutionizing all domains of life and technology, many associated risks and consequent issues are also brimming. On one hand, there are societal concerns with the advance of digitalization. Automation and efficient technologies bring economic benefits to the businesses, but it also leads to unemployment of the working classes causing socio-political issues like poverty (Mokyr, Vickers & Ziebarth, 2015). Also, increasing rates of cybercrime, cyberbullying and cyber addictions along with problems related to data privacy are negatively impacting the human in a personal and societal level (Overby, 2015). Blockchain technology promises transparency and traceability, at the same time raises concerns relating to privacy and proprietary intellectual property (Quarshie, Salmi, & Leuschner, 2016). On the other hand, energy consumed to support the digital artifacts is in turn adversely impacting the ecological aspects (Murugesan, 2008). Power consumption for supporting the digital technologies, like charging digital devices like cell phones, laptops, etc., or the energy dissipated by heavy digital devices along with the energy needed to cool down those heavy digital machines, all of these directly or indirectly lead to climate change. The wastage building up due to the discarded and outdated mobile phones and their debris like batteries, silicone, lead, cadmium pose alarming threats to humans and the environment, "*illustrating the unequivocal connection between a successful pervasive computing technology and a looming environmental crisis*" (Huang, Yatani, Truong, Kientz & Patel, 2009).

The unintentional '*feedback loop*' or the '*rebound effects*' associated with digital transformation need to be monitored for the social, economic and environmental safety and benefits, which were neglected or underestimated before (Scholz, 2016). Freeman (2018) states that rebound effects occur due to higher growth rates, more intensive use of energy and higher energy costs. The expected gains from various policies and strategies in today's complex economy often end up building more side effects, mostly negative, depending on the efficiency of the utilization and consumption of natural and technological resources (Townsend & Coroama, 2018). The rebound effects can be categorized as economy-wide effects, transformational effects, frontier effects, and international rebound effects. An example of economy-wide effects

could be cost reduction of goods and services because of better technological solutions. Cost reduction leads to increased demand leading to overconsumption (Hertwich, 2005). Transformational rebound effect relates to technological or strategic changes of business models leading to easy access and availability and thus resulting in increased consumptions (Greening, Greene & Difiglio, 2000).

Latest models and devices become more in demand, resulting in the wastage of old devices. A good example would be the growth of personal computers, from desktops to laptops, tablets and other digital devices. These emergent technologies leading to the under-utilization of older products will result into a global scale frontier effect in the long run (Freeman, 2018). International rebound effects relate to the transfer of resource-conserving technologies like increased transfer rates of light-duty vehicles from China, India, and South East Asia, with the primary goal of business profits rather than the focus of improving resource efficiency (Sarr and Swanson, 2017; Creutzig, Jochem, Edelenbosch, Mattauch, van Vuuren & McCollum, 2015). These effects highlight that advanced technologies put in place of efficient resource utilization can still result in an overall increase in resource use. Thus it becomes essential to consider these rebound effects for a sustainable future (Freeman, 2018). These repercussions of digitalization are alarming the world to ensure sustainable digital technologies and services. Although, this research does not direct itself towards the sustainability of digital technologies, rather is concerned with the involvement of digital technologies as an enabler, that supports the three pillars of sustainability, and investigates whether or not organizations are ready for technology as an enabler.

2.3.2 Digital Technologies to Enhance Sustainability

Overuse of resources, underconsumption or inefficient resource utilization, carbon-intensive industrialization, all contribute to imbalanced, self-destructive environmental factors leading to major existential threats to our natural ecosystems (George, Merrill & Schillebeeckx, 2020). Researchers believe that the continued evolution of digital ecosystems involved with such business practices may endanger the social and environmental aspects even more, if not handled from a sustainable development perspective (Scholz, 2016). The seemingly intractable societal challenges along with the major challenge of climate change and global warming are now being acknowledged and monitored with the help of innovative digital avenues (George, Merrill & Schillebeeckx, 2020). With the help of Digital Sustainability (digital sustainability) as an enabler, these challenges can be addressed efficiently (Balogun, Marks, Sharma, Shekhar, Balmes, Maheng, Arshad & Salehi, 2019). digital sustainability not only helps in optimized resource utilization but also brings up innovative ideas of using '*cleantech'* that are products beneficial for the environment. digital sustainability also helps to enable the circulation of resources by identifying methods of recycling, maintenance/refurbishment, and sharing/reuse like shared economy (Townsend & Coroama, 2018).

Researchers believe following the SDGs could be an efficient way for companies to curb the negative effects of the business organizations' operations (Osburg & Lohrmann, 2017). With the help of digital technologies and conscious strategies, enterprises (small or big) of various industries can follow the SDGs. Researchers and sustainability experts suggest digitalization as an enabler for sustainability initiatives. The concept of Society 5.0, first proposed in Japan is one of such examples amongst many others, as it aims for a prosperous human-centered society by involving the use of digital technologies for several strategies for improving the societal ecosystem (Keogh, Dube, Rejeb, Hand, Khan & Dean, 2020). Establishing the role and

significance of digital sustainability in organizations, business operations and processes can steer towards a transparent and sustainable value chain. Public organizations also help influencing the procurement of sustainability standards, by awarding sustainability certificates (Osburg & Lohrmann, 2017).

2.3.3 Digital Sustainability Readiness

The two most hyped buzzwords of today's corporate landscape are digitalization and sustainability (Kiron & Unruh, 2018). Seele and Lock (2017) also consider the two concepts of digitalization and sustainability as '*megatrends'*. And the collaboration of these two practices can also be defined as digital sustainability (George, Merrill & Schillebeeckx, 2020).

Though the two concepts have been researched in academic literature individually, the emergence of the two concepts combined has not been explored enough (von Kutzschenbach & Daub, 2021). Also, the importance of digital sustainability has been evident in the literature and appreciated in the entrepreneurial culture, yet the execution and operations with respect to digital sustainability in organizations have limited research (Wut et al., 2021). Khuntia, Saldanha, Mithas and Sambamurthy (2017) also stress that although studies support the role of digital technologies in managing operations supporting sustainability, fewer studies have actually highlighted the efficacy of such engagement. Seele and Lock (2017) stress the possibilities, perils and pathways of digital transformation facilitating a sustainable world, as they wonder the current state of the organizations' maturity in this regard is not much known. These disparities call for questioning the organizations' perception towards the use of digital artifacts and to reiterate how technologies can be employed for the betterment of the environment, society and economy.

Perception of organizations: With the varied definitions of digital sustainability on the basis of researchers' perceptions discussed in the start of this Chapter, it is imperative to study the perspectives and maturity levels of organizations to incorporate digital sustainability. It is known that the scale of digital sustainability practices varies from industry to industry, and is also based on geographical locations (Wut et al., 2021). Lock and Seele (2017) identifies the complex interplay between various stakeholders associated with digital transformation aiding sustainability, and present a model for digital sustainability stakeholders in their research. Figure 2.2 represents their model. Chandola (2016) mentions that since consumers, shareholders and other stakeholders have accessibility to Brand Value, Revenues and Company Valuation of an organization, it becomes necessary to incorporate the link between digital transformation and sustainability transformation for having a competitive edge. Apart from competitive advantage, the vested interest of corporate firms and legislative or public organizations for '*greening*' could also be due to various reasons such as regulatory compliance, stakeholder pressures or ethical responsibility of top management (Bansal & Roth, 2007).

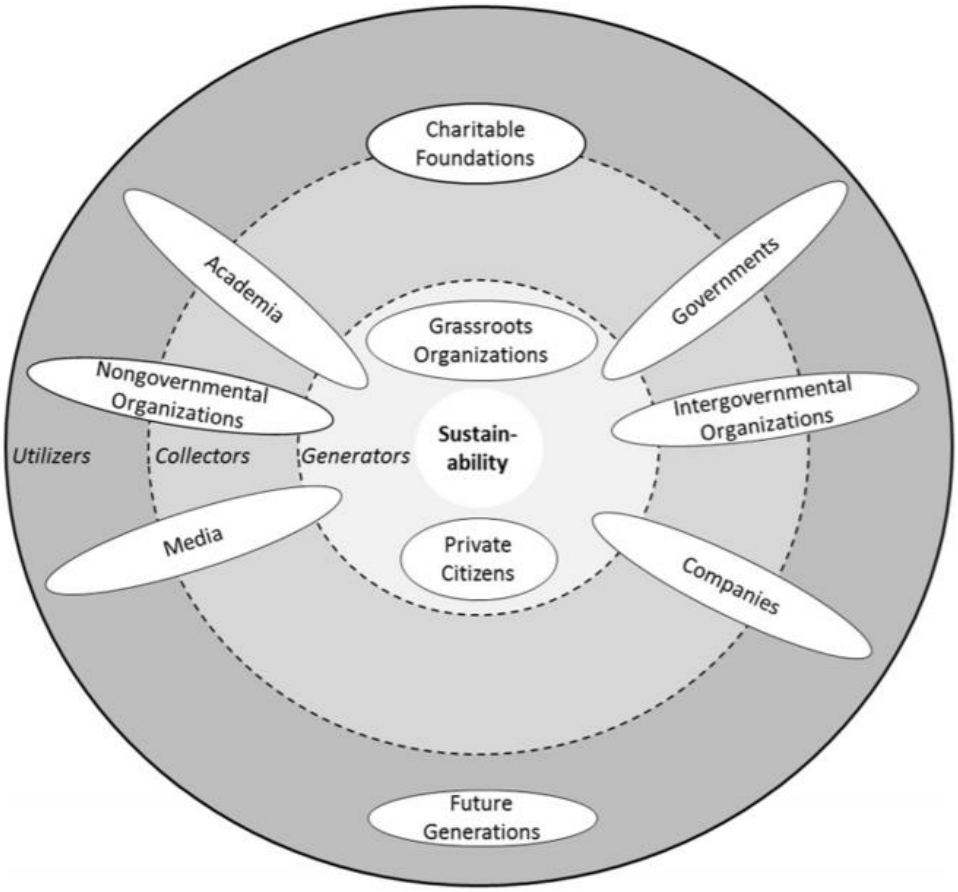

Figure 2.2: Model for digital sustainability stakeholders (Lock & Seele, 2017)

Ramalingam and Hernandez (2016) shed a different perspective, arguing that the digital revolution has not only presented opportunities for sustainable development, but also have led to certain challenges, such as inequality in terms of digital coverage and access, partition between urban and rural communities or growth rate in developed and developing countries. The Sustainability Development report 2020 scores countries based on their overall progress towards the 17 SDGs, and as per the results, its been noted that the top countries are mostly European led by the Scandinavian nations, whereas the progress of Asian and Pacific countries are unfortunately not sufficient to reach the SDG targets by 2030 (Sachs, Schmidt-Traub, Kroll, Lafortune, Fuller & Woelm, 2020). Few factors are identified in the Sustainability Development Goals Website (n.d.), that is the reason for stagnant or slow progress towards SDGs. Firstly, there are slow progress in organizations support for innovation, industry and infrastructure, leading to delay in global partnerships. Secondly, assistance in technical cooperation and broadband access in rural and subregions are missing resulting in intercountry digital divide. Thirdly, the lack of investments, which is a critical concern towards the fulfillment of next-generation infrastructure.

Employment of Digital Avenues: Evolution of measurement metrics, reporting tools, net positive business models, consumer awareness, ethical sourcing: all of these can be achieved with the help of digital technologies. Green computing techniques calculate the carbon emission due to energy consumption, raising consciousness and consequent reduction of impact of IT hardware in the environment (Osburg & Lohrmann, 2017). Efficient and optimized transportation using information systems has caused faster, and environment friendly logistics (Jovic, Tijan, Zgaljic & Karanikic, 2020). Digital story-telling helps in collaborative creativity (Daskolia,

Kynigos & Makri, 2015) as well as raises awareness amongst consumers for ethical consumption and waste management. New disruptions are possible with the use of augmented, virtual and mixed reality aiding to the better performance of educational, healthcare, mining and even tourism sectors (Martin, 2021). Using analytical tools, resource demand could be estimated and thus optimized utilization of resources becomes possible preventing unnecessary extraction and degrading the environment (Pohl & Finkbeiner, 2017). Cloud mediums and servers have reduced the requirement and thus production of many hardware products.

Even conventional industries like agriculture, horticulture and animal husbandry are using technologies to become sustainable, such as indoor farming, or precision agriculture, or alternate plant-based meat substitutes with the help of innovative technologies (Folk, 2020). Forestry departments are also using technologies like close range remote sensors and drones for resource assessment and monitoring large areas of forest lands (Calders, Jonckheere, Nightingale, Vastaranta, 2020). With the advent of COVID-19 pandemic, people are pushed to use digital avenues even more. Working from home is being possible and meetings can be attended via video conferencing platforms like Microsoft Teams, Zoom, Skype or Google Meet. Products and commodities are being available to us at doorsteps using the home-delivery services of ecommerce websites and apps. Various other service providers are managing to provide services remotely, even generic healthcare related information. Live updates on the COVID patients' statistics all over the world can be known to us over internet. Technology is aiding to monitoring, surveillance, detection and prevention of Covid-19 (Ting, Carin, Dzau & Wong, 2020). The outer circle of the Figure 2.3 demonstrates the role of ICT that contributes to the fulfillment of the 17 UN Sustainability Development Goals.

Figure 2.3: ICT Contributions to SDG (ITU, 2018)

Most companies, especially those belonging to non-IT industries, do not have the strategic capabilities to drive the digital transformation and those who have already set path in that direction gain ascendancy in the area of value creation, customer satisfaction and profit margins, when compared to their peers and competitor (Westerman, Bonnet & McAfee, 2014a). Nevertheless, it is equally important for embracing digitization and digitalization, irrespective of the nature of their industry or operations in multiple geographies, to unlock additional shareholder values. With a mindset of sustainable outcomes, it is therefore important for embarking sustainable strategic management practices at the very core, that would govern the complexity of integrating the entire coordination, prioritization, and incorporation of digital transformation in any enterprise (Matt, Hess & Benlian, 2015). Thus, outsourcing these strategic digital capabilities could promote collaboration initiatives between large companies, local suppliers, and governmental and academic institutions for the development of technological solutions (Sánchez & Hartlieb, 2020), and generate better organizational values with respect to people, planet and profit. To familiarize the readers with the node of outsourcing in the context of digital sustainability, efforts have been made to elaborate the concepts of outsourcing framework and its associated theories in the following two sections.

2.4 Outsourcing Framework

Coase (1995), in his paper '*The nature of the firm'*, asked, what determines whether production will be organized in a firm or through the market and later coined the term '*make-or-buy'* decision. Sourcing (make-or-buy) is a complex strategic decision that has implications on the overall corporate strategy of the organization (McIvor, Humphreys & McAleer, 1997). In the case where the '*buy'* option is selected, the company/organization outsources. The concept of outsourcing has evolved immensely over the years, starting from transactional, to strategic, moving ahead to transformational, and recently leading to innovative outsourcing (Vagadia, 2012). This section describes outsourcing, the conceptual model of outsourcing that is used as a reference model in this research, different stages used in the conceptual model and potential benefits and associated risks of outsourcing.

Outsourcing is defined as the act of obtaining semi-finished products, finished products or services from an outside company if these activities were traditionally performed internally (Dolgui & Proth, 2013). In early days of outsourcing, the primary motivation for outsourcing was on reducing costs (Pearlson & Saunders, 2013). In 1989, Eastman Kodak created the '*Kodak effect'* by introducing a multi-vendor approach to meet its IS needs by outsourcing its data center operations to IBM, its network to Digital Equipment Company and its desktop supply and support operations to Businessland (Pearlson & Saunders, 2013). In the middle of the nineties, started another major transformation of outsourcing higher value-added products and services such as key auto parts for Ford, Daimler-Chrysler and Volkswagen, key airplane components for Boeing and so on (Dolgui & Proth, 2013).

Outsourcing is often not a simple purchasing decision which aims only for cost reduction but more of a strategic decision that can impact the overall success of the business (McIvor, 2005). Outsourcing can involve, transfer of an entire business function to a vendor, transfer of some activities associated with the function whilst some are kept in-house, transfer of both people and physical resources to the vendor etc. (McIvor, 2005). There are several key internal factors due to which an organization considers outsourcing, a few are: outsourcing enables organizations to refocus their resources on their core business, developing technology internally would be too expensive compared to buying the same from a vendor, outsourcing lets companies revamp their benefit plans, make them more efficient and save time and money and a final possible reason is to reduce costs, over the longer term (McCarthy, 1996). The four key inter-related factors in the external business environment that triggered an increased adoption of outsourcing practice are globalization, developments in information and communication technologies, public sector reforms and more demanding customers (McIvor, 2005).

The different stages involved in the outsourcing process can be broadly divided into preparation/planning, development, implementation/transition, managing relationship and reconsideration (Perunović & Pedersen, 2007; Zhu, Hsu & Lillie, 2001). The key activities involved in the preparation stage are strategic & capability evaluation, risk assessment, preferred relationship, drafting the SLA, etc. (Insinga & Werle, 2000; Perunović & Pedersen, 2007; Prahalad & Hamel, 1997). Vendor agreement, business relationship, developing outsourcing timeline etc. are some of the important activities in the development stage (Das & Teng, 1998; Zhu, Hsu & Lillie, 2001). The implementation stage involves activities like defining communication and exchange of knowledge, transfer of assets, employee separation & transition, etc. (Perunović & Pedersen, 2007; Zhu, Hsu & Lillie, 2001). The key activities involved in managing relationship stage are handling meetings & communicating, monitoring the performance, managing success

factors, solving problems etc. (Mohr & Spekman, 1994; Perunović & Pedersen, 2007; Prahinski & Benton, 2004).

2.4.1 Conceptual Reference Model for Outsourcing

Outsourcing can be conceptualized as a process which begins with the development of a concrete business case for outsourcing, then implementation of the external sourcing model and finally managing the relationship with the vendor (Handley & Benton, 2009). Figure 2.4 below summarizes the conceptual model used in this research, and the following sections elaborate on each constituent.

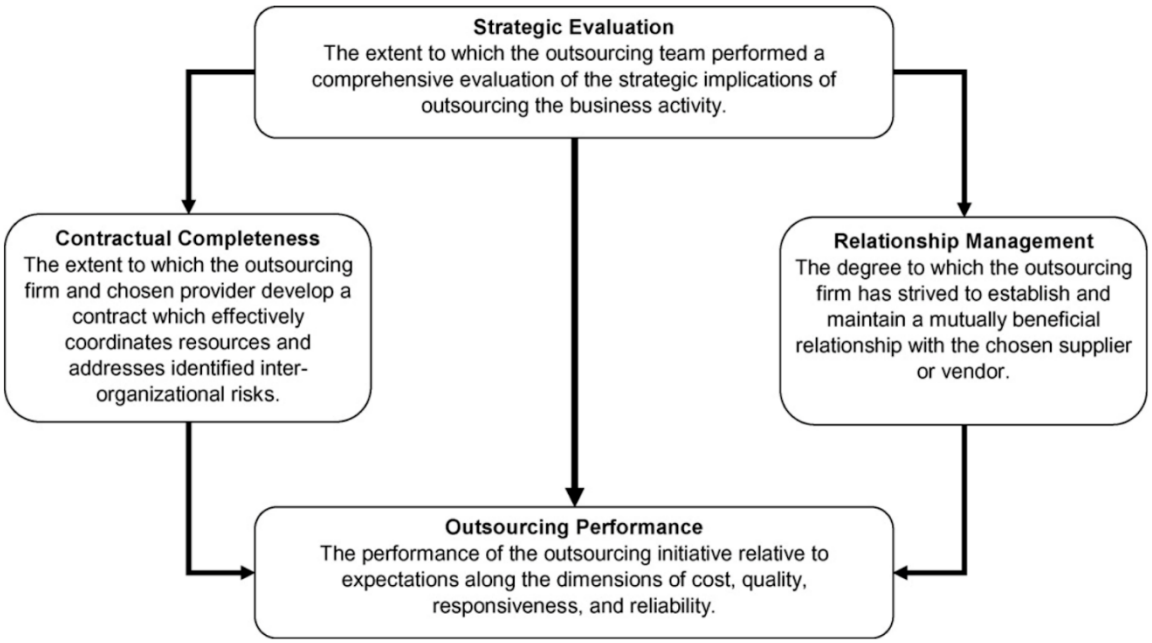

Figure 2.4: A conceptual model for outsourcing (Handley & Benton, 2009)

Strategic Evaluation

The first step in the outsourcing process is strategic evaluation during which a comprehensive evaluation of the strategic implications of outsourcing the business activity is performed (Handley & Benton, 2009). By successfully combining two strategic approaches firms can gain significant benefits, 1. Concentrate the firm's resources on a set of '*core competencies*' where it can achieve definable pre-eminence and provide unique value for customers and 2. Strategically outsource other activities - including many traditionally considered integral to any company - for which the firm has neither a critical strategic need nor special capabilities (Quinn & Hilmer, 1994). Strategic evaluation is a very critical step because firms that continue to develop wrong business activities within their boundary risk losing strategic focus and becoming bloated and bureaucratic whereas firms that outsource core competencies risk losing their competitive advantages and becoming hollow corporations (Barney, 1999). Strategic evaluation is generally performed from two perspectives, from a capability perspective and from a risk perspective (Handley & Benton, 2009).

From a capability perspective, the strategic value of the capabilities and resources associated with the business activities are evaluated against the firm's current and anticipated competitive advantage (Handley & Benton, 2009). Companies that race to build core competencies will almost certainly outpace rivals in new business development (Prahalad & Hamel, 1997). The three tests that can be used to identify core competencies are:

- a core competence provides potential access to a wide variety of markets,
- a core competence should make a significant contribution to the perceived customer benefits of the end product and
- a core competence should be difficult for competitors to imitate (Prahalad & Hamel, 1997)

Some important characteristics of core competence are skill or knowledge sets, flexible long-term platforms, limited in number, etc (Prahalad & Hamel, 1997). In rapidly evolving competitive industries, it is often preferred to gain access to competitive capabilities through non-hierarchical forms of governance because the other two alternatives, to develop the capabilities on their own and to acquire another firm that already possesses these capabilities can be costly (Barney, 1999). It must be noted while performing capability evaluation that capabilities that are non-core today may become core in the future (Handley & Benton, 2009).

From a risk perspective, the evaluation process must assess the risk involved in making once proprietary information available to an external organization and also the strategic risk involved in vendor shirking, that arises due to goal misalignment (Handley & Benton, 2009). Furthermore, transaction cost theory claims that the presence of uncertainty, contractual incompleteness in contract will lead to inefficient results due to non-optimal investments or resources being expended on socially wasteful defensive measures commonly known as '*hold-up problem*' (Holmstrom & Roberts, 1998).

Contractual Completeness

Once the decision to outsource has been made and identified the vendor, the next important stage is contract negotiation. Barthelemy (2003) states '*writing a poor contract'* as one of the seven deadly sins of outsourcing. According to him, the best contracts have five key characteristics of *Precise, Complete, Incentive-based, Balanced,* and *Flexible*. Contractual completeness is the degree to which the outsourcing organization and the vendor create a contractual agreement that not only optimizes the resources participating in the outsourcing activity but also addresses the risks identified for both parties (Handley & Benton, 2009). The transaction costs and resource-based perspectives suggested that a complete contract fulfills two fundamental functions: control and coordination function respectively (Mellewigt, Madhok & Weibel, 2007). As part of coordination, the contract clarifies mutual expectations, enables goal congruence, as well as delineation of roles, rules, programs and procedures, enables the coordination of interfaces that are necessary for accomplishing the collective goals (Handley & Benton, 2009).

The role of trust is one of the important aspects of contract design (Mellewigt, Madhok & Weibel, 2007). Trust and contract design has two different and competing views in the literature in which one states trust and formal contracts are substitutes and the other status trust and formal contracts are complementary (Mellewigt, Madhok & Weibel, 2007). This further implies that in the former case, greater trust would manifest itself through less detailed contracts whereas in

the latter perspective greater trust would produce more detailed contracts (Mellewigt, Madhok & Weibel, 2007).

From a firm capability perspective, it is important to have a cross-functional team involved in the contract development process because different groups within the organization have unique qualified capabilities to develop certain contractual provisions (Handley & Benton, 2009). Barthelemy (2003) cited *'writing a poor contract'* and *'losing control over the outsourced activity'* had the largest impact on the outcome of outsourcing efforts.

Relationship Management

Relationship management depicts the extent to which the outsourcing organization has attempted to develop, establish, and maintain a mutually beneficial relationship with the vendor (Handley & Benton, 2009). The objectives of the outsourcing strategy, the importance of the activity and the level of risk involved determine the direction of the buyer-supplier relationship as well as the type of the adopted relationship (McIvor, 2005). In the end, the success of the relationship is going to be determined by how it is managed at the operational level which further emphasizes the need of both parties having necessary skills and resources to manage the process at operational level (McIvor, 2005).

The two key characteristics that distinguish strategic relationships between two firms from a single firm relationship are interfirm cooperation and the uncertainty or '*relational risk*' (Das & Teng, 1998). Das and Teng (1998, p.492) defined partner cooperation as "*the willingness of a partner firm to pursue mutually compatible interests in the alliance rather than act opportunistically*". Pierce (2013, p.27) defined alliance as "*collaboration between two or more parties aimed at reaching common and individual objectives".* On the other hand, opportunism can be considered as the opposite of partner cooperation in strategic alliance (Das & Teng, 1998). Two important dimensions of cooperation are veracity, i.e., being truthful and commitment i.e making efforts (Arino, 1997; Das & Teng, 1998). Teece (1992) pointed out that it is important to find a balance between competition and cooperation. Commitment and cooperation are interwoven in their roles in establishing a relationship that is mutually beneficial for both parties (Handley & Benton, 2009). Pierce (2013) suggested that three factors that positively influence a successful alliance for obtaining ICT capabilities are *transfer capacity, relationship governance* and *culture.*

According to Prahinski and Benton (2004), relationship commitment is defined as the degree to which the outsourcing firm feels pledged or obligated to continue or maintain a robust relationship with the vendor. For the success of outsourcing relationships, strong commitment is required from both parties, which means willingness to accept short term sacrifices to build a robust relationship (Handley & Benton, 2009). Kakabadse and Kakabadse (2003) stresses the participation of top management in the relationship management process.

In the context of outsourcing, cooperation is the degree to which the outsourcing firm and the vendor work together to solve problems, maintain flexibility and plan collaboratively (Handley & Benton, 2009). Confidence plays an important role in cooperation, a low level of confidence will lead outsourcing firms and vendors to view each other with suspicion and thereby creating a deleterious effect on the outsourcing relationship (Das & Teng, 1998). Das and Teng (1998) defined confidence in cooperation as a firm's perceived level of certainty that the vendor firm will pursue mutually compatible interests in the relationship rather than acting opportunistically. The two key sources of confidence are trust and control (Das & Teng, 1998). It is

important to understand the key difference between trust and confidence, trust refers to expectations about positive motives whereas confidence refers to certainty about cooperative behaviors (Das & Teng, 1998).

Outsourcing Performance

Performance measures are needed in an outsourcing context to assess whether or not outsourcing is helping to achieve the strategic objectives of the business (McIvor, Wall, Humphreys & McKittrick, 2009). The increasing refinement of outsourcing strategies makes measurement of performance in the context of outsourcing a complex problem (McIvor et al., 2009).

Chang and King (2005) proposed a three-dimensional functional-level performance model to assess the performance of IS functions. They are *Systems performance*: assesses the quality aspects of systems such as reliability, response time, ease of use, and so on, and the various impacts that systems have on the user's work, *Information effectiveness*: assesses the quality of information in terms of the design, operation, use, and value provided by information as well as the effects of the information on the user's job and *Service performance*: assesses the user's experience with services provided by the IS function in terms of quality and flexibility (Chang & King, 2005). De Toni and Tonchia (2001) presented performance measurement measures: cost performances such as production costs and productivity and non-cost measures such as time, quality and flexibility. Studies suggest that performance measures and metrics for outsourcing arrangements differ at different stages of outsourcing such as pre-outsourcing, during-outsourcing and post-outsourcing and performance metrics can broadly be categorized as financial/non-financial and tangible/intangible (Gunasekaran , Irani, Choy, Filippi, & Papadopoulos, 2015).

Rockart (1979) defined critical success factors as those performance factors which must receive continued attention from the management of the company is to remain competitive. Once the CSFs, generally between four and eight, have been determined, it is critical to integrate them into the performance measurement systems (McIvor et al., 2009). An important technique for associating CSFs with performance is benchmarking (McIvor et al., 2009). Employing benchmarking in outsourcing enables an organization to align operational processes at the lower level with the overall business strategy of the organization (McIvor et al., 2009).

2.4.2 Benefits and Risks of Outsourcing

Potential Benefits of Outsourcing

There are many potential benefits of outsourcing, the most common benefits as presented by McIvor (2005) are as follows:

- Cost management: It is one of the primary motivating factors in adopting outsourcing. Outsourcing enables the firm to benefit from the vendor's cost advantages such as economies of scale, experience and location. Furthermore, with help of outsourcing, firms can reduce risks by converting their fixed costs into variable costs.
- Performance Improvement: The outsourcing firms could leverage vendor's expertise to optimize their non-core competencies and thereby focusing more on core competencies.
- Flexibility: Due to challenges such as rapid changes in technology, reduced time-to-market, and an increasingly demanding customer base, it is very difficult for

organizations to control and excel all activities that create a competitive advantage. Outsourcing provides greater flexibility to adopt best practices, leverage technology advances, improve scalability, enhance services, manage complexities, etc.

- Specialization: Outsourcing allows the organization to focus on areas of the business that drives competitive advantage and outsource peripheral activities thereby making use of the expertise of the vendors. Additionally, specialization can have a positive impact on career development opportunities of employees.
- Access to innovation: Outsourcing gives the access to expertise, efficient services, management expertise and innovation that outsourcing firms can leverage from vendors/suppliers.

Potential Risks of Outsourcing

No business process is full-proof and there always exist some risks. Some important potential risks associated with outsourcing are as follows (McIvor, 2005):

- Cost escalation: The initial contract can be competitive, however, there are chances of underestimating future costs for activities such as managing resources.
- Supply market risk: Organizations can encounter significant risks when they use supply markets for activities that they have performed internally in the past. Relying too much on a particular vendor can lead to significant risks in terms of cost, quality and vendor failure.
- Loss of skills: Outsourcing can cause the loss of critical skills that drive innovation and eventually causing the loss of potential for innovation. It is important for the outsourcing firm to maintain innovation capabilities in a number of key activities so that they can continue exploiting the new opportunities.
- Organizational change implications: Outsourcing can lead to setting up new systems, job roles, staff transfers, redundancies, etc. Organizations have had extreme difficulties with effectively managing the change process required. Furthermore, overlooking personal issues such as motivating retained employees, gaining commitment from redeployed employees are also common.

2.5 Sustainability and Outsourcing

2.5.1 Integrating Sustainability and Outsourcing

To perpetuate one's existence in a global and complex business environment and gain competitive advantage, organizations involve themselves with various outsourcing firms to strategically reduce cost, utilize expert capabilities and thus are able to focus their limited resources on their core competency (Lankford & Parsa, 1999; Grossman & Elhanan, 2005). And with the growing environmental and societal challenges, procuring products and services with a sustainable approach helps both with corporate responsibilities of the firms and with providing a competitive advantage (Li, Okoroafo & Gammoh, 2014). This approach is implied to provide a win-win-win situation for the firms, their clients and the environment (Elkington, 1994). Outsourcing sustainably can ensure the quality and efficiency of the newly acquired capabilities with

simplified operations and therefore allowing quicker response to environmental challenges (Lacity, Khan, & Willcocks, 2009).

The report of '*Black Book of Outsourcing: 2007 Green Outsourcer Report*' (2007) highlights the demands set by clients on the outsourcing vendors to drive their products and services ethically and that supports the betterment of environmental health. In the report, the different types of outsourcing adopting the green initiatives are mentioned namely: information technology, facilities management, document process, business process management and supply chain, transportation & Logistics. Studies suggest that while building new contracts with outsourcing vendors, clients expect the inclusion of adhering to stricter environmental standards and compliances. Also, they consider sustainability reports and environmental management system of outsourcing firms while vendor selection evaluation (Bowen, Cousins, Lamming, & Farukt, 2001). This concept of sustainable outsourcing can be defined as "*the strategic integration and achievement of a firm's social, environmental, and economic goals in its sourcing to a third-party entity"* (Li, Okoroafo & Gammoh, 2014,p.3).

2.5.2 Technology Outsourcing

There can be many variations and disciplines of technologies, in the form of either products or services, which are being outsourced for a long time (Bui, Leo & Adelakun, 2019). The most common aspect that falls under the outsourcing paradigm is the information technology (IT) services catering to the various operational processes of an organization such as supply chain, marketing, finance, or HR. Within IT services there can be further levels of offerings, like security and maintenance of internal IT systems, or frontend and backend development, customization or support for ERP or CRM systems (Fedorova, 2020). Enterprise resource planning (ERP) systems is incorporated by many companies to create, modify, store, distribute information and manage their business processes across organizational units effectively and support their operational process (DeHondt & Knapp, 2008). Being a complicated technology requiring expertise in configuring and integrating all business functions of purchasing, sales, product planning, financial and inventory control of the organization, ERP implementations are mostly outsourced (Philip, Wende & Schwabe, 2013; Motaki & Kamach, 2017). Similarly, the customer relationship management (CRM) functions that utilize complex, cross-functional processes needed to enhance customer satisfaction/retention and market performance are also being outsourced (Brockman, Park & Morgan, 2017).

These IT services and many more aspects of digital technologies have revolutionized the business processes of organizations leading to an accelerated transfer of operational ownership to the outsourcing service providers (OSPs) (Fersht & Snowdon, 2018). And with the fast-changing digital age, innovative ideas and initiatives are being proposed by OSPs, giving clients the possibility to build new business values for both their existing customers as well as entering new markets (Kotlarsky, Oshri, Lee & Jarvenpaa, 2015). However, with the rising trend of digital transformation leading to adoption of newest technologies of social, mobile, analytics, cloud, autonomics, robotics and IoTs, the scope of technology outsourcing must also evolve (Overby, 2015). The reason for the necessity to evolve the outsourcing paradigms is because of the innovative solutions that are less expensive, more robust and scalable and more automated with less scope for customization (Overby, 2015). Organizations are pressurized to re-organize their traditional values and reconfigure their business processes to compete in this digital era (Tanriverdi & Lim, 2017). Studies suggest that the concept of traditional business process outsourcing, and IT outsourcing have now combined to evolve into digital transformational

outsourcing, wherein the key features are consultation, orchestration, network management, insights and knowledge access, and standardization with the help of digital avenues (Mazumder & Garg, 2021).

2.5.3 Technology for Sustainability

Along with the growing trend of digital transformation, more and more organizations are also investing in becoming green and are being aware of its necessity and potential (Lawrence & Morell, 1995). Cybernetics, environmental informatics, computational sustainability, sustainable human computer interaction (HCI), etc are some forms of digital ecosystems, that help in catering to the sustainability initiatives (Hilty & Aebischer, 2015). More and more digital technologies are being developed for either measurement of sustainability competency or automation functionality for the welfare of society. Various city assessment tools have been devised, that help as indicators for the initial urban sustainable development plan in the making of smart cities (Ahvenniemi, Huovila, Pinto-Seppa & Airaksinen, 2017). While AI/ML helps in these assessment decisions, various green and innovative technologies are used for efficient use of transport systems, infrastructures, logistics and energy systems of any smart city with the help of IoT connecting different devices for communication (George, Merrill & Schillebeeckx, 2020). Smart houses and cities promise a better lifestyle and welfare of society utilizing efficient energy resources with improved transaction cost (Pasolini, Buratti, Feltrin, Zabini, De Castro, Verdone & Andrisano, 2018).

Sensor-based technology helping execute the first-expire-first-out (FEFO) policy in comparison to the first-in-first-out concept contributes to reducing of wastage of perishable goods to a great extent (Ilic, Staake & Fleisch, 2009). A "*large network of low-cost, embedded devices containing microcomputers, radios, and sensors*" can also be used for agricultural activities in sensitive riverbanks supporting large-scale commercial enterprise as well as protecting natural resources (Woodruff & Mankoff, 2009, p.3). Sensor technology can also be used for domestic and commercial use for efficient energy consumption (Woodruff & Mankoff, 2009, p.3) as well as embedded in water cyber-physical systems (CPS) along with wireless processors, actuators forming a hydrodynamic model to address the water sustainability challenges of chemical, thermal, and biological pollution (Wang, Song, Watkins, Ong, Xue, Yang & Shi, 2015).

Satellites and drones along with IoT devices enable short and long-distance observations and high-resolution data collection capabilities facilitate quantifying complex socioecological ecosystems and help analyze, predict or avoid business risks and market failures (George, Merrill & Schillebeeckx, 2020). The new technology of blockchain provides transparent management and can monitor, analyze and store real-time green or carbon data of activities producing pollution and environmental degradation and helps in making a retrospective timely decision (Saberi, Kouhizadeh, Sarkis, & Shen, 2019). With its "*decentralized combination of database with open-source networking*", blockchain promises to provide cheaper services thereby contributing to better economic wealth distribution, Bitcoin being one such example (Schinckus, 2020, p.1). Blockchain offers avoiding corruption and disorganizations with transparent and irrevocable operations helping attain sustainable infrastructure and empowered community that are the premise of some of the goals set by the UN (Blackstad & Allen, 2018).

2.6 Digital Sustainability and Outsourcing

The concept of sustainability and outsourcing can be interpreted in different forms depending on the context it is used (Batagan, 2011). For this reason, it has been discussed about the concepts in and around sustainability, digitalization and outsourcing, and how they are interlinked or overlapping with each other in the previous section. Evidence is presented of the academic studies that showcase the active participation of private and public sectors towards any two of these concepts at a time. However, the premise of this research was to combine the three imperatives of sustainability, digitalization and outsourcing, and galvanize them to analyze the success factors or mitigation plans for the challenges and risks faced during such engagements of client companies and outsourcing service providers. Although, this aspect is yet in its infancy, there are many new digital tools coming up to help companies regulate their sustainability goals. Companies are realizing that strategic utilization of the data they own has the potential to provide them with a competitive edge (Pappas, Mikalef, Giannakos, Krogstie & Lekakos, 2018).

Salesforce (2019) announced a carbon accounting product called Salesforce Sustainability Cloud, that provides its customers drive their climate and footprint actions. Microsoft Sustainability Calculator is an application using analytics and data from Azure services to make better sustainability decisions (Microsoft Azure, 2020). Similarly, many digital avenues like Ample: helps use renewable source using analytics to reduce carbon footprint; Pachama: helps forest conversation using remote sensors; Global Mangrove Trust: connects SMEs, invertors and public sectors for reforestation using blockchain (Network of Business Sustainability, 2020). Although, in a more practical setup, there are limited templates for driving towards these goals and using these innovative tools and applications with necessary data can be daunting to follow. For that reason, companies might require consultancy and expert assistance to drive with these innovations. "*The knowledge gap concerning the known unknowns and the unknown unknowns*" (George, Merrill & Schillebeeckx, 2020, p.7) involved with the scoping of digital solutions to fulfill sustainability goals of companies can be bridged with the help of outsourcing, thus setting the scope for this research.

3 Methodology

In this chapter, the methodological choices and considerations to conduct an empirical study of the research topic have been highlighted. The exploration of literature in regard to the research topic has been elaborated and the analysis of the choice of mixed-method approach has been discussed. Furthermore, the interview target sampling, the process of creating the interview guide, as well as transcription and coding method have been explained. High-quality research following to the ethical standards, respecting the participants' interests have been ensured throughout the research span, which have also been presented in this chapter.

3.1 Research Strategy

For this research, a mixed-method approach was opted, involving both qualitative interviews to get expert views, along with a quantitative survey to help us analyze the theoretical concepts with the help of basic statistics (Creswell, 1999). This study of '*Digital sustainability outsourcing*' can be driven by the qualitative research with an interpretive perspective to understand and interconnect the behaviors, experiences and perceptions of the participants of the research (Goldkuhl, 2012; Thanh & Thanh, 2015). To validate and generalize the response of the qualitative research findings, a positivistic information systems research was also adopted to quantify the perceptions of the respondents (Klein and Myers, 1999). Lee's (2004) argument of co-existence of interpretivism and positivism perspective have been incorporated in this research to ensure quality results using a mixed-method approach.

The qualitative method can provide insights and support phenomenon by providing reasons for peoples' decision to act in a particular way (Recker, 2013), which influenced the researchers to use this method and implore the critical factors influencing the outsourcing performance of a sustainability-specific project. The decision to include the qualitative approach strengthens as this field of study has not been researched enough, and to fully understand the applicability of the research construct, Creswell (1994) and Recker (2013) have suggested the same methodology. The interpretive research paradigm suits this research better than the pragmatism approach, since the intention was to understand rather that intervene in the outsourcing concept in terms of digital sustainability (Goldkuhl, 2012). This was done by applying deductive reasoning and sense-making of the collected social constructs and to identify, relate and validate the theoretical concepts (Bhattacherjee, 2012). This approach has also guided the researchers to ask the philosophical questions of "[w]hat am I researching?", "[h]ow can I communicate my insights?" or "[w]ho is my audience" prior to conducting our research (Hassan, Mingers and Stahl, 2018 p.263).

Although, the generalizability of a qualitative approach has been questioned due to the limited range of respondents. As Maxwell (1992) argues, quantitative methods could ensure a broader range of respondents to provide weightage to the research area in question. Since our topic has not been explored enough, we decided that while interviewing experts involved in sustainability engagements would help us get some detailed and exploratory evidence of the basic construct to our research, we also need to strengthen our understanding from the interviews, by formulating a survey derived from some of the keywords of the interviews. The response from the survey was expected to support our findings from the interview and provide a generalized aspect

to human intervention about the topic. The mixed-methods approach of combining the features of qualitative and quantitative methods that benefit this research from the strengths of both approaches, goes in line with the suggestions made by Recker (2013). However, the way in which elements of quantitative and qualitative methodologies get combined is liable to be fragmented and inconsistent (Denscombe, 2008). Denscombe (2008) argues the need of vision of research paradigm that accommodates such variations and inconsistencies. This inherent inconsistent nature of the mixed methodology paradigm can result in different results based on the methodological tools that are imposed during the whole of the study.

To answer the research questions mentioned in Section 1.3, aligning it with evidences from literature review in Chapter 2, four themes have been formulated. These themes include '*Digital Sustainability readiness', 'Strategic Evaluation', 'Relationship Management', 'Outsourcing Performance'*. In this research work, an attempt has been made to qualify the responses from interviews and survey participants into these four themes and further validate their theoretical construct.

3.1.1 Understanding the Themes

Our research question is focused on understanding organizations' maturity towards employing digital technologies to achieve their sustainability targets. Thus, it is imperative to understand the '*Digital Sustainability readiness (DSr)*' of organizations. This maturity or readiness can be based on two trails of thoughts. Firstly, '*Perspective of Organizations (PoO)*', which helps in examining whether organizations perceive sustainability as an important aspect and if they are willing to explore the various possibilities offered by digital technologies in the context of sustainability. Secondly, on the basis of the academic evidence, there seemed a need to explore the '*Employment of Digital Avenues (eDA)*' in the practical sense.

The next section of this research is based on the former section of readiness of organizations towards digital sustainability. This research leads the researchers to further parameterize the interest of organizations, who realize the need for investing in digital sustainability, to collaborate with external sustainability experts. The factors leading to such collaboration decision can be understood from the '*Strategic Management (SE)*', whereas the factors influencing the success of such engagements are categorized as '*Relationship Management (RM)*' and '*Outsourcing Performance (OP)*'.

The themes as highlighted above, become the important consideration to validate the research questions, as mentioned in section 1.3 combining with evidence from the literature review in Chapter 2. The following weightage methodology has been followed for the data analysis (qualitative and quantitative). To elaborate further, the themes validate the research question in the following approach:

Qualitative: *the higher the instances of themes identified from interviews, indicates stronger support to answer the research question affirmatively.*

Quantitative: *the higher the score of themes identified from survey results, indicates stronger support to answer the research question affirmatively.*

The following table illustrates the quantitative scale, which has been used to range the average score of the mentioned themes from the survey results.

Table 3.1: Quantitative Score and Scale

Importance Scoring	Low	Medium	High	Very High
Scale	0-5	5-7	7-9	9-10

3.2 Conducting Literature Review

One of the foremost and important phases of any quality research is an elaborate and extensive literature review (Recker, 2013). Once the researchers decided on the topic of research, they had to critically examine the knowledge about the selected research topic that is already existing. This investigation involved identifying existing research articles, authors, books, blogs, and other academic publications present in the selected field, as recommended by (Bhattacherjee, 2012). Since the research topic is a combination of three separate topics, a basic premise has been provided to the readers to be acquainted with the individual concepts of *Sustainability, Digital Transformation, and Outsourcing* framework. After setting up the foundation of the research, the various pairing formed out of the theories involved were highlighted. This was to provide any contradicting or alternative interpretation of the said concepts, as has been suggested by Randolph (2009).

The primary sources used to explore, study, and select the relevant academic journals and publications were Google Scholar and LUBSearch, with is the online library of Lund University. Some company reports and influential blogs have also influenced the literature review of this research. In order to select the most relevant literature for the research field, various queries search terms were used on Google Scholar and on academic search engines, some of which are as follows:

- Sustainability
- Sustainability + UN SDGs
- Digital Transformation
- Problems with Digital Transformation
- Sustainability + Digital Transformation
- Digital Sustainability
- Sustainability metrics
- Challenges in Digital sustainability
- Sourcing strategies
- Outsourcing frameworks
- Critical success factors in outsourcing
- Sustainable outsourcing
- Outsourcing sustainable products
- Outsourcing Digital Sustainability

Moreover, to identify the critical success factors of the proposed concept, it is essential to implore the necessity for this research at the organizational and academic levels. Efforts have been made to finding the gaps as well as problematizing the existing theories and literature so as to

establish the need for outsourcing digital sustainability (Alvesson & Sandberg, 2011). Subsequently, the missing link of any outsourcing framework in academic literature, in the context of digital sustainability sets up the premise for this research to identify the critical success factors or risks involved in the said context. There are many academic frameworks based on the concept of outsourcing in various fields and industries. The choice of choosing the outsourcing framework mentioned in Chapter 2 is because of its generic stature which was missing in other frameworks reviewed by us.

3.3 Data Collection: Interview

In this research, interviewing has been considered as one of the data collection methods, the most prominent form of the qualitative part of the mixed-method research (Recker, 2013). Since the research investigated the readiness of organizations towards digital sustainability and analyze the multi-faceted critical success factors in outsourcing of digital sustainability in organizations, explorative interviews were used as recommended by Recker (2013). Adopting interviews as the data collection method helped in focusing directly on the topic and derive insightful causal inferences as perceived by interviewees (Recker, 2013).

The interviews can be conducted in different formats such as face-to-face interviews, group interviews or telephone interviews (Bhattacherjee, 2012). The face-to-face interviews provide the opportunity to interpret and assess the quality of the responses by observing informants' body language, facial expressions while it imposes constraints on reaching out to potential informants that are geographically located in different cities or countries. On the other hand, telephone interviews have the risk of wrong interpretation of the response and thereby decreasing the overall quality of the interview while not imposing the constraints of geographies (Bhattacherjee, 2012). Most interviews were conducted using video conferencing tools like Zoom and Microsoft Teams to avoid any wrong interpretations of the response. Although due to time availability and network issues, two of the interviews were conducted via email and Zoom audio conference respectively.

The audio-video interviews were organized as semi-structured interviews, which is the most used type of interview in qualitative research in information systems (Myers & Newman, 2007). Semi-structured interviews follow a predefined protocol to ask informants about the topic of the research in a conversational form that allows for follow-up questions and bidirectional discussions about the topic (Recker, 2013). This conversational form is important for this research because it handles broad topics such as sustainability and questions need to be framed based on the perspectives of the informants. The incomplete nature of the semi-structured interview script requires the researcher to be flexible, open and improvise on responses (Myers & Newman, 2007). These characteristics of flexibility and openness helped the researcher to acquire important information about sustainability strategies in different domains such as supply-chain logistics, manufacturing etc which would not have been possible with a structured interview as they had little or no practical experience in these domains. Furthermore, flexibility helped gathering more information by techniques such as probing questions (Recker, 2013) like how the informant thinks sustainability strategic initiative in the domain of the informant, say logistics differ from related domains, say automobile manufacturing.

The interviews have potential difficulties and common pitfalls such as artificiality of the interview, lack of trust, lack of time, level of entry, elite bias, constructing the knowledge etc. (Myers

& Newman, 2007). To address these difficulties/pitfalls at two levels, firstly the interview guide was designed based on recommended guidelines from the literature and secondly a well-planned data collection process was executed. A detailed description of the design of the interview guide is provided in the section 3.3.2. A short description of the details about the steps executed for the data collection process is presented as follows. The lack of time, which may cause incomplete data collection or subjects creating opinions under time constraints (Myers & Newman, 2007), was addressed by adding buffer time in booking the time slot for the interview. On average the interview questions were prepared to be completed in 35- 40 minutes yet were scheduled for one hour interview window to give the buffer needed. To minimize the elite bias, the interviewed informants chosen worked at different capacities in various industries such as Head of Digital Sustainability, Project Manager of Digital Sustainability, Business Analyst, Director in Sustainable sourcing and operations, and Sustainability Manager. For those respondents who requested for additional explanation of the scope of the research, separate short meetings were conducted to present the background of the research, which helped in building a feeling of familiarity during the main interview session.

3.3.1 Selection of Respondents

The respondent selection for the interview session was targeted towards sustainability experts of outsourcing service providers' perspective as well as consultants and managers from organizations who have taken initiatives for fulfilling sustainability goals. The reason for this choice was to understand the patterns and behaviors of client-vendor stakeholders involved in sustainability-specific projects, which could help in deducing valuable insights. Several respondents were approached by the researchers relevant to the field. Many did not respond to the researchers' requests, while some denied of either availability or knowledge in the said field. In the end, six interview respondents agreed to participate, most of them requesting to remain anonymous. This section provides a holistic overview of the respondents participating in the interview.

The survey was conducted in a rather open setup. A summary was provided in the starting of the survey and was posted over social media platforms and sustainability forums. Many of the possible interview respondents were also shared the survey link individually, and some of them responded in the survey. The name of the survey participants has been kept optional to fill, for ethical reasons.

Respondent 1 - Anonymous

Respondent 1 (R1) is an experienced Sustainability Manager in a reputed MNC with over 5 years of relevant experience within the transportation industry with a strong focus on air traffic, such as airport, airline, and maintenance, repair, and overhaul (MRO). Further, the respondent has strong experience within the field of Supply Chain Management (SCM) and has a passion for sustainability-related topics and future of mobility. Before his current role as a Sustainability consultant, he has worked on various European-wide projects with a focus on process optimization, risk analysis, stakeholder management as well as multi-project management.

Respondent 2 - Anonymous

Respondent 2 (R2) is currently the Project Manager Sustainability and Strategy in a reputed MNC company in Malaysia. The respondent is passionate about sustainability performances from companies operating in various sectors and industries in all parts of the globe. He has 6

years of experience in sustainability matters. Initially, he had taken the role of project coordinator. He is highly dedicated in learning new innovations and solutions on how various companies and organizations tackle the problems and challenges relating to ESG/ Sustainability issues in order to improve their overall performances and how and what they could contribute and benefit to all of their stakeholders.

Respondent 3 - Anonymous

Respondent 3 (R3) is a Senior Manager at a reputed consumer durable (CPRD-white goods) company in India. His past experience is in Building Services industry and in both fields, he has been involved in Negotiation, Sustainable Development, Analytics and Sales in multiple projects. He is passionate about dealing with complex sustainability challenges and is a member of the Green Building Council (GBC).

Respondent 4 - Abhijeet

Abhijeet (R4) is a consultant at a Big4 consulting firm, and currently working on sustainability projects for rural development, catering to the social and environmental concerns, in a public-private partnership environment. The respondent's present client is one of the state government regulatory office within India, where his works revolve around building innovative solutions and circular models for waste and plastic management and treatment plans.

Respondent 5 – Julian Fox

Julian Fox (R5) is the Director, Sustainable Sourcing & Operations at Tetra Pak, Sweden. He is an experienced leader having an overall experience of more than 30 years in different domains Engineering, Higher Education, Consultancy, Engineering Management and Sustainability Management. In his current role as director at Tetra Pak, he leads global strategy for sustainable sourcing of paperboard, polymers and aluminium foil, leads governance framework for corporate environmental impact and KPI report and manages customer's expectations on sustainable sourcing and operations. He also manages relationships with sustainability standards such as Forest Stewardship Council (FSC), Bonsucro, Aluminium Stewardship Initiative (ASI) and Roundtable on Sustainable Biomaterials (RSB).

Respondent 6 - Lyndsey Parette

Lyndsey Parette (R6) is the Sustainability Manager at Duni Group, Sweden. Duni Group is a global leader in delivering high-quality table setting concepts and accessories that help restaurants, caterers and takeaway businesses create sustainable GoodFoodMood. In her current role, she manages sustainability initiatives in supply chain and waste disposal solutions in coordination with internal and external stakeholders. She also works closely with certification agencies and NGOs that operate in different sustainability domains such as carbon emission, waste disposal and packaging.

The following table shows a summary of information of respondents, communication channel, date, and duration.

Table 3.2: Overview of Interview Respondents

Respondent Name	Role	Communication Channel	Date	Duration
Respondent 1 – Anonymous	Sustainability Manager, Supply Chain Management [Reputed MNC, Europe]	Zoom	14-April-2021	48 minutes
Respondent 2 – Anonymous	Project Manager Sustainability and Strategy [Reputed MNC, Malaysia]	Email	29-April-2021	
Respondent 3 – Anonymous	Senior Manager [Reputed Consumer Durable Company, India]	Zoom	8-May-2021	32 minutes
Respondent 4 – Abhijeet	Consultant [Big4 Consulting Firm, working on Public-private partnership project]	Zoom	11-May-2021	36 minutes
Respondent 5 – Julian Fox	Director [Sustainable Sourcing and Operations, Tetra Pak]	Microsoft Teams	4-June-2021	44 minutes
Respondent 6 – Lyndsey Parette	Sustainability Manager [Duni Group]	Zoom	10-June-2021	35 minutes

3.3.2 Designing the Interview Guide

A semi-structured interview method was adopted in this research as the approach requires the characteristics like openness, flexibility and improvisation (Myers & Newman, 2007). These characteristics are very much essential as the research attempted to arrive at a subjective understanding of multi-faceted critical success factors in outsourcing digital sustainability. Furthermore, semi-structured interviews are argued to be the most used in qualitative research in information systems (Myers & Newman, 2007).

The design of the interview guide is based on the generic principle of semi-structured interviews to have a predefined interview structure (Recker, 2013). An interview questionnaire was

prepared which not only helped to provide a structure for the interview but also helped to track and ensure that all questions were answered by the informants. Bhattacherjee (2012) recommends the questions in the script be asked as written and must not be changed to sound friendlier. However, as recommended by Myers and Newman (2007) and Recker (2013), the script was kept flexible, so as to ask probing questions and improvise during the interviews.

The interview guide was prepared according to the guidelines by Myers & Newman (2007) which was based on the dramaturgical model. According to the guideline, the script should have four stages, preparing the opening, preparing the introduction, preparing the key questions, and preparing the exit (Myers & Newman, 2007). In the interview guide, the first section i.e., preparing the opening, contained a quick introduction of the researchers, their role in the research and the purpose of the research. As it was intended to record the interview session in order to transcribe and use it as a key source of evidence as suggested by Recker (2013), the researchers asked for permission from the informants before. Also, necessary measures were taken, for those requesting to by anonymous. Like non-disclosure forms, were shared with the participants, to keep the confidentialities in the research intact.

According to Bhattacherjee (2012), it is important to start the interview with easy non-threatening questions that can be easily recalled. Myers & Newman (2007) stresses the importance of minimizing social distance, i.e., minimize anything that may lead the interviewee to feel uncomfortable. Hence, the second stage of the introduction was designed with questions to know about the informant's role in their organization, their involvement in sustainable development initiatives, their view on UN Sustainable Development Goals (SDG), etc. Even though some of the questions in the introduction stage are open-ended, they help to set up the environment for the rest of the interview session and acted as steppingstones to the next stage of key questions.

In the third stage of the interview, preparing the key questions, the informants were presented with the direct questions related to the research topic. The questions in this section were designed to be more direct and at the same time have the important characteristics of semi-structured interviews, flexibility, openness and improvisation (Myers & Newman, 2007). According to Recker (2013), the information obtained from semi-structured interviews will provide not just answers but also reasons for the answers. This was achieved by probing using follow-up questions. Myers and Newman (2007) recommend using mirroring in questions and answers which means taking the words and phrases the informants use in constructing a subsequent question or comment. Hence, follow-up questions were also prepared in the questionnaire, but these follow-up questions were rephrased to apply the mirroring principle during the interview. The key questions addressed the role of digitization in achieving sustainable development goals, the factors that drive relationships between sustainability service providers and clients, the role of trust in sustainability outsourcing initiatives, the risks involved and mitigation strategies, etc.

In the last stage, preparing the exit, the informants were asked if they would like to add any information that could enhance the research findings. As recommended by Myers & Newman (2007) the informants were requested for permission to call back to check on factual matters if needed. The snowballing technique was adopted as mentioned by Myers and Newman (2007) to ask who else could be interviewed. Lastly, the researchers offered their willingness to share the results of the research with the informants as and when it is available to consume.

The following table provides an overview of the interview themes and the related literature. The final interview questionnaire is presented in Appendix 1.

Table 3.3: Overview of interview questions and related literature

Interview Sectio	Questions' Theme	Reference	Interview Questions
Opening	• Explaining about confidentiality. • Understand whether the informant would like to be anonymous. • Seek consent to record the interview.	Recker, 2013; Myers & Newman (2007)	
Introduction	• Understands the role and responsibility of the informant. • Depicts the basics of sustainability, digitization. • Core benefits of digital sustainability. • Awareness and compliance of UN Sustainable Development Goals.	Bansal & Roth (2000); Barkemeyer, Holt, Preuss & Tsang (2014), Giovannoni & Fabietti (2014); Kiron, Kruschwitz, Reeves & Goh (2013); Myers & Newman (2007); Westerman, Bonnet & McAfee (2014a)	Questions 1 - 4
Sustainability practices	• Understands sustainability practices in different domains. • Challenges involved in sustainability initiatives. • Role played by digital technologies in sustainability practices and helping to achieving sustainability goals.	Dao, Langella & Carbo (2011); Fiksel, McDaniel & Mendenhall (1999); Kayikci (2018); Nawaz & Koç (2019); Placet, Anderson & Fowler (2005); Seele & Lock (2017)	Questions 5 - 6
Client/Vendor Perception	• Value proposition in the context of digital sustainability.	Claybaugh & Srite (2009); Frow & Payne (2011); Hazen, Skipper, Ezell	Questions 7, 8, 12

	• Understands Client/Vendor interactions in implementation of digital sustainability. • Employment of digital avenues in achieving sustainability goals.	& Boone (2016); Levina & Ross (2003)	
Strategic Evaluation, Relationship Management and Outsourcing Performance	• Strategic evaluation in the context of sustainability outsourcing. • Relationship management in the context of sustainability outsourcing. • Role of trust in sustainability outsourcing.	Handley & Benton (2009); Hanna & Daim (2007); Kim & Chung (2003); Lok, Opoku, Baldry (2018); McIvor (2005); Oza, Hall, Rainer & Grey (2004); Perunović & Pedersen (2007)	Questions 9 - 11, 13 - 15
Closing & Exit	• Asking the informant if he/she would like to add more inputs that is significant to the thesis. • Asking permission to reach out to the informant in case of any follow up questions. • Asking for recommendations if anybody else would be interested to participate for interviewing to make the context of the research richer.	Myers & Newman (2007); Recker, 2013	

3.4 Data Collection: Survey

This research also uses surveys as a means of gathering information about the characteristics, perceptions, and preferences (Recker, 2013) of sustainability initiatives and outsourcing from the industry practitioners in different domains and geographies. Furthermore, survey is a popular method of quantitative research and can be used for descriptive, exploratory or explanatory research (Bhattacherjee, 2012). The main goal of conducting the survey is to gather insights on managing technology (outsourcing) of sustainability engagements from the sustainability practitioners in different domains. An important aspect for conducting the survey is to understand how the insights derived from large population of sustainability practitioners gauge is aligning with the conclusions derived from semi-structured interviews of handful of sustainability experts.

3.4.1 Selection of Survey Participants

The process of selecting the survey participants, sampling, has three main stages: defining the target population, choosing a sampling frame and choosing a sample from the sampling frame (Bhattacherjee, 2012). The target population for this survey were sustainability practitioners in different domains and geographies and professionals directly or indirectly related to sustainability specific engagements. The sampling frame was directed to LinkedIn and Facebook groups like "*Sustainability Professionals*", which is a network of sustainability professionals from different domains. A probabilistic sampling technique was used, simple random sampling to choose the sample (Bhattacherjee, 2012). Different members of the LinkedIn group and other professionals working on sustainability projects were approached and shared the survey link individually. Non-probabilistic sampling techniques, like snowball sampling, was also used (Bhattacherjee, 2012), by seeking assistance from sustainability professionals who were connected through LinkedIn to recommend others they know who could provide valuable insights by participating in the survey.

3.4.2 Survey Guide

When creating the survey, a conscious decision was made to frame the questions based on prior studies in digital sustainability, outsourcing and relationship management. As recommended by (Bhattacherjee, 2012), the survey questions were framed without ambiguity and to hold characteristics like concise, no questions were framed in a negative manner, or not too generic. When designing the survey, for many questions interval-level response format using five-point Likert scale were used which helps to achieve more finely tuned response as well as capture neutral opinions (Bhattacherjee, 2012). The survey was kept short and limited to capture what was absolutely necessary for this research and participants needed to spend only 5 – 8 minutes responding to the survey.

A web-based approach was used to send out surveys which is scalable and operable. The survey form was designed and deployed using Google Forms which is easy to distribute, use and administer. The following table provides an overview of the survey themes and the related literature. Snapshots of the final survey are presented in Appendix 2.

Table 3.4: Overview of survey questions and related literature

Theme	Questions' theme	Reference	Survey Questions
Introduction/Opening	• Understands role and domain of expertise		Questions 2 - 3
Sustainability initiatives and practices	• Depicts role of sustainability in the organizations. • Triple Bottom Line for sustainability • Role of digital technologies in achieving sustainability goals	Bansal & Roth (2000); Slaper & Hall (2011); Schneider (2019)	Questions 4 - 6
Strategic Evaluation	• Understand extend to which different strategies like outsourcing are being employed in achieving sustainability goals. • Criteria in selecting outsourcing providers	Handley & Benton (2009); McIvor (2005)	Questions 7 - 9
Relationship Management	• Relationship management in the context of sustainability outsourcing • Role of trust in sustainability outsourcing. • Risk involved in sustainability partnerships.	Kim & Chung (2003); McIvor (2005); Oza, Hall, Rainer & Grey (2004)	Questions 10 - 12

3.5 Data Analysis

As highlighted in Chapter 3.1 (Research Strategy), both the interview and survey responses have been bucketed to codify for qualitative analysis and scored on a defined scale for quantitative analysis. The reasoning and description of the codification and scoring categorization have been discussed in the following subsections.

3.5.1 Analyzing the Qualitative Data

One of the primary sources of the data for the research is audio-video recordings that are captured, after getting the required consent, during the interview. Kvale (1996) describes transcribing as transforming, to change from one form to another. According to the author, an interview is an evolving conservation between two parties whereas transcriptions are frozen in time and abstracted from their base in a social interaction (Kvale, 1996). Hence it is important to perform the transcription without much loss in contextual information. One method to reduce the loss of information during the transcription process is to perform the transcription as soon as the interview is finished (Kvale & Brinkmann, 2009). The transcription activity was performed right after each of the interviews were held. Of course, transcription was done after taking permission from the respondents. A software tool, called Trint was used to transcribe the interview recordings. The transcribed texts from the tool were manually reviewed by reading through the transcription while listening to the recording and correcting any mistakes or wrong interpretations. In order to guarantee the privacy of the informants, the words, names, etc that could potentially identify the informants, their organizations, clients, etc were anonymized. Aliases like [RespName] and [CompName] were used to mark the anonymized text referring to the respondents' name and any companies' (own or clients) referred to while citing examples.

According to Hancock, Ockleford & Windridge (2007) when people are in conversation only a small proportion of the information is communicated in the actual words and a larger proportion is transmitted in the way people speak such as the tone, inflection, etc. Therefore, when transcribing it is important to capture these feelings and implicit meanings in the transcription by using punctuation marks like full stops and commas (Hancock, Ockleford & Windridge, 2007). Along with normal punctuation marks like full stops and commas, (..) were used to mark those sections where the informants used long pauses while framing their sentences. These techniques helped to keep the transcriptions rich contextual text data rather than a mere verbatim as recommended by Kvale & Brinkmann (2009). Furthermore, few of the statements, those which were not making sense in the spoken language, were rewritten in the form of written language. It must be noted that it was made sure that the content and meaning of those texts did not change, rather ensured better readability.

Aberbach and Rockman (2002) claim that coding procedures are of paramount importance when the researchers employ open-ended interviewing techniques to elicit subtle and rich responses. The most important part of qualitative analysis is understanding the phenomenon involved, i.e., "sense-making" (Bhattacherjee, 2012). The codifying activity was performed by trying to find semantic frequencies in the transcripts and categorizing them according to the themes. Codes and colors were assigned to find common themes from the large volume of transcript raw data as recommended by Griffee (2005). The description of the considered themes can be referred from Section 3.1.1, while the transcribed and codified interviews are added in Appendix 3 till Appendix 6. The themes and color-coding used are shown in the below table.

Table 3.5: Thematic and color codes

Theme	Code	Color Code
Digital Sustainability Readiness	DSr	Turquoise
Client/Vendor Perception	PoO	Yellow
Employment of Digital Avenues	eDA	Pink
Strategic Evaluation	SE	Grey
Relationship Management	RM	Green
Outsourcing Performance	OP	Red

To demonstrate how the coding was performed with the original transcript, the following screenshot from Appendix 3 has been presented, which highlights two themes within the answer from respondent R1. First, green marking relates to *Relationship Management* and second pink marking relates to *Employment of Digital Avenues*.

44.	R1	it's and it's not the mindset anymore. As we talked about the two ways before, I get the same interview with the mindset of the people. Sustainability is not important. This will not bring us a competitive advantage. But this mindset is not valid anymore. It's about the data.	RM, eDA

Figure 3.1: A sample of coding process

3.5.2 Analyzing the Survey Data

The survey sampling comprised of 60 responses which can be considered as a good amount of participation as specific professionals and practitioners were approached who directly or indirectly work with sustainability specific engagements and/or digital transformation projects in various industries. Firstly, an univariate analysis of the quantitative data was performed to identify the necessary properties such as frequency and distribution as recommended by Bhattacherjee (2012). Google Forms was used for creating the survey which provided the basic analysis and analytical feature. The "summary" presents the graphical representation of univariate analysis in formats such as histograms, pie charts, bar charts, etc. which helps to infer basic insights.

A sample analysis showing the critical success factors in managing digital sustainability outsourcing is shown in the below figure.

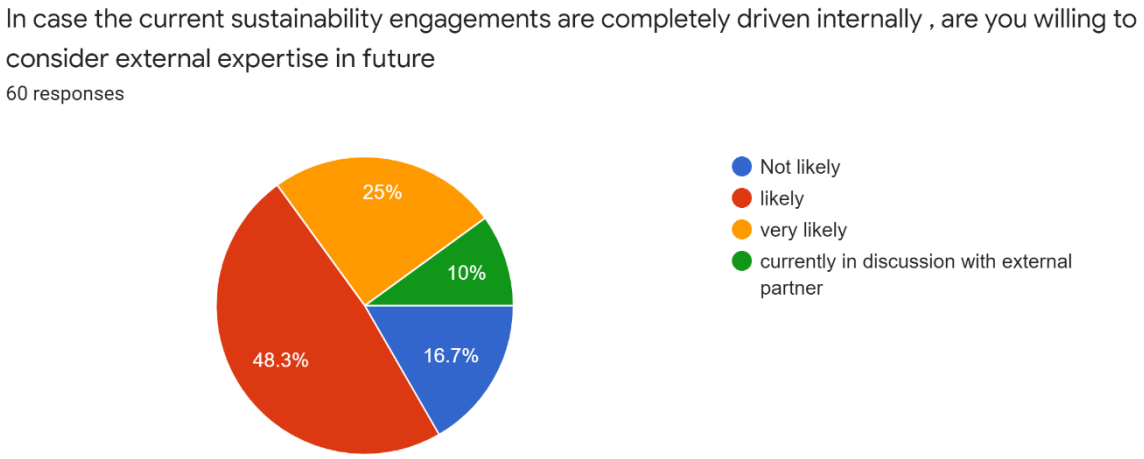

Figure 3.2: Sample analysis of survey data using Google Forms

Once the survey results were gathered, the extraction and transformation activities began. During the extraction phase, the results from the Google forms were exported to an excel file, where the data was cleaned, analyzed and categorized. Since most of the questions were designed to answer by selecting from multiple options or scoring and rating, the only field that required cleaning from the exported data was the industry the participants were working on. Since, the question '*Industry presently working in'*, was a free text, multiple repetitions existed such as '*IT', 'IT Consulting', 'Information Technology'* or *'Banking', 'Finance/Banking', 'Financial*' and more.

After cleaning, all the survey questions were bracketed into the decided themes, and each question was assigned a certain weightage (in percentage) to sum up to 100% for a score of 1 to 10 (Figure 3.4). Each question was designed to quantify one or more of the above mentioned themes, as presented in Appendix 9. The average of each theme was calculated from the survey results and scored based on the scale shown in Table 3.6. The themes are mapped to specific questions and are not mutually exclusive and the significance of the scoring range for each of the themes has been described in Section 3.1.1:

Table 3.6 Scoring levels and scale

Scoring levels	Low	Medium	High	Very High
Scale	0-5	5-7	7-9	9-10

The answers from options were assigned score values which determined the final average score of the respondents. Samples of the scoring sheet and the qualification criteria are shown in the below Figures 3.3 and 3.4.

Sl no	Question details	Themes	Scoring Criteria	Weightage (%)	Respondents Avg Scores
Q1	To what extent sustainability is considered important in developing organizational strategy (on scale of 1-10)	SE	1-10	10	8,57
Q2a	How do you prioritize or score EES (Environment, Economic, Social) initiatives within sustainability goals for your organization currently [Environment]	SE, DSR	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	4	6,79
Q2b	How do you prioritize or score EES (Environment, Economic, Social) initiatives within sustainability goals for your organization currently [Economic]	SE, DSR	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	6,87

Figure 3.3: Sample of the qualification criteria for the survey data

2	Categories	SE	SE, DSR	SE, DSR	SE,DSR	SE, DSR	SE, OP, RM	SE, RM	SE, RM	SE, RM, OP	SE, RM, OP
3	Weightage (%)	10	4	3	3	10	10	10	3	3	3
4	Industry presently working in (Ex. FMCG, Manufacturing, Retail, etc)	Q1	Q2a	Q2b	Q2c	Q3	Q4	Q5	Q6	Q6b	Q6c
51	BFSI	8	7	10	10	6	5	5	7	10	7
52	Consulting	8	5	7	5	9	7	8	5	7	7
53	Consulting	7	7	5	7	10	5	2	3	7	7
54	BFSI	9	7	10	7	9	3	2	10	10	10
55	Manufacturing	9	5	10	7	10	3	5	7	5	10
56	Pharmaceutical	8	7	10	7	9	9	8	7	10	10
57	BFSI	10	7	7	7	10	10	5	7	7	7
58	Avg	8,5660377	6,7924528	6,8679245	6,3773585	8,0754717	5,9056604	5,9056604	6,698	6,3773585	7,4716981

Figure 3.4: Sample of the scoring sheet from the survey data

3.6 Research Quality

According to Noble and Smith (2015), evaluating the quality of the research is essential if findings are to be utilized in practice. Reliability and validity evaluated in a research paradigm (Golafshani, 2003) are used to establish the truth of this research. Furthermore, according to Recker (2013), triangulation i.e., perusing and relating multiple sources of evidence about a particular phenomenon or topic, increases reliability and validity of the research. In this research a mixed method was adopted, using interviews and surveys to perform triangulation and thereby achieving higher reliability and validity.

3.6.1 Reliability

Reliability is a concept commonly used for evaluating quantitative research, however, the idea is most often used in all kinds of research (Golafshani, 2003). Reliability primarily determines the overall quality of research, which applied in the qualitative research paradigm describes consistency within the employed analytical procedures (Noble & Smith, 2015). To ensure

reliability in qualitative research, it is crucial establish trust (Golafshani, 2003). According to Noble and Smith (2015), trustworthiness can be established by illustrating the methods that have been undertaken and by transparency and clarity of the researcher's decision-making. In order to achieve the crucial characteristics i.e., trustworthiness, transparency and clarity, a detailed research process has been presented containing the descriptions about fundamental concepts, and how the interview and survey questionnaires were designed. The techniques like mirroring were also used during the interviews. By providing such detailed procedures, the researchers expect that other researchers will be able to reliably recreate interviews and surveys and derive similar conclusions.

3.6.2 Validity

In the broadest context validity refers to the integrity and application of the methods undertaken and the precision in which the findings accurately reflect the data (Noble & Smith, 2015). In order to achieve this, firstly independent coding was done for each interview and followed up with a discussion amongst the researchers to resolve any inconsistencies and prepared the final coded data. Secondly, participants were invited to comment on the interview transcripts and confirm whether the themes and concepts that were arrived at, reflected the phenomena. The survey used this research enables triangulation thereby reducing the aspects of personal bias.

3.6.3 Generalizability

Generalizability refers to how the observations from the research can be extended or applied to other contexts or domains (Bhattacherjee, 2012). It was attempted to bring generalization to this research by conducting interviews with representatives of different domains such as supply-chain of automobile manufacturers, government organizations, real-estate, etc. as well as located in different geographies such as Europe and Asia. The survey also helped to achieve generalizability as data was captured from different based on the perceptions of various professionals working in different capacities across many industry sectors, from different domains across the globe.

3.7 Ethics

Ethics define the principles of right and wrong conduct in a community or profession (Recker, 2013). Thus, scientific researchers are expected to be aware of and abide by general agreements that constitute acceptable and unacceptable behaviors in the professional conduct of science (Bhattacherjee, 2012). This research is conducted by following ethical principles recommended by Bhattacherjee, 2012 i.e., voluntary participation and harmlessness, anonymity and confidentiality, disclosure, and analysis and reporting. Recker (2013) points out the criticality of triangulation of data in mixed methods to gain a more nuanced picture of the situation and thereby increasing the validity and reliability of the research. In this study, the key aspects derived from the interviews and survey results were compared with help of a thorough understanding of the literature.

Voluntary participation and harmlessness were established in two-stage processes. In the first stage, the researchers personally connected with the participants through professional networking sites like LinkedIn and emails by providing a short description and purpose of the research.

Once the participants showed an initial interest in the research by accepting the connection requests, in the second stage a detailed description and purpose of the research was sent over to the respondents via email. A sample of the questionnaires was also offered and one to one virtual meeting explaining the research purpose so that participants can completely understand the research and then make a fully conscious decision on whether to participate in the research or not. Anonymity and confidentiality were provided as the choice for the participants.

Explicit permissions were sought to record the interview sessions which enabled error-free transcription using a software. Disclosure was established in the initial stage when the participants were approached by explaining questions such as: who is conducting the study, for what purpose, what outcomes are expected, and who will benefit from the results. The disclosure was reiterated before the start of the interview as well. Bhattacherjee (2012) stresses the importance of ethical obligations of the researchers to express openness and honesty by fully disclosing the problems or findings even if they negatively affect the research design. Therefore effort were made to present the data and findings objectively.

4 Findings

In this chapter, the findings from both interviews and surveys have been summarized based on the two methods of data collection. The questions of both interviews and survey are categorized into themes and presented in the following subsections. The results will give way to the discussion of the research premise with context to the literature in the following chapter.

4.1 Findings from Interviews

4.1.1 Digital Sustainability Readiness

Table 4.1: Overview of Digital Sustainability Readiness

Respondents	Appendix	Theme	Row
R1	3	DSr	12, 16, 24
R2	4	DSr	2
R3	5	DSr	10, 20, 34, 36, 57, 78
R4	6	DSr	6, 38, 66, 68
R5	7	DSr	10, 14, 18, 26, 23, 43, 48
R6	8	DSr	6, 14, 19, 21, 43, 55

Based on the respondents' perspectives, the readiness of the using digital technologies as an enabler to sustainability initiatives in organizations and corporations varied on the basis of many factors. The first factor being time, R1 talks about the two waves that have arisen for the importance of sustainability, one in the early 2010s, but the highlighting of digital ventures towards sustainability is being seen now more than before, during the testing times of COVID pandemic (A3, 12). On similar lines, R3's experience in the industry has led him to believe that as time progresses, more and more organizations are willing to incorporate energy-efficient technologies, which can be measured and monitored using interconnected systems (A5, 34). R6 also approves the importance of digitalization in any organization's sustainability operations (A8, 19). Although, R5 discusses Tetra Pak's consideration of sustainability as a core pillar that has been in place since long and was called '*drive environmental excellence*', whereas currently it is being recognized as '*lead the sustainability transformation*' (A7, 14). He further adds that the sustainability initiatives have been in place at Tetra Pak for three decades, only now it is coming into limelight (A7, 26).

Secondly, all the respondents agreed that legislative policies have a major role in companies recognizing the need for sustainability. R1, R5 and R6 concur that new innovative digital and technological solutions and workflow automation are being constantly implored and implemented proactively for adapting and complying to the changing regulations (A3, 16; A7, 48; A8, 55). On the other hand, based on his experience, R4 argues that while corporate organizations have the opportunity and access to acquaint themselves with digital avenues, to incorporate the same for sustainability initiatives, they have still, a long way to go. This is since there are not many mandates or compulsory regulations in place for corporates to take sustainability seriously (A6, 6). For the government sector, though efforts are ongoing for social and ecological sustainability, the technological incorporation is still at its infancy even though there is a promising future ahead (A6, 28), such as the use of database systems for keeping data and use of social media platforms for awareness initiatives.

Thirdly, to understand if digital sustainability to become a prioritization and considering as a core strategy, the participants had had similar viewpoints. While R1 considers sustainability rising to become one of the top priorities, and will rise in future, but cost-cutting and profit-making will always be the first priority for businesses (A3, 12). According to R3 also, energy efficiency and preservation have been essential for the business, but not with the sole motive of sustainability, rather with the intentions of cost-savings with better technologies (A5, 10). But, having said that, R3 also claims that sustainability is gradually becoming more important, if not the most important element as he says (A5, 36):

"*So far the market has consciously moved towards more sustainable products and technologies over the last seven or eight years*."

R3 further adds that some sustainability concepts which have been known to the world for some years, are now being appreciated and enthusiastically incorporated in developing countries like India as the industries are recognizing the advantages and potentials of sustainability (A5, 57). Having the legislative organization as his clients, R4 suggests that the motives of his clients are mostly of social and environmental interests, and steps are being taken to build circular model to generate revenues from sustainable projects. Yet, he believes that the inclusion of digital technologies and mediums is difficult in those settings and will take more time than corporate organizations (A6, 66; A6, 68).

4.1.2 Perception of Organizations

Table 4.2: Overview of Perception of Organizations

Respondents	Appendix	Theme	Row
R1	3	PoO	14, 16, 18, 22, 66, 68, 70, 72
R2	4	PoO	2
R3	5	PoO	18, 22, 24, 38, 59
R4	6	PoO	6, 18, 40, 42
R5	7	PoO	16, 24, 26, 40
R6	8	PoO	23, 25, 55

All the respondents have emphasized on any organization's behaviour and perceptions towards sustainability are mostly governed by the legislative rule imposed by the country where they operate. R1 emphasizes that some companies pay millions and millions of euros as penalties and fees imposed by the European Union or government of European countries for not incorporating eco-friendly operations (A3, 16). Certification like from ISO, or a science-based Target agreement or a certificate against Paris climate agreement, also propel the interests of business to remain compliant (A3, 66). Safety of products, operations and services are also aligned to the sustainability aspects (A5, 18). R5 and R6 also mention following legislative directives like the European packaging and waste directive or the single-use plastic directive (A7, 26; A7, 40; A8, 55).

Other than the legal formalities, some suppliers believe that sustainability as a branding, helps them achieve a competitive edge, since their clients ask for more sustainable products (A3, 16; A5, 24; A7, 16; A8, 23). R1 recalls that consumers are now willing to pay the extra cost, provided the products and services in question adhere to the sustainability metrics (A3, 18). The same thing about consumer demand has been highlighted by R3 (A5, 59). R1 further elaborates

about the shift in optimization techniques in supply chain, where earlier importance was given to reducing cost, while now, the CO2 emission, as well as the labour cost associated with the execution, are also being monitored and parameterized for optimization (A3, 22). Meanwhile, R3's view on the sustainability strategy is that the growth to meet the supply and demand, has been more generic and steadier and slow paced (A5, 38).

Interacting with the respondents helped the researchers understand the variation of sustainability concerns based on the country and region of operation. While most European countries do not have many social problems, their focus is mostly on ecological issues (A3, 68; A7, 10), whereas in developing countries, both social and environmental issues are being addressed (A6, 18). This is also mostly led by governmental bodies or NGOs. And since there are no definitive regulations laid out mandatorily in underdeveloped and developing countries, the cost to implement better technologies in order to reduce carbon footprint is not taken seriously by corporate (A3, 72; A6, 6). It is simple considered as just one negative outcome in comparison to the revenue or profits (A3, 72). Although, some companies do involve themselves in corporate social responsibility (CSR) activities (A6, 42).

4.1.3 Employment of Digital Avenues

Table 4.3: Overview of Employment of Digital Avenues

Respondents	Appendix	Theme	Row
R1	3	eDA	22, 24, 26, 32, 44, 70
R2	4	eDA	2
R3	5	eDA	8, 28, 30, 32, 40, 63, 65, 67
R4	6	eDA	16, 26, 34, 48
R5	7	eDA	12, 18, 26, 36, 38, 40, 42, 44
R6	8	eDA	19, 47, 49

R1 defines digital intelligence as an enabler for increasing sustainability (A3, 22). In his area of work in logistics and supply chain, optimization using digitalization is a key contributor to sustainability. Be it reducing greenhouse gas (GHG) emission or fuel and water consumption, or conserving energy and better financing, optimization is being used in all horizons (A3, 24). On similar lines, R3 talks about use of electronics and other technologies like sensors and IoT devices, for improving energy efficiency (A5, 8). He cites the example of the building management system, which is a software that monitors and optimizes the major electricity consuming systems of a building which are elevators and air conditioners, based on sensors identifying occupancy in a certain part of the building (A5, 28). R5 refers to the use of standard ERP systems for collecting crucial data, while climate reporting software for reporting the environmental impacts acting as a sustainability reporting tool (A7, 12). He further mentions the automation and thereby optimization of various processes and use of innovative functionality of tracking and tracing of their products that helps in calculating the carbon footprint of the company (A7, 18).

The second method of using digital avenues is highlighted as predictive maintenance works, highlighted by R1 (A3, 24), which helps in saving huge amounts of fuel, natural resources as well as labour. And analytical tools help hugely in accomplishing these predictive maintenances (A3, 26). Predictive analysis also helps in the power consumption of the electronic devices

based on the timings of the building occupancy (A5, 32). The technologies are becoming smarter according to R3. Example can be sensors and essential IoT devices (A5, 67):

"you can read it, when a component is when and what are the life remaining services that you can take corrective measures before the failure happens? So avoiding unit downtime"

Similarly, R5 mentions the use of various technologies (A7, 42) like :

"LIDAR (Light Detection and Ranging) sensor mounted on the International Space Station GEDI project, thinking GEDI, run by NASA. And that's for assessing carbon stock in forests. Then we have drones absolutely can also do that. We have companies like Satelligence which they're they take information from satellites, and they've developed algorithms for, for example, being able to predict where deforestation is going to take place in a couple of years time"

Another approach towards digital sustainability is identifying substitutes for non-renewable resources of materials leading to less carbon footprint or even simplifying the social concerns like labour and employment problems (A3, 24). R1 stresses the importance of innovations and disruptive technologies which can help in handling sustainability projects, since there are not many existing templates or references present that can be followed (A3, 70). Hence innovations and disruptions are essential to achieve the set sustainability targets. R6 recalls the use of digital mediums to provide background information of the various products that her organization offers to their customer, so that the customers can make any informed decisions for any products alternative (A8, 47). R3 argues that while the pioneers' organizations are formulating innovative solutions, the laggards are still trying to catch up with the existing technologies in the path of digital sustainability (A5, 63), as currently, the utilization of digital avenues are mostly for value-added services rather than mainstream operations which are handled physically and mechanically. R4 also has similar views where his client's primary focus is on the social development projects including sanitation, agriculture, education and rural development with the help of circular frameworks on the ground level physical implementations like waste management and material composting (A6, 16).

Nonetheless, whatever developments are being done for the sustainability initiatives, must be portrayed and showcased to the clients, consumers and society to be informed and aware. Also, for branding and marketing, digital spaces like social media platforms including Facebook, Twitter and LinkedIn are helping the organization to reach, connect and communicate efficiently (A6, 48). All respondents agreed to the use of social media to create awareness of their sustainability-specific activities and performances (A3, 32; A5, 40; A6, 34; A7, 26).

Although, collecting and maintaining critical data in a database system is paramount for the effective results of all above mentioned activities, as data is the key to effective optimization, prediction, substitution and even showcasing ideas and innovations in front of businesses and while using the social media platforms for marketing, branding and awareness drives. This need for data collection and preservation of data has been emphasized by R1, R4 and R5 as a crucial element (A3, 44; A6, 26; A7, 36).

4.1.4 Strategic Evaluation

Table 4.4: Overview of Strategic Evaluation

Respond-ents	Appendix	Theme	Row
R1	3	SE	28, 34, 36, 38, 48
R2	4	SE	4
R3	5	SE	8, 34, 42
R4	6	SE	18, 40
R5	7	SE	22, 26, 30, 40
R6	8	SE	23, 27, 55

All the respondents have agreed that sustainability initiatives are mostly a collaborative effort, with the involvement of various internal stakeholders as well as external parties. R3 and R4 stated the collaboration of multiple parties involved in sustainability projects. They elaborate that in their work environment involves involvement and cooperation of government, sustainability experts, public sectors, NGOs and the consumers and societies like Self Help Groups (SHGs) (A5, 42; A6, 18). Both R3 and R6 explain that products with sustainable offerings are a selling point for not only their customers, but also add value to the customers of their clients, affirming a chain of interests and awareness (A5, 34; A8, 27). Moreover, R4 recalls public sector organizations' involvement in helping out in the planning and evaluation phases in certain areas of improvement (A6, 40). An interesting observation was made from the discussion with R6, who stressed the expectations for sustainability reforms with the change of Sustainability Director in her organization (A8, 23).

The first step of any sustainability-specific starts with the assessment of the organization in question. R1 suggests that this can be done by assessing the baseline or in other words, the SES or the status core of the organization (A3, 34). Having a baseline or not, depends on maturity level of the company since the issues related to sustainability are holistic in nature, according to R2 (A4, 4). R2 also adds that due to their evolving nature of sustainability issues, and need for innovative solutions, some organizations might not have the capacity to solve the IT issues that relate to sustainability and vice versa (A4, 4). The internal teams of some organizations also lack the capacity to translate the IT strategies to sustainability strategies for which they may require external experts to advise and develop solutions for sustainability-related initiatives.

Involving sustainability experts as mentioned by R1, the baseline of the organization is reviewed. In case the baseline does not exist, then the experts strategize with the internal team to identify the baseline. This activity is also termed by R1 as the scoping phase and its dependent on the right data and a benchmark to measure the same (A3, 48). The next step is to identify the improvement areas which need to be taken into consideration as explained by R1 (A3, 34) for example, restructuring for warehouses, rework your entire fleet to use renewable energy for use. Based on the baseline, scoping and improvement areas, strategies are developed to create the roadmaps for organizations to follow for driving their sustainability initiatives. R1 further adds that the most important phase of such projects are the initial consultancy phase as he mentions that (A3, 38):

"The most comprehensive and the important is the first one, identify, calculate, discuss, align and so on."

R2 believes that the sustainability projects are mostly assigned to a combination of both in-house teams and external sustainability experts (A4, 4), which is also supported by R5. R5 mentions that his organization has various sustainability teams within the organization and also collaborates with external companies for activities like carbon calculator software and more, particularly for verification of results and avoiding greenwashing (A7, 16). Additionally, R1 states that most of the sustainability projects offered to outsourcing service providers are around consultation and some implementation projects. Since organizations are improving toward digitalization in a structured and organized fashion, with proper guidance, it is possible for these organizations to follow the roadmaps finalized from the consultation projects with sustainability strategists (A3, 36).

4.1.5 Relationship Management

Table 4.5: Overview of Relationship Management

Respondents	Appendix	Theme	Row
R1	3	RM	36, 42, 44, 46, 48, 50, 58, 60, 62, 66
R2	4	RM	4
R3	5	RM	43, 49, 53
R4	6	RM	18, 40, 46, 64
R5	7	RM	10, 26, 28, 46
R6	8	RM	16, 27, 33, 37, 39, 41

R1 emphasizes that the most important and difficult aspect for successful implementation of digital sustainability projects is data availability (A3, 42). And to extract the required data the service providers need to communicate and collaborate with various cross-functional teams (A3, 46). R3 and R4 also have similar views of collaborative relationships with the various stakeholders of the projects (A5, 49; A6, 18). Moreover, R1 highlights that the data availability becomes more complex when the services and products of their clients are themselves outsourced (A3, 48). He further explains the situation giving an instance of a furniture company outsourcing certain products from another company, which in turn outsources the raw materials from even another company; this multiple level of stakeholder involvement raises the difficulty level of, say calculating the CO2 footprint (A3, 48). R5 highlights the standard tools for ensuring proper relationship management and code of conduct, like non-disclosure agreement, companies own environmental policy, and risk assessment tools like Verisk Maplecroft, FSC Bonsucro, ASI (Aluminium Stewardship Initiative) and other self assessment audits like Sedex Members Ethical Trade Audit called SMETA (A7, 28).

R1, R3 and R6 suggest that these complex situations can be handled by clarity, transparency and efficiency while collaborating with the associated stakeholders (A3, 50; A5, 53; A8, 39). Also, the associated stakeholders may or may not be aware of the sustainability related data which can be referred as knowledge gaps. According to R1, it is the responsibility of the service providers to explain and request clearly for specific data to the clients (A3, 58). And in case of unavailability of the required data, the service providers must explain as well as support in extracting the data by investigating from the clients' systems (A3, 62). R4 suggested that sometimes regular follow up is required for timely implementation of the projects (A6, 46).

Transparency in communication and good collaboration with NGOs or public sector organization can help acquiring innovative solution as well as funding from corporate organizations

since some corporates are interested in investing, to fulfil their CSR mandates (A5, 43; A6, 40). R5 states the importance of verifying the attitude of consumers across the world through surveys, to know the perception of the existing and possible clients towards sustainability topics (A7, 46). R1 recalls about the mindset of the clients which earlier used to be

"*Sustainability is not important. This will not bring us a competitive advantage"* has changed now as he says, "*But this mindset is not valid anymore*" (A3, 44).

However, the progress is slow, especially in government setups, where mere telephonic or emails communication won't suffice for the processing of the projects, rather hardcopies and physical paperwork are essential. R4 states that the paperwork and official formalities take time and regular follow ups are needed to keep things moving (A6, 64).

4.1.6 Outsourcing Performance

Table 4.6: Overview of Outsourcing Performance

Respondents	Appendix	Theme	Row
R1	3	OP	36, 48, 50, 52, 54, 56, 70
R2	4	OP	NA
R3	5	OP	18, 51
R4	6	OP	18, 22, 46, 64
R5	7	OP	36, 44, 50
R6	8	OP	57, 59

According to R1, the main contributing factors to ensure better outsourcing performance of any sustainability-specific projects are the quality of scoping and data collection (A3, 36). And also, benchmarking becomes a necessity while doing the scoping of the organization and for extracting the relevant data (A3, 36). R3 talks about ensuring safety as the one of the main factors for industries working with electronic products (A5, 18). R4 believes that more and more innovative solutions are required to improve the performance of any sustainability projects, as he exemplifies the circular projects which he is working on that would help generate revenue from the by-products of waste management and plastic management treatment plans, catering to the three pillars of sustainability. These projects have the basic concept of cleaning the environment with the help of treatment processes by engaging and employing rural villagers and forming Self-help Groups (SHGs) and furthermore, selling the by-products, such as compost helps in generating revenue for the villagers involved with such projects (A6, 22).

Moreover, R1 also mentions that handling multiple stakeholders could be a challenge some times when working with big organizations (A3, 48). In such cases, R1 recalls to approach the projects by compartmentalizing the project scope to smaller individual units and working with the in-house components first, and then, moving step by step outwards in the organization structure (A3, 50) of the company. It was discussed that this bottom-up approach can be considered for simplifying and ensuring success in projects that are more complex in terms of organization structure and involve multiple internal and external stakeholders at various levels in the company (A3, 52). R4 highlights that in case of Government funded sustainability projects, the progress in these projects are relatively slower than those of corporate, since there are more legal formalities involved (A6, 46). He also mentions that channelling of the file processing are

relatively rigid in these collaborations, thereby affecting the delivery time of the sustainability-specific projects (A6, 64).

When asked about the outsourcing performance dependence on type of industry, there were varied responses. R1 argues that, rather than the industry, the scale of company matters as well as how much the organization is spread across, globally (A3, 54). It also depends on the nested levels of sourcing managed by the company. Whereas, according to R3's viewpoint, industry of an organization does matter in terms of outsourcing performance, since the task levels of efficiency is defined by the industry itself (A5, 51). The respondent adds that the CSR initiatives might vary from company to company, but the core business, involving efficient energy utilization, at the same time valuing the safety of products and operations, becomes a key aspect that gives the companies in any specific industry, the competitive edge (A5, 51).

4.2 Findings from Survey

4.2.1 Digital Sustainability Readiness and Organizational Perceptions

The initial section of the survey was to understand the general perception of the employees of various organizations towards sustainability being a core strategy, and secondly how ready the organizations are, to incorporate digital technologies for such initiatives. So, the first question to help recognize the perception was "*To what extent sustainability is considered important in developing organizational strategy (on scale of 1-10)*" with 1 being "Consideration limited to CSR only" and 10 being "Sustainability is a core pillar". Out of 60 survey participants, 19 respondents gave the rating as high as 10 for sustainability being considered for organizational strategy followed by many other respondents who have also rated highly, making the average rating as 8.48. The results presented in the below Figure 4.1.

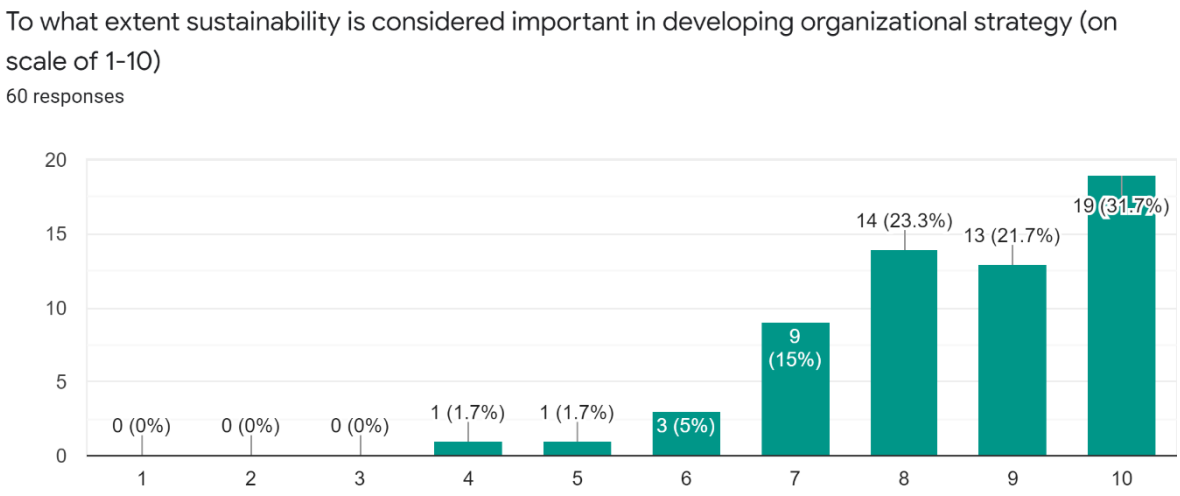

Figure 4.1: Result for relevance of sustainability in developing organizational strategy

To know more about which pillar of sustainability is getting more prioritization within organizations, the next question was: "*How do you prioritize or score EES (Environment, Economic, Social) initiatives within sustainability goals for your organization currently*", to which average respondent side slightly more towards the economic pillar than environment and social pillars. The options for each pillar had been given numeric weightage and the average of economy was found to be 6.78, followed by environment and social average as 6.92 and 6.35 respectively and are represented in using bar chart in the following Figure 4.2

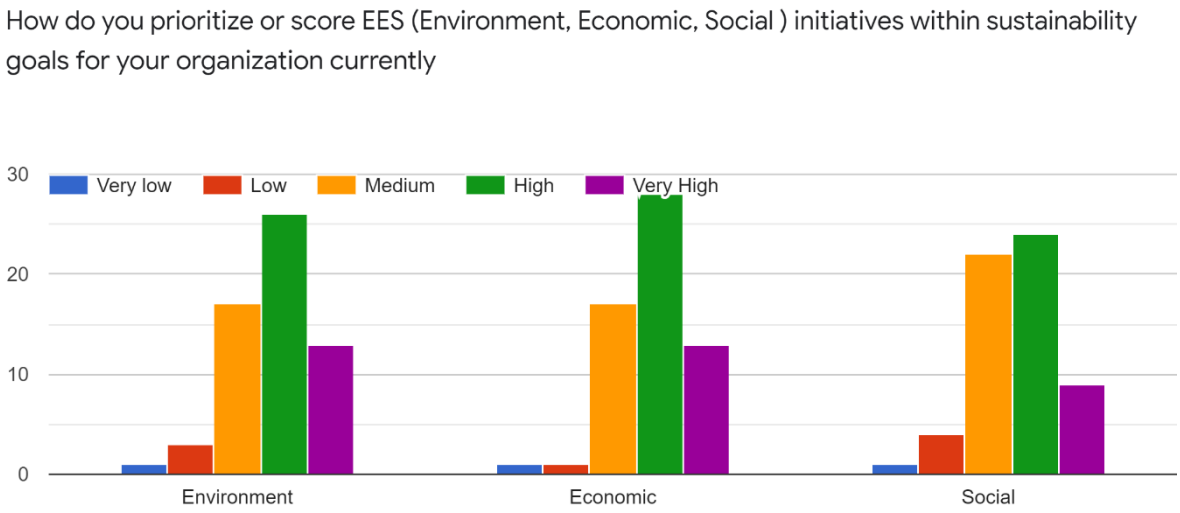

Figure 4.2: EES initiatives within sustainability goals

Coming to the centre of the research premise, the following question was to understand the extent to which digital technologies are being incorporated by businesses for enabling sustainability-driven projects: "*To what extent digital technologies are being explored to define and measure sustainability goals/KPIs (digital sustainability)"*. The response option was scaled from 1 to 10, 1 being "*Limited use (restricted only to Excel)"* and 10 being "*Use of IoT-smart devices, advanced reporting and analytics, AI/ML, blockchain etc*". To this the majority of respondents have scored the question as more than 6, with an average of 8.07 which can be viewed in bar chart in the following Figure 4.3.

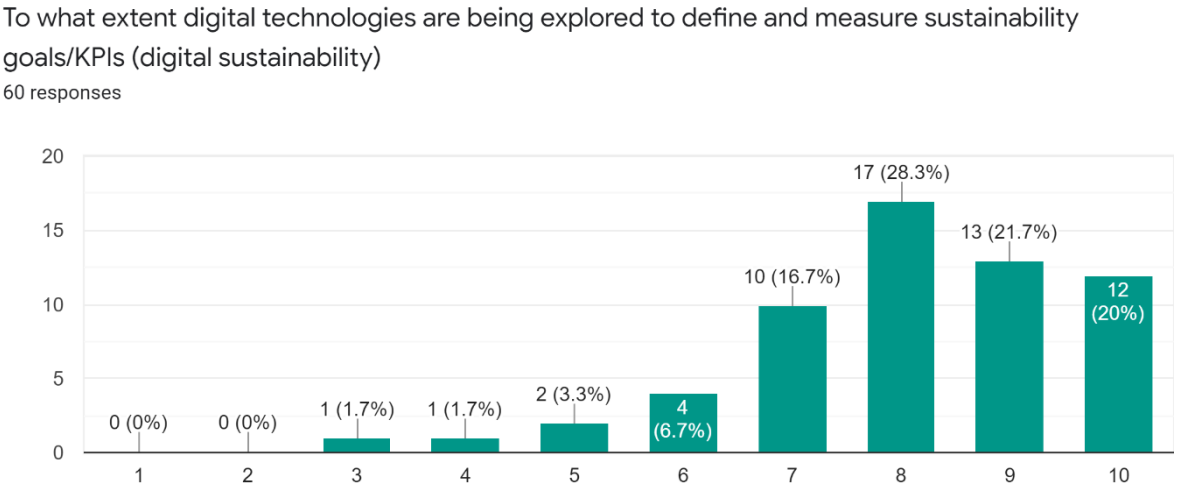

Figure 4.3: Adoption of digital technologies in measuring sustainability KPIs

With reference to the table in Appendix 9, it can be seen that there are multiple questions being mapped to all possible themes. In context of Digital sustainability readiness, apart from the findings presented in above questions, there also exists other set of questions totalling to 5 questions altogether, the cumulative average score of DSr comes out to be 7.09 based on survey responses. This clearly indicates organizations are in general at a '*high'* score as mentioned in Chapter 3.1.1 with respect to digital sustainability readiness.

4.2.2 Strategic Evaluation

Coming to the next section, the researches attempted to derive the familiarity of organizations towards the opportunities and services that are now available through external sustainability experts and service providers, who can help organizations build roadmaps for sustainable solutions and help in driving their sustainability-specific goals. It was also intended to further identify how likely they are collaborating with these sustainability service providers in future, if not doing now and what parameter they would want to base their decision of outsourcing sustainability. So, the next question was designed as "*To what extent sustainability initiatives/engagements (including digital technology specific engagements) are outsourced to external experts at present (1-10)*" and the response scale ranging from 1 to 10, with 1 being "Completely driven by internal teams" and 10 being "Completely outsourced to external experts". The results were mixed. Although, when filtered by the role of sustainability consultants and strategists, which comprises of about 10% of the total respondents, the average was 4.6, which was slightly lesser than the total score average of 5.83. The graphical representation is shown below in Figure 4.4.

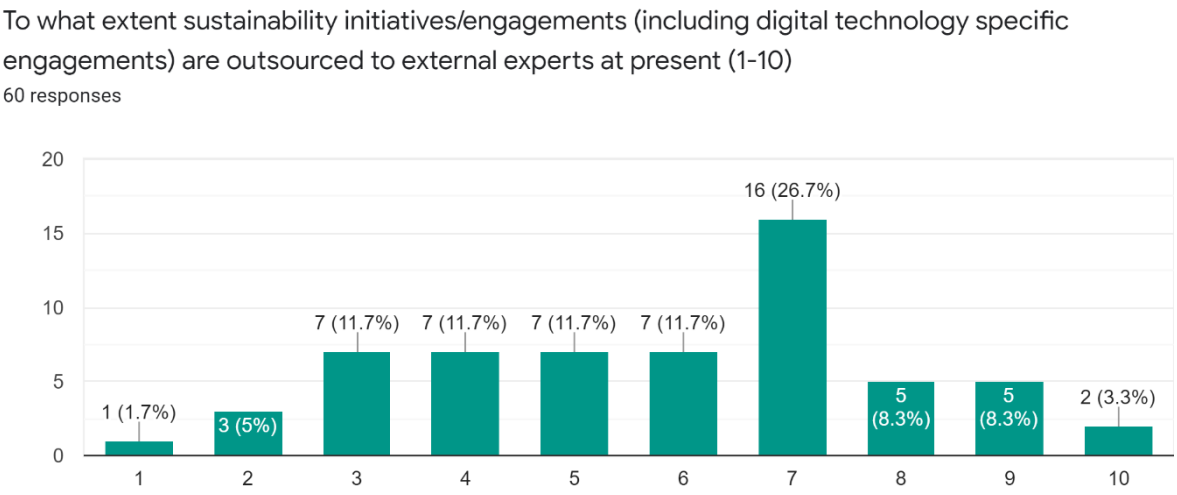

Figure 4.4: Outsourcing as a strategy of achieving sustainability goals

Knowing that some organizations are driving their sustainability-specific engagements internal, the next question was designed to perceive the future direction of outsourcing sustainability initiatives. So from the next question of "*In case the current sustainability engagements are completely driven internally, are you willing to consider external expertise in future*", the maximum response shows that they are likely to connect with external experts, as can be seen from the below pie chart (Figure 4.5)

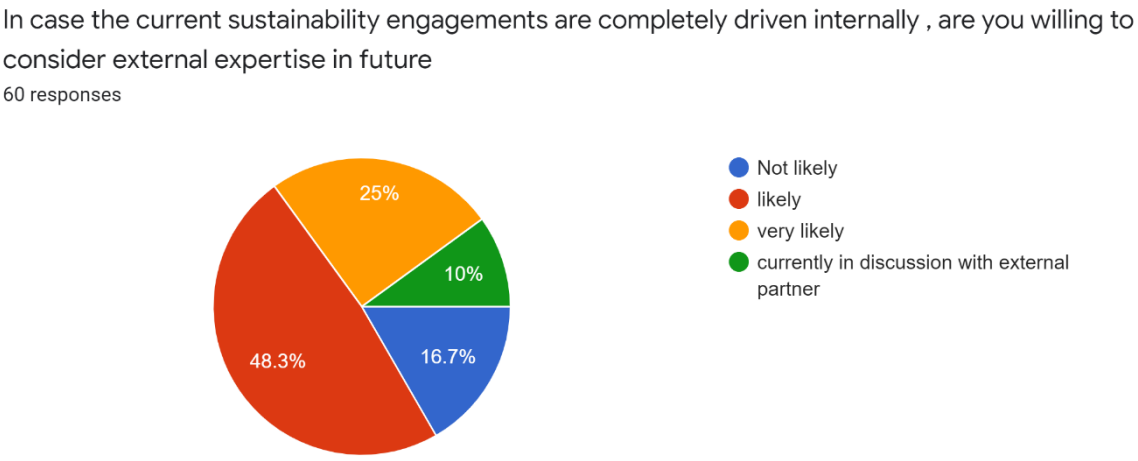

Figure 4.5: Sustainability engagements inhouse vs outsource

Considering the importance of strategic evaluation while considering to outsourcing, the researchers wanted to understand the main considerations taken for the selection process of service providers. The question "*What could be the criteria while selecting outsourcing service providers (OSPs) for sustainability initiatives/engagements*" was provided with the options of "*Cost Efficiency*", "*Reputation of OSPs*", "*Strong competency and value proposition*", "*Focus on innovative solutions*" and "*Cyber security/Data Handling*". Cyber security followed

competency and value propositions are considered most important to the respondents with an weighted average of 7.42 and 7.35, whereas the reputation of the OSP's are given comparatively less importance with an weighted average of 6.28 as shown in below graph (Figure 4.6).

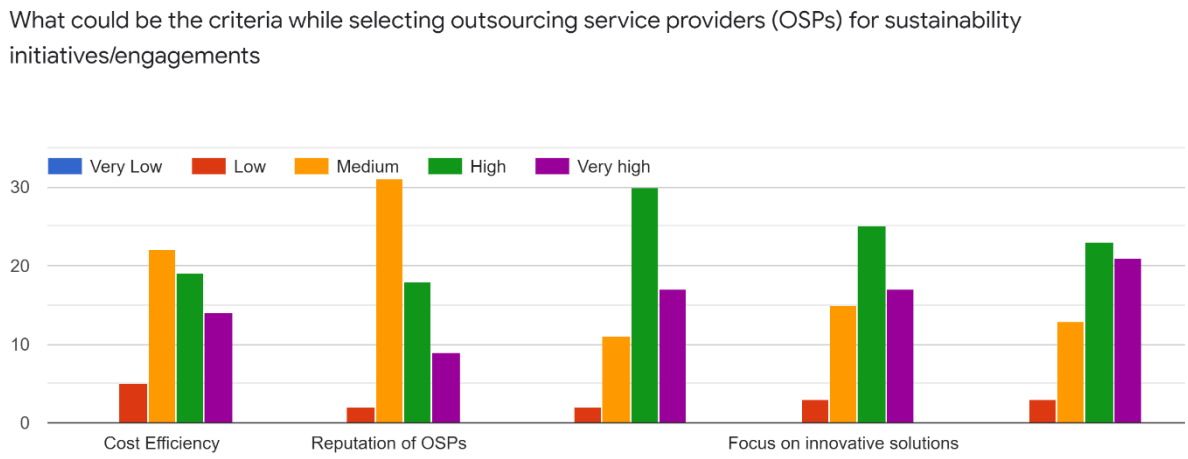

Figure 4.6: Selection criteria for choosing outsourcing service providers

In context of Strategic Evaluation, apart from the findings presented in above questions, there also exists other set of questions totalling to 7 questions altogether as can be seen in Appendix 9. The cumulative average score of SE comes out to be 6.71 based on survey responses. With reference to Appendix 9, it can be seen that there are multiple questions being mapped to the strategic evaluation. This clearly indicates organizations are in general at the '*medium'* score as mentioned in Chapter 3.1.1 with respect to strategizing to outsource sustainability services.

4.2.3 Relationship Management

After identifying the perception of respondents towards the current and future of outsourcing digital sustainability, the researches wanted to understand the factors responsible for establishing trust and ensuring smooth collaboration between clients and vendors in said context. So, the respondents were asked "What factors could be considered in establishing trust between your organization & external partners engaged in sustainability specific engagements", followed by the options of "*Transparency*", "*Commitment*", "*Domain Knowledge*", "*Certification from regulatory bodies*" and "*Strong credentials*". To this, the respondents consider commitment and transparency of both parties are valued more, as the weighted average comes to be 7.87 and 7.77 respectively whereas strong credentials are also valued showing an average score of 7.05, yet the least, when considered to other options mentioned. Figure 4.7 depicts the graphical results to this question below:

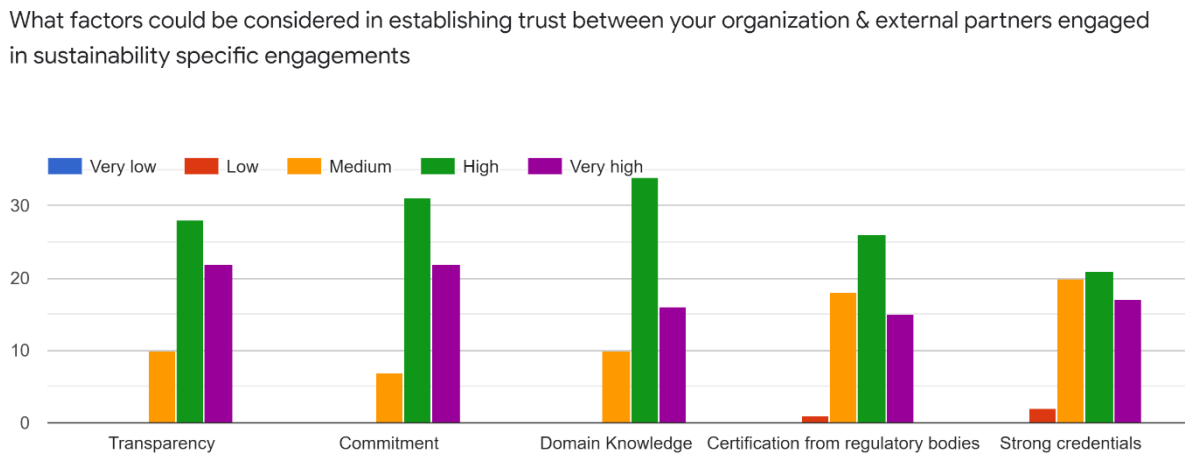

Figure 4.7: Factors in establishing trust between organization and external partners

To identify the most important success factors for managing relationships, the question asked is "*Which of the following critical factors you rate the most important in managing digital sustainability outsourcing relationships*". The options to this question were "Process", "Value addition", "Communication", "Quality", and 49.2% respondents consider *quality* of service matters the most for ensuring good relationships. Communication and processes involved in such engagements matter comparatively less, as shown in Figure 4.8 below:

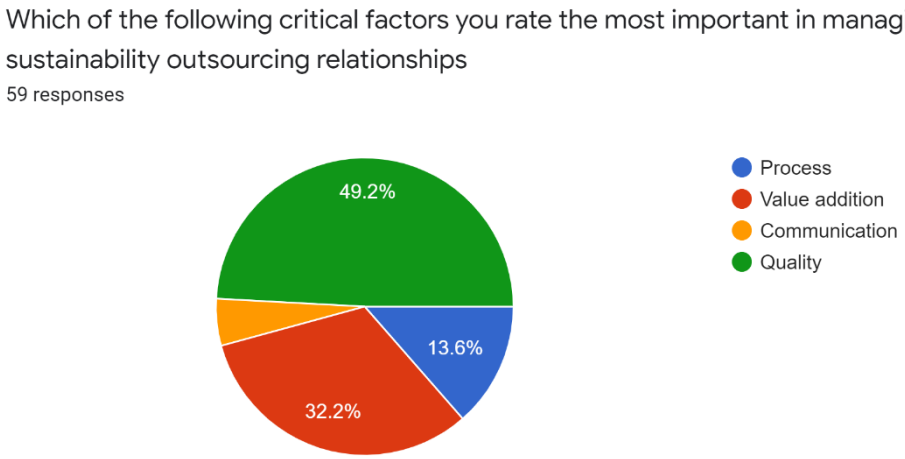

Figure 4.8: Critical Success Factors in managing digital sustainability outsourcing

In context of Relationship Management, apart from the findings presented in above questions, there also exists other set of questions totalling to 10 questions altogether as can be seen in Appendix 9. The cumulative average score of RM comes out to be 7.17 based on survey responses. With reference to Appendix 9, it can be seen that there are multiple questions being mapped to all possible parameters. This clearly indicates organizations are in general at the '*high'* stage of the score mentioned in Chapter 3.1.1 with respect to relationship management.

4.2.4 Outsourcing Performance

This section of the survey attempts to quantify the metric and risks affecting the performance of sustainability projects when outsourced to externals service providers. To understand this, the next question was asked as "*What could be the risks involved in driving sustainability engagements with external partners*" with the multiple options of "*Cost over run*", "*Time over run*", "*quality of deliverables*", "*Data governance/Cyber Security*". Quality of the services is given maximum importance by 41 respondents followed 36 respondents selecting data governance and cyber security as another risk. Time taken is less of a risk in terms of sustainability-specific deliverables as only 19 respondents chose time as a risk factor. Another option was added as an open text in case the respondents would want to add some other risks that is not included, and one respondent added "Change management, when the need arises to change existing OSP" as a risk contributing to outsourcing performance. The graph representing the results is shown below (Figure 4.9)

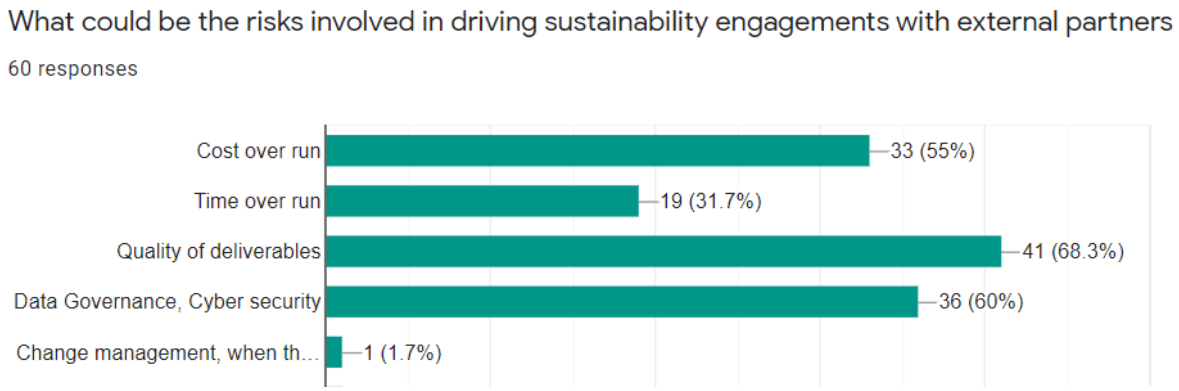

Figure 4.9: Risks involved in sustainability engagements with external partners

In context of Outsourcing Performance, apart from the findings presented in above questions, there also exists other set of questions totalling to 3 questions altogether as can be seen in Appendix 9. The cumulative average score of OP comes out to be 7 based on survey responses. This clearly indicates organizations are in general at the '*high'* stage of the score mentioned in Section 3.1.1 with respect to outsourcing performance also.

The survey also includes an open text optional for welcoming any comments from respondents. The question was "Any specific inputs on the role of technology to meet the sustainability objectives of your organization in future" and few of the interesting responses were:

"Technology will play a major role in future".

"Sustainability will happen through evolution. If technology does not evolve, there is less chance of sustainability."

"Without innovative technological solution like AI, IoT it is looks impossible to achieve sustainability".

"Like all functions, Sustainability is undergoing digital transformation. There is definitely money to be made in Sustainability Technology."

"Using Business and artificial intelligence for 'Social- Listening', this often leads to new insights".

"Transparency and data issues are probably highest on our risk mapping for this topic".

5 Discussion

In this chapter, the decided themes have been discussed based on the results from the conducted mixed-method study. It answers the research question by connecting the results with the findings from the literature and gives perspective to the research field.

5.1 Digital Sustainability readiness

The benefits of digital sustainability have become apparent from the academic literature. To shed light on the first section of this research (RQ1) and understand if organizations are ready to embark on exploring digital avenues to solve sustainability-specific challenges, an attempt was made to find evidence of maturity levels towards digital sustainability through finding from interviews and survey. Literature suggests that the use of digital technologies and innovations have the potential to support many business engagements of strategic decision-making, reinventing business models, value-added customer experience, and many more operations (Westerman, Bonnet & McAfee, 2014a). These innovative digital technologies are also perceived as enablers to support the sustainability initiatives of the companies (von Kutzschenbach & Daub, 2021). The researchers, von Kutzschenbach and Daub (2021), also suggest that, to understand the involvement and practical engagement of digital technologies in sustainability challenges of organizations, more research is required, including organizational awareness and experimentation with stakeholders.

More instances of companies are being found, who are including sustainability in their organizational strategy. Researchers believe that the pioneers of their respective industries are promoting sustainability as one of their corporate strategies to address the sustainability dimensions and gain competitive advantage (Lekakos, Vlachos & Koritos, 2014). Similar views were shared by the interview respondents. Even though sustainability is gaining more strategic importance gradually, profitability is still the most important metric for the corporate world (A3, 12), while technology acts as an enabler for efficient and sustainable products and services (A5, 10; A8, 19). The high score of 8.48 from the survey answering to the importance of sustainability in corporate (A9, 1) indicates it to be one of the important considerations for the organizational strategy, if not the top considerations (A5, 36). It is also evident from the survey that most respondents belonging to a diverse set of industries (FMCG, Manufacturing, Consulting) have given high weightage to all the three pillars of sustainability (economic, environment, social) as ongoing and future priorities (A9, 2) as is supported by R5 (A7, 10).

The evolution of digital era has been continuously revolutionizing the way of life. The digital transformations are not just helping in strategizing organization structures, processes and business models (Vial, 2019), it is also helping reinvent the sustainability practices with the help of its innovative nature (George, Merrill & Schillebeeckx, 2020). Time being a key essence, the adoption of digital technologies is for sustainability has and will evolve with time, as it has been evident from the literature as well as highlighted by the interview participants. Along with the drive to embark on digital mastery (Westerman, Bonnet & McAfee, 2014a), corporations are consciously moving towards sustainable products over time (A3, 12; A5, 36). Although, the rate of digital progression and adoption varies based on industry sectors, in a global setup (A3, 16: A8, 19). The developed countries are pioneering in achieving sustainability goals with innovative usage of digital technologies like robotics, IoT smart devices, big data and analytics and blockchain (A7, 40). On the other hand, the efforts made in developing economies are not

matching with same pace. The differentiated progress to ensure a sustainable world for the future has become a pressing concern (Sustainability Development Goals Website, n.d.).

There are few differences in approach of the developed and the developing countries working towards sustainability targets (Ramalingam and Hernandez, 2016). The developing countries or the organizations operating in the developing countries focus more on eliminating the social issues like poverty, sanitation, water and waste management, child labour, healthcare, education equality, unemployment and so on (A6, 20). Even though there are initiatives for environmental sustainability exist, focus is bifurcated between both the societal and ecological issues (A6, 18; A7, 14). On the other hand, developed countries are more focused on the environmental concerns since there are relatively lesser societal concerns governing their focus (A3, 30). The interview respondents have noticed this difference as they talk about the digital artifacts used for the sustainability development of ecological concerns are easier to establish as the data are more tangible than the social issues. The developments done for the sustainable societal ecosystem are more on the ground level with less scope for involvement of digital technologies (A6, 16). The practices are more directed towards innovative solutions incorporating circular economy with minimal use of resources.

Nonetheless, technologies have started to slowly and consistently evolve to provide aid to these development projects of developing economies also, such as maintaining critical data in database systems, using internet and social media for branding, raising awareness, and digital storytelling and detailed product information via websites (A6, 26; A6, 34; A7, 26; A8, 49). And with the new innovative technologies over time, the increase in digital sustainability readiness in the developing countries can be anticipated (A5, 78). The above analysis, but is based on the countries perspectives. Based on the organizational standpoint, the survey result however indicates the economic aspect of sustainability as more important that ecological and lastly the social initiatives (A9, 2).

5.1.1 Perception of Organizations

The Sustainability Development Report (2020) showcases the varied progress of countries of the UN, in terms of achieving the 17 SDGs. The rising trend of actively promoting and implementing digital sustainability is mostly seen in organizations within developed economies (Kuntsman & Rattle, 2018). Few interview respondents have also highlighted the differences in organizations' maturity towards adopting digital technologies sustainability as discussed in the above section. Apart from the social and ecological sustainability focuses of organizations (A3, 68), there are two other factors identified in this research which becomes the foundation of organizations perception towards digital sustainability. Researchers identify regulatory compliance, and stakeholder pressures to be a few of the factors which force organizations to imperatively employ innovative digital avenues which can ensure compliance along with profitability and efficient operations (Bansal & Roth, 2007).

The importance of regulatory compliance for the seriousness of sustainability initiatives became even more evident on the basis of interaction with the interview respondents. The lack of interest of organizations in developing countries towards digital sustainability is because there are no regulatory mandates or legal penalties in these countries, as compared to organizations in developed countries (A3, 72; A6, 6; A7 26; A7, 40; A8, 55). Organizations of developed economies invest in costly technologies so as to avoid paying even more costlier penalties and taxes (A3, 16). Certification and other ISO standards are also means of enhancing perspective of

organizations towards digital sustainability (A3, 36). On similar lines, the Sustainability Development Goals website (n.d.) identifies the lack of investments in the developing nations leading to delay in the SDG fulfilments. Safety and efficiency in operations, products and services with the help of digital technologies are also perceived important for corporate organizations (A5, 18). Some organizations also involve themselves with CSR initiatives (A5, 51; A6, 42). Although the graph depicting the perception of survey participants suggests otherwise (A9, 1).

Digital technologies help to reconceptualize the foundational operations and core values of every aspect of organizational strategies, including sustainability (Vial, 2019). With experimentation and agility, digital transformations are perceived to give the organization a competitive advantage (Rudder, 2020). Companies are realizing the benefits of data preservation and utilization for sustainability initiatives to provide a competitive edge over their competitors (Pappas et al., 2018). The interview respondents have agreed to the shift in consumer behaviour, who are requesting sustainable products (A5, 59; A7, 16; A8, 23). Even when some extra cost is associated with the sustainable products, the consumers still expect goods and services complying to the sustainability metrics (A3, 18). With the global as well as the shared economy, the demand for sustainable products in an internationally sourced market is raising the bar for corporates to comply with sustainability.

5.1.2 Employment of Digital Avenues

Many academic researchers describe the numerous possibilities of using digital technologies across various industry sectors for enabling sustainability initiatives. Green computing helps calculate GHG emissions (Osburg & Lohrmann, 2017), whereas an optimized GPS system ensures less fuel consumption and carbon footprints (Jovic et al., 2020). Other examples include predictive analytics using big data, or sensors and robotics technology (Pohl & Finkbeiner, 2017; Woodruff & Mankoff, 2009). The dimensions of technology enabling sustainability are in manifolds, including blockchain, digital twinning, AI/ML, IoT and smart devices (Sánchez & Hartlieb, 2020). The aforementioned examples of use of digital avenues were embraced and supported by all interview respondents, as they talk about all the digital tools that are being used for achieving sustainability (A5, 67; A7, 18; A8, 19). The respondents agree with the literature (A3, 22) suggesting technology to be an enabler or catalyst for sustainability goals (Balogun et al., 2019). The survey result confirms the use of technology for sustainability (A9, 3). Some of the interview respondents further elaborate their experience of using digital avenues helping with the sustainability projects, for example, software for evaluating carbon footprints (A3, 24; A7, 40; A8, 47), or smart IoT devices used in smart building for optimized energy consumption (A5, 28), or drones and satellites use for assessing and predicting carbon stock in forests (A7, 42). Although, some respondents working with socioecological concerns working on poverty, sanitation, healthcare and rural development projects talk about the minimal use of technology as the projects are more on a ground level not leaving much scope for use of digital technologies (16). The only digital aspects used in such engagement currently are managing database systems of the villagers and the project-specific details (A6, 26)

It has become apparent from this study regarding the main use technologies for sustainability KPIs are aiding to optimization, prediction, maintenance, and identifying alternate substitutes which are less taxing to the environment, economy and society (A3, 24; A5, 65; A7, 40). From a practical standpoint, the success of the optimization and predictive analysis is dependent on one most crucial input, that is data. The importance of availability of relevant data has been stressed by one of the respondents. It was argued that the gathering of relevant data from their

clients, which is needed to create a baseline for any sustainability roadmap, sometimes is the most challenging phase of such projects, which is aligned with the perception derived from other scholars (Seele, 2016; Stuermer, Abu-Tayeh & Myrach, 2017). While the pioneering companies have the data available with them, the laggards either have the data without knowing their relevance for sustainability, or they do not have such data at all (A3, 34). Researchers suggest that knowledge and critical data relating to sustainability can be accessed, accumulated and acquired with the help of innovative digital artifacts (Stuermer, Abu-Tayeh & Myrach, 2017). Technologies like satellites, drones, IoT smart devices enables observation and collection of short and long distance data which can help in quantifying the complex socioecological ecosystem and avoid business risks and market failure through optimization and predictive analytics (George, Merrill & Schillebeeckx, 2020).

From the literature and the research findings, it is evident that there are different levels of sustainability perceptions, also factoring in the use of digital avenues. Organizations operating in developed economies seek the advantages of the technology. Not using them makes the companies susceptible to legal penalties or loss in brand image leading to competitive disadvantages. Organizations of the developing economies, on the other hand, make use of digital technologies, but not as innovators, rather followers of existing proven and profitable technologies (A5, 57). The demand of sustainable products in developed economies like US and Europe, also triggers the practices of sustainable sourcing and product development in outsourcing destinations like Asia Pacific regions. On a different note, ecological sustainability is perceived as the primary concern for organizations of both developed and developing economies; ecological sustainability is focused in developed economies with mature use of digital artifacts, whereas developing economies share their resources for both societal and ecological ecosystems, wherein employment of digital technologies have not yet evolved as much (A9, 2).

Combining the evidences from interview respondents and survey participants the researchers can affirmatively position measuring ‘digital sustainability readiness’ as a critical step to assess organizations embarking on the transformation journey. The survey analysis gives an overall score of 7.09 (with reference to table below) for all respondents which could be interpreted in ‘*high*’ category. This implies that most organizations have considered sustainability as a core pillar and are ready to leverage technology for realizing true potential, allocated resources (internal teams or external collaborations), and are just starting their journey.

Table 5.1: Employment of Digital Avenues, received score and scale

Scoring levels	Low	Medium	High	Very High
Scale	0-5	5-7	7-9	9-10

5.2 Strategic Evaluation

Based on the previous section, it is evident that many organizations, if not all, have either kicked off some digital sustainability phase, or are still in conceptualization/ideation phase. To analyze the next section of this research (RQ2a) and understand if these organizations are driving their sustainability goals completely internally or considering to engage with external partners to help them in this journey, this research attempts to relate the existing literature with the perceptions of the research participants to give sound insights.

The investments in owning fixed assets and efforts on innovations for carrying out the non-core activities could cost the firms hugely (Prahalad and Hamel, 1997). And while engaging in a sustainability project many stakeholders are associated and involved, as presented by Lock and Seele (2017), in their digital sustainability model (Figure 2.2), which requires constant collaborative activities and might occupy the firms' critical workforce (Lock and Seele, 2017).

Literature suggests that outsourcing business activities, could be of small scale or large operation, yet is considered as an organizational strategy (McIvor, Humphreys & McKittrick, 2010). There are two prevalent factors associated with any organization's decision to source externally (Quinn & Hilmer, 1994). Firstly, when the firm realizes that the non-core business activities might become bloated and bureaucratic risking loss in the firms' focus from their main competency. Secondly, the cost needed to invest can be more than outsourcing it. To come across the challenges of cost and focus, organizations can outsource the necessary, but non-core business activities to OSPs, making it easier for the firm to focus on their own core competencies (McIvor, Humphreys, & McKittrick, 2010); sustainability initiatives being no exception. Literature stresses the evaluation phase to be the most basic and important phase of outsourcing (Handley & Benton, 2009). This is because this phase determines the decision of an organization to build the resource inhouse or buy from vendors. The survey result in this notion indicates that most organizations are still laggards in terms of outsourcing digital sustainability projects. Two of the respondents supports the mixed nature on both in-house and outsourced sustainability engagements (A4, 4; A7, 26).

It can be also inferred from the interview respondents, that the choice of outsourcing depends on an organization's maturity. Organizations may have varied approaches to achieve sustainability, some may employ sustainability heads with immense knowledge and experience, while some operations may be completely passed on to the external service providers. As discussed in the precious section, one of the respondents mentioned the change in Sustainability head in her company has increased their hopes for better results in terms of sustainability (A8, 23). Some could have sustainability team, but more on non-digital level, and might collaborate with digital sustainability experts. Moreover, there can be different phases of sustainability projects which can be outsourced such as assessment and consultancy which is the most common phase of outsourcing (for creating roadmaps or blueprints), implementation phase (using the roadmaps into reality), and post-implementation support (monitoring and maintenance activities) (A3, 36).

Moreover, literature highlights the importance of accessing the outsourcing decision based on the risks and potential benefits (Handley & Benton, 2009). And when a firm decides on outsourcing certain business activities, it must lead to further evaluation of choosing the appropriate vendors, that would be the best fit for the requirements of the firm (Barney, 1999). This research also aimed to find any relevance in the evaluation criteria of outsourcing sustainability-specific projects in comparison to any other outsourcing projects. The survey results also indicate an inclination of industries to adopt technologies as a likelihood in the future to drive sustainability initiatives (A9, Q4). This also indirectly tilts in favor of potential discussions with external expertise (A9, Q5). Additionally, the survey results are opinionated towards strong competency, value proposition and data and cybersecurity being the critical criteria for the selection of the digital sustainability vendors (A9, Q6). Cost efficiency and innovative solutions are also scored well, but not as much as the value proposition and security. Reputation of the vendors is given the least priority. The results are affirmatively supported by literatures of other technology outsourcing considering quality, delivery, price, service as the critical factors for vendor selection process (Cheraghi, Dadashzadeh & Subramanian, 2004).

Combining the evidences from interview respondents and survey participants the researchers can affirmatively position the theme of 'strategic evaluation' to be capable of answering RQ2a and RQ2b. The survey analysis gives an overall score of 6.71 (with reference to table below) for all respondents which could be interpreted in '*medium*' category. This implies that most organizations are ready (near ready) to engage with external sustainability experts, in same manner as they do in any other technology outsourcing engagement. However, this is the perception captured, while true evidence is yet to be seen.

Table 5.2: Strategic Evaluation, received score and scale

Scoring levels	Low	Medium	High	Very High
Scale	0-5	5-7	7-9	9-10

5.3 Relationship Management

In their extensive 20 years research program reaching over 500 global companies in all major economic sectors, Lacity, Willcocks & Rottman (2008) established that effectively managing the client-vendor relationship is one of the most important factors in outsourcing success. This finding is supported by other studies (Gottschalk & Solli-Sæther 2005; Levina & Ross 2003; Ellram, Tate & Billington 2004). The researchers used this critical nature of relationship management to investigate further to understand key factors in setting up and managing relationships in digital sustainability outsourcing.

Goles and Chin (2005) claimed that there is a cyclic interdependence between the attributes and processes to build a successful outsourcing relationship. For example, communication is usually considered a precedent of trust, but as trust builds the communication becomes more and more open which in turn strengthens the trust between participants (Goles & Chin, 2005). The attributes concluded by Goles and Chin (2005) are: Commitment, Consensus, Cultural Compatibility, Flexibility, Interdependence and Trust. The most important factors being trust, communication and collaboration, the investigation was focused on analyzing these critical success factors during the interviews and used probing questions so that the informants could feel free to share any other attributes or processes in their responses. All the interviewees acknowledged the importance of trust in the successful implementation of outsourcing relationship. This result is aligning with the inference from literature review and also prior research in identifying critical success factors in outsourcing relationship management.

Two of the interviewees stated that communication and collaboration in sustainability initiatives can become very complex due to the involvement of multiple stakeholders involved in a firm. To gather relevant data that could help the sustainability outsourcing vendor draw roadmaps for driving the sustainability projects, they need to interact with other suppliers and service providers of their client, like supplier for raw materials, outsourced operation of logistics, etc. This complexity in multiple stakeholder involvement has been supported in literature (Lock and Seele, 2017). The interviewees shared that transparency, which in turn builds trust, acts as the key attribute that helped them to efficiently handle these kinds of multi-level stakeholder interactions (A8, 39) apart from some standard tools for ensuring proper code of conduct like non-disclosure agreement and auditing tools (A7, 30). It is interesting to note that

transparency has been voted as one of the top attribute in building trust by the survey respondents as well. This reinforces the importance of transparency in successful digital sustainability outsourcing relationships.

The success of the outsourcing relationship is determined by how it is managed at the operational level which stresses the need for both parties to have the necessary skills and resources to manage the process at operational level (McIvor, 2005). Most of the interviewees have pointed out that communication and collaboration are two crucial processes in establishing successful outsourcing relationships. One of the relevant observations from the public sector interviewee is that less or no adoption of digital medium of communication in public sector initiatives due to stricter legislative regulation, results in poor operational speed. Therefore, it can be inferred that gap in communication and increase in response time will affect the outsourcing performance adversely, which is also supported in the literature (Verma, Gustafsson, Gustafsson, Kristensson & Witell, 2012).

In the context of relationship management, one of the attributes that are not mentioned in the literature but came up in the interviews was data and its security as an enabler for establishing trust in sustainability outsourcing. As relevant data is key for assessing the sustainability goals like reduction in CO2 emissions, an interoperable data channel between different stakeholders of sustainability initiatives helps in creating efficient collaboration and smooth execution of objectives. Another aspect which is not common in other outsourcing engagements but significantly used in sustainability outsourcing is green certification and eco-label from different government agencies. The interviewees agreed that these kinds of certifications and ecol-labels from different regulatory bodies are considered very valuable by most of the clients and help establishing trust in the client-vendor relationship. However, it is important to note that the survey participants did not rate certification from regulatory bodies as highly as compared to other factors, such as commitment, transparency, domain knowledge, etc, as critical success factor of client-vendor relationships.

Furthermore, about 50% of the survey participants voted for *quality of service* when asked for choosing the critical success factor for managing sustainability outsourcing relationships. It is interesting to note that overall process and communication have been voted very less compared to quality of service by the survey respondents. This provides an opportunity for future research to identify the specific attributes of quality that help to establish and manage successful sustainability outsourcing relationships. The survey was provided with an open text section to collect feedback from survey respondents and one of the response is worth mentioning in the context of relationship management, "*Transparency and data issues are probably highest on our risk mapping for this topic"*, which help the researchers concluding this discussion that transparency and data security and management can make or break digital sustainability outsourcing relationships.

Combining the evidences from interview respondents and survey participants the researchers can affirmatively position the theme of 'relationship management' to be capable for answering RQ2b. The survey analysis gives an overall score of 7.17 (with reference to table below) for all respondents which could be interpreted in '*high'* category. This implies that most organizations are ready to engage with external sustainability experts, in same manner as they do in any other technology outsourcing engagement. However, this is the perception captured, while true evidence is yet to be seen.

Table 5.3: Relationship Management, received score and scale

Scoring levels	Low	Medium	High	Very High
Scale	0-5	5-7	7-9	9-10

5.4 Outsourcing Performance

In order to assess the success of sustainability outsourcing initiatives, it is important to conduct performance measurements. With the increasing improvements in outsourcing strategies, the measurement of performance in the context of outsourcing is a complex problem (McIvor et al., 2009). De Toni and Tonchia (2001) pointed out the traditional performance measurement systems in operations management that rely on production costs and productivity needs to be reconsidered in the context of latest advancements such as lean manufacturing, just-in-time, concurrent engineering etc. De Toni and Tonchia (2001) also presented the performance measurement measures: cost performances (production costs & productivity) and non-cost measures (time, quality and flexibility). Furthermore, as pointed out by Gunasekaran et al., (2015), in the context of outsourcing, the performance measures and metrics need to be measured and evaluated for different stages in outsourcing such as strategic evaluation, establishing the relationship, managing the relationship and evaluating the outsourcing relationship.

Even though the performance measurement in the context of outsourcing is complex in nature as mentioned above, this research attempted to analyze the outsourcing performance through the perception of interview and survey respondents. Without understanding the implications of outsourcing sustainability, the performance of such engagements in an organization will make the research inconclusive. Hence, the benchmarking technique was adopted in which the critical success factors of the outsourcing strategies are associated with the performance of such engagements (McIvor et al., 2009). In the previous sections of the discussion, the key factors of strategic evaluation and relationship management stages were focused, which directly impacts the performance along the dimensions of quality, flexibility, cost, and reliability (Handley & Benton, 2009).

Literature suggests that extensive strategic evaluation has a direct influence on outsourcing performance, as implied from the referred model in this research (Figure 2.4). However, the analysis of interviews showed an indirect impact on outsourcing performance. The interview participants stressed that performing a quality scoping during the strategic evaluation is necessary to plan how the outsourcing relationship is established. The quality scoping will further help in finalizing the kind of approach, top-down or bottom-up, that needs to be deployed to set up a successful outsourcing project on time. It is worth noting that, one of the participants expressed that a bottom-up approach of implementation is more effective than top-down approach when dealing with a complex organizational structure that involves multiple internal and external stakeholders at various levels in the company. In the context of sustainability where requirements keep evolving, most of the domains like business operations, logistics, automobile manufacturing, etc. have this complex structure of multiple internal and external stakeholders. This also requires an evolution in solutions and structuring an agile work environment as highlighted by one of the interview respondents. This inference of bottom-up approach, by sectioning the

complex operations and setting up smaller targets at a time, could be considered as an effective approach, in an otherwise complex assignment.

It can be inferred from the literature corresponding to the outsourcing frameworks of various business activities, that relationship management has a significant direct positive impact on outsourcing performance. The results from the analysis of interviews and survey showed the critical nature of effective relationship management on outsourcing performance. Therefore, organization must work in a cooperative and collaborative manner in order to extract full potential from the sustainability outsourcing initiatives. This direct positive impact of relationship management on outsourcing performance is in line with other outsourcing practices like IT outsourcing. Hence sustainability outsourcing initiatives can infer from the best practices of relationship management in outsourcing.

Moreover, in this research, another factor impacting the performance of digital sustainability outsourcing has been highlighted as data acquisition and data governance. In the research, there was no assumption based on the critical nature of the data on outsourcing performance, but it is important to mention that different participants of interviews and surveys have suggested data as a critical factor in driving outsourcing performance in the context of digital sustainability. A large percentage of survey participants has pointed out data governance and cybersecurity as the major risk in digital sustainability outsourcing performance. This inference about the critical nature of data acquisition and data governance in digital sustainability outsourcing performance needs to be analyzed in further research.

Combining the evidences from interview respondents and survey participants the researchers can affirmatively position the theme of ‘outsourcing performance’ to be capable for answering RQ2b. The survey analysis gives the overall score of 7 (with reference to table below) for all respondents which could be interpreted in just ‘*high*’ category. This implies that most organizations are ready (near ready) to engage with external sustainability experts, in same manner as they do in any other technology outsourcing engagement. However, this is the perception captured, while true evidence is yet to be seen.

Table 5.4: Outsourcing Performance, received score and scale

Scoring levels	Low	Medium	High	Very High
Scale	0-5	5-7	7-9	9-10

6 Conclusion and Limitations

6.1 Research Question and Purpose

Sustainability as a concept is not new and has evolved rapidly over the last few years. As suggested by the literature, sustainability is trending more and more amongst big corporations as part of their core strategy. More instances of new entrepreneurial ecosystem especially in the Nordics region are fuelling through new digital business models (Cybercom, Afry, Norrsken Foundation, etc.). Increasing consumer awareness on ethical sourcing, circular economy, investors preference on ESG compliances, stringent regulatory requirements are contributing to the field of sustainability. Literature also suggests digital transformation is accelerating amongst various industry sectors at a rapid pace, sustainability is no exception. As technology, processes and skillsets mature, it becomes important to understand if the technology engagements for sustainability could be managed effectively for yielding better results. This was the premise of undertaken thesis work. While interacting with a considerable number of sustainability/supply chain professionals over the LinkedIn platform, it became evident that many individuals were not familiar with the concept of outsourcing digital sustainability, as most of the developments were either internal or not benchmarked with any theoretical framework. As a first step to first investigate the organizations' readiness for adopting technology for sustainability engagements. This led to formulating the first research question.

RQ1: Are organizations ready to embark on exploring digital transformation to solve sustainability-specific challenges?

Subsequently, the theoretical construct to support the research work was primarily referred from the article of Handley and Benton (2009). The sub-factors/themes were taken as a base to answer the following research questions.

RQ2a: If organizations are exploring digital technologies to meet sustainability goals, are they considering engaging with external partners to help them in this journey?

RQ2b: If organizations are engaged with external partners, are the standard outsourcing frameworks applicable in understanding digital sustainability-specific engagements?

The themes of 'Digital Sustainability readiness', 'Strategic Evaluation', 'Relationship Management' and 'Outsourcing Performance' are thoroughly qualified in Section 3.1.1 and considered applicable to answer all of the research questions.

6.2 Key Findings

Based on a comprehensive review of the subject matter (Chapter 2), and thoroughly substantiating the literature with the interview and survey findings in Chapter 5, the following conclusion has been derived.

Digital Sustainability readiness: Most organizations are ready to leverage modern-day technologies to solve sustainability challenges, but lack resources or are in the prospecting/ideation

phase to kick off few initiatives. Digital Sustainability readiness theme, therefore, supports in favor of RQ1.

Strategic Evaluation: Findings indicate that time to maturity is a critical aspect for any new technology adoption or application of technology to new fields. This is applicable in the context of sustainability. SE theme supports in favor of RQ2a and RQ2b.

Relationship Management: Findings indicate that digital sustainability engagements could potentially require multiple stakeholders' involvement making the whole exercise complex. The importance of Relationship Management theme is therefore validated to support in favor of RQ2b.

Outsourcing Performance: Findings indicate the standard metrics of technology Outsourcing engagements are perfectly applicable to digital sustainability also. Metrics including, Cost, quality, delivery, data handling (acquisition, governance), partner reputation, all are highlighted explicitly. Therefore, the outsourcing performance theme supports in favor of RQ2b.

To summarize the learnings from the above themes, it can be concurred that most organizations are ready to incorporate digital sustainability, but lack clear direction to proceed forward. Also, the theoretical framework for managing any technology outsourcing projects referred to in this research (Figure 2.4), can be extended to the outsourcing of digital sustainability-specific engagement as well.

6.3 Limitations and Future Scope

Apart from the standard limitations of time and availability of respondents to conduct the research extensively, one additional limitation stemmed from the theoretical construct. One of the decided themes of contractual completeness as stated in the literature (Handley & Benton, 2009), could not be investigated. This was due to the lack of formal digital sustainability projects which could be known during the research period. As indicated from findings, the digital sustainability readiness of organizations is still at the ideation/evaluation phase, it became unrealistic to acquire relevant data in regards to the contractual completeness theme.

Secondly, there were diverse survey responses (representations from multiple industries), the size of participation is not statistically significant to give industry-specific insights. Even though this is the limitation, it can be considered as an impetus for future research, where industry or geographic-specific insights could be derived, with a wider and deeper respondent base. Another scope of future research is undertaking a longitudinal and cross-sectional case study approach, which could determine the factors influencing contractual completeness, as well as validating the present research findings.

6.4 Contribution to Information System

Numerous academic literature regarding Digital sustainability is already in place. However, the concept of outsourcing digital sustainability projects, though have been cited as use cases implicitly, have never been discussed in any theoretical construct explicitly. This research

attempted to do so, and shed some light on this new observation, and hence could pave way for the future direction of research.

As technology, frameworks and business processes evolve around digital sustainability over due course of time, the present work done and linkage to outsourcing theories become much more relevant to investigate. The future direction highlighted in the previous section will generate additional interesting problem statements contributing even further to the Information Systems field. This thesis could be significant as an eye-opener for a promising research direction going forward.

Appendix 1: Interview Questions

Sl.no	Questions
1.	Could you tell us a little bit about your role in your company, and how are you involved in sustainability specific topics (Internal as well as external).
2.	What is your opinion on sustainability becoming a core strategic pillar for businesses/ corporations.
3.	What core benefits does Digital Sustainability engagements bring to your clients: economic benefit, competitive advantage, branding, compliance to UN SDG, or socio-ecological benefits.
4.	How would you define digital sustainability.
5.	Based on your interactions with multiple clients and industry experts, where do you see technology playing a role in sustainability specific goals.
6.	Based on your knowledge, and interactions with multiple clients, what are the sustainability specific challenges that the they usually highlight (business problems).
6.1	Is there any specific need of technology outright highlighted, or generally sought.
7.	As a solution provider, what value proposition does your company provide to meet such challenges that the clients face in the context of DS.
7.1	In cases where your clients might have less/no knowledge about some sustainability initiatives (and rather have some broader objectives), how do you fill these knowledge gaps or showcase possible strategies/ solutions to them?
8.	While crafting the response to proposals/ presenting PoVs, to what extent, technology becomes a factor in demonstrating the value that business/client stakeholders need? (people, process, technology)
8.1	Do you need to analyze the client organization's digital maturity. If yes, what metrics do you consider when doing such analysis (SWOT, VMG, or PESTL)?
8.2	Are there any data science avenues involved?
9.	What steps/ phases are involved in these engagements (Is it similar to traditional ERP/other IT driven setup with phases like Consulting, Implementation, maintenance and support)?
9.1	Are there any scope for extension of these projects (or repeat business) for the Digital Sustainability engagements.
10.	What are some of the core skillsets of your team involved in such engagements?
11.	During the implementation phases, could you elaborate on the coordination and trust factors between your team and the clients.
11.1	Does your team need to coordinate with the cross-functional entities (Finance, Marketing, IT, HR, etc.) of the client's organization, during the implementation phase, or is it just the top-level stakeholders whom you interact with.
12.	After the implementation phase, how does your client impart the value propositions with their customers. Do they, or you provide any digital story telling, or any other avenues that would generate consumer as well as employees awareness?
13.	From your company's perspective, what could be the possible risks and mitigation methods of managing such projects?
13.1	What are the most common bottlenecks for orgs/firms during stakeholder buy in, scope management, change management, etc.
13.2	Do they vary with the industry sectors your clients belong to (like manufacturing, retail, healthcare, etc.)?

13.3	What all legislative or governmental aspects need to be taken into account in such projects?
14.	In a nutshell, what are you thoughts on the similarities or differences between Digital Sustainability and traditional ERP, or any other IT specific projects?
15.	Lastly, does your team need to work onshore, or offshore, or is it a hybrid model. Does industry sector of client matter, in this context? With the pandemic situation, has the work environment changed?

Appendix 2: Survey Questions

Digital sustainability outsourcing

Survey to gather insights on managing outsourcing (technology) of sustainability- specific engagements

*Required

Name

Your answer

Present designation in the organization *

Your answer

Industry presently working in (Ex. FMCG, Manufacturing, Retail, etc) *

Your answer

To what extent sustainability is considered important in developing organizational strategy (on scale of 1-10) *

	1	2	3	4	5	6	7	8	9	10	
Consideration limited to CSR only	○	○	○	○	○	○	○	○	○	○	Sustainability is a core pillar

How do you prioritize or score EES (Environment, Economic, Social) initiatives within sustainability goals for your organization currently *

	Very low	Low	Medium	High	Very High
Environment	○	○	○	○	○
Economic	○	○	○	○	○
Social	○	○	○	○	○

To what extent digital technologies are being explored to define and measure sustainability goals/KPIs (digital sustainability) *

	1	2	3	4	5	6	7	8	9	10	
Limited use (restricted only to Excel)	○	○	○	○	○	○	○	○	○	○	Use of IoT-smart devices, advanced reporting and analytics, AI/ML, blockchain etc

To what extent sustainability initiatives/engagements (including digital technology specific engagements) are outsourced to external experts at present (1-10) *

	1	2	3	4	5	6	7	8	9	10	
Completely driven by internal teams	○	○	○	○	○	○	○	○	○	○	Completely outsourced to external experts

In case the current sustainability engagements are completely driven internally , are you willing to consider external expertise in future *

- ◯ Not likely
- ◯ likely
- ◯ very likely
- ◯ currently in discussion with external partner

What could be the criteria while selecting outsourcing service providers (OSPs) for sustainability initiatives/engagements *

	Very Low	Low	Medium	High	Very high
Cost Efficiency	◯	◯	◯	◯	◯
Reputation of OSPs	◯	◯	◯	◯	◯
strong competency and value proposition	◯	◯	◯	◯	◯
Focus on innovative solutions	◯	◯	◯	◯	◯
Cyber security/Data Handling	◯	◯	◯	◯	◯

What factors could be considered in establishing trust between your organization & external partners engaged in sustainability specific engagements *

	Very low	Low	Medium	High	Very high
Transparency	○	○	○	○	○
Commitment	○	○	○	○	○
Domain Knowledge	○	○	○	○	○
Certification from regulatory bodies	○	○	○	○	○
Strong credentials	○	○	○	○	○

Which of the following critical factors you rate the most important in managing digital sustainability outsourcing relationships

- ○ Process
- ○ Value addition
- ○ Communication
- ○ Quality

What could be the risks involved in driving sustainability engagements with external partners *

- [ ] Cost over run
- [ ] Time over run
- [ ] Quality of deliverables
- [ ] Data Governance, Cyber security
- [ ] Other: _____

Any specific inputs on the role of technology to meet the sustainability objectives of your organization in future

Your answer

Appendix 3: Interview Transcript-R1

Information
Respondent: R1 Position: Manager Start Time and Type: 2021-04-14, 17:36, Zoom video call Participants: R1, Shradha Panda (I) and Rani Ranish (I)

Dimension	Color	Theme ID
Digital Sustainability readiness	Turquoise	DSr
Perception of Organizations	Yellow	PoO
employment of Digital Avenues	Pink	eDA
Strategic Evaluation	Grey	SE
Relationship Management	Green	RM
Outsourcing Performance	Red	OP

Row#	Per-son	Information	Code
1.	I	First of all, thank you for accepting our request and participating in our master's thesis.	
2.	R1	Yes, of course, of course.	
3.	I	So, we would like to, again, give you some brief of our research work. So, basically we are working on, the three concepts of digitalization, sustainability and outsourcing and all of the digitalization is the key word in every business now. Everyone is talking about transformation. And with that sustainability has also gained a lot of attraction. And there are also several SDG goals like which companies want to achieve and the footprint and that is the case with the digital sustainability. So, we think that we have seen so that companies what have the core competencies or much more focused on digital sustainability that they try to seek out consultancy or business transform or other from other companies outside. So we want to analyze how different this from the normal outsourcing of any IT projects and what are the critical success factors, those engagements.	
4.	R1	Ok, understood.	
5.	I	So, Lund University provides us with the consent form, which we have provided you. And I just wanted to highlight that non-disclosure agreements, all of those things are related and these checkboxes and that's fine with you. And you can tick whatever you are comfortable with, and send us that with a digital signature.	

6.	R1	OK, great. Yes. So I would, I would follow all the NDA's in the next day, so you can use my information as you like. But as I mentioned before I will answering from the perspective of manager of [CompName]. And I met some people in Germany and Britain and so on and so on. Yes. But please do not name [CompName]. And because all I have to be people with huge, huge administration processes here in Germany just to give the logo and the name and so on, to accelerate this process. I'm answering this question on the basis of your information. Identified clients.	
7.	I	Yes. Sure. We will not use this information like your name and what you mentioned.	
8.	R1	If I mentioned the client's name is just here to expand this to you, please. Let's say I didn't know the name of any research. It's a German company, a picture of US, European aircraft manufacturer and so on. As always.	
9.	I	OK, I will. Would you be comfortable if we record it so that we can use it for transcription? Thank you so much. So we would like to start talking about your the role in your company and how you are involved in these aspects like sustainability specific topics both internally within the company and to the external clients.	
10.	R1	OK, so I just mentioned before I'm [RespName], but I have been in [CompName] with one and a half. Almost two years ago before I was as a consultant to a small company in Germany, this company was only focused on transport control and logistics and just so nothing with sustainability. And then I grew up in the sustainability topic and the owner of the supply chain sustainability assessment. So, I really have you are very close to your topics and interview. I'm pushing this topic and a team of four people. Four team members around Europe, the one in US and externally are pushing this topic for clients. So in a nutshell, how can a client increase sustainability in their supply chain, not only in the *** but in the supply chains?	
11.	I	So, yeah, so sustainability as a concept, has it become a core strategy to drive forward business, or, I mean, it's just CSR needs ?	
12.	R1	that's a good question. Very good question. From my point of view, we identified two waves. The first wave of sustainability importance is something like around 2012, 2013. But this wave does not hit the bottom . Which was just the let's say, the first sort of production back and so on and so on. But now, change in the second wave started with the pandemic of corona. And this wave hit the Balkans extremely hard. For example, the Balkans fun, but also the rich and powerful Smeaton as. OK, so this is the core of business development and so on and so on. From my point of view, it's pretty prioritization, but not the first one, to be honest. It's cost cutting again, but it's coming closer. So maybe if we have this interview in the next two years,	DSr

		maybe it's top one or two. But for now, let's say top one, two, or three.	
13.	I	So that's the way the digital transformation, it is a kept as helping as getting positivity for our customers. And that's all we are. Think that this is becoming a factor, too.	
14.	R1	OK, but this sentence, as you mentioned before, I underline for one hundred percent more sustainable development net zero or whatever. It it's a little bit like most people, of course. But all of these words, yes, they are only possible with digital opportunities, ideas to whatever it is, let's talk a little bit change of the mindset. Yes. So, you throw your rubbish into the ocean, but nevertheless, digitalization is important.	PoO
15.	I	So, the core benefits of the digitalization engagement, apart from I mean the economic benefits or the competitive advantages or any other compliances or what are the driving factors for companies to follow these engagements.	
16.	R1	Because from my point of view, these are three points, the first one, they do not have to pay penalties and fees. Because for now, [CompName] pays millions and millions of euros because they are not selling the exact amount of ecofriendly costs. [CompName] does this and millions of fees. Yes, it's a huge. So they do not have to pay penalty and fees. And that it's a strong one because it's from the government, the Swedish government to the government, European Union, whatever we think of, as you mentioned before, it's perfect. It's branding. But it's not, let's say, just the brand stuff, because it's very close, connected to the idea of getting a competitive advantage, because if I have that, I know Nike and Adidas, they're very similar to the same shoe, almost the same price as for Manchester United, the other one for Chelsea, whatever it. Yes. So, but the competitive advantage is the sustainability aspect for all other aspects. The maximum the lightest cost issue, whatever, the best shoe already. So, the technology level of shoes is unlimited, the sustainability aspect. It's a very good competitive advantage. And the client is asking for this trying to supplement for example, clients are asking for 80 percent, not considering more than 80 percent when they're buying a new car. 10 years before, this was just 10 percent.	DSr, PoO
17.	I	Ok	
18.	R1	They are looking for this sustainability. But they even want to look for this and looking for biases. And they are willing to pay more, they are willing to pay more.	PoO
19.	I	Then customer awareness is also a key for this.	
20.	R1	100 percent, 100 percent.	
21.	I	So by DS what would you say, what are the features that compliances with DS. How would you define DS ?	
22.	R1	Digital Sustainability, I'm honest. I had to look up a little bit. What this this is what it's about because I from the supply chain	eDA, PoO

		logistics and from my point of view, sustainability means with the digital intelligence, I would increase sustainability, for example, aside from the logistics side. Yes. Within the last twenty-five years, we optimized the logistics network of [CompName], [CompName] ever, fully regarding costs. But now we will have you. And you knew that you and you knew about you there, and this is new value there, that is CO2, so I am looking for the best [CompName] supplier network regarding the cost, because better may maybe most of the products would be on the Bangladesh, India and not so labor cost intensive country. So, there's a lot of not so labor costs, but if I can deliver this from, let's say, Russia to Sweden, it's will save like twenty five percent of the CO2. Well, they will not consider this. Twenty-five years before [CompName] does not even think about this. So this is a modern saving increase sustainability by using technologies for digitalization as it's opportunity for now.	
23.	I	Make sense. What most of clients and the interaction with the industry experts, what kind of technologies are coming into picture with logistics and how's it ?	
24.	R1	OK, again, just sustainability perspective. So I mean, from finance, energy to first from everything you can related or you can imagine regarding optimization and the new horizon for optimization out there to not only optimize against the cost for less employees and the cost not non-sensitive employee, but the second one, everything was prediction of this prediction maintenance. The industry, for example, they can save an unbelievable amount of fuel or labor and so on if they use predictive maintenance works. So these are the two points. What I can say from the neighbour unit, we have this digital manufacturing sort of the supply chain is the manufacturing is everything you can imagine around is raw materials or materials. They have the most important opportunity regarding the cost efficiency. Identify a substitute. Do not use cobalt for your iphone12 if it as a substitute, because we do not want to use raw material to make the old use again for Bangladesh India, or whatever. So, its value in this mining sector. Australia has a right to my right in South Australia delivering this to India and then sending the iPhone in New York. Well, they actually do substitute, but of course, keep the cost in your mind. So these are the top existing optimization, prediction, maintenance and identify substitute.	eDA, DSr
25.	I	And I think with the optimism, prediction, both of these using analytics heavily.	eDA
26.	R1	Yes Well, for sure.	eDA
27.	I	So, these are the value propositions of [CompName] to the customers like optimized tools and prediction values that they provide, right.	SE
28.	R1	Yes, within the focus of this supply chain and delivered on threats, on environment, of course, from I read as a huge	SE

		company, we can provide you with the governments aspects of public relatedness and the social aspects to decrease child labour rate to your employees 2000 euros to get certified and sustainability management, whatever. Guess that's right. But it's OK to Sweden is a good country to have. But what about Eastern Europe? Because we're not talking about the battle zone yet. We're talking about Eastern Europe. So, what about the warehouses in Romania? So of course, these are the other aspects of sustainability. So that's very good. And I think this is maybe an advantage for [CompName] in against TWC or McKinsey or whatever other companies. We are considering sustainability within all three aspects, ESG, all of the social aspects. Well, I know the social aspect, I'm not so marketing relevant as the environmental aspects. To be honest, this that's how the economy works.	
29.	I	so that our clients are also interested in the social aspects that	
30.	R1	Social aspect is much less than the environment. Let's say 70 to 30 percent, 70 environmental economic aspects of save money, get a certificate less zero CO2 net zero, 30 percent increase social aspects.	PoO
31.	I	And let me ask, what kind of technology is used for the societal aspects, like how can we have no	
32.	R1	No technology aspects. technologies that you can't really comment on that assessment just to get an idea what you're talking about? And then we have the new transparency law in Germany. We come to Europe, to Sweden, of course, that said that all the companies in Germany needs to process the range and maturity or transparency of their supply chain. So I'm asking [CompName] and this t shirt or this sweatshirt, does this arrive for Bangladesh, India or Brazil or does the child produce this sweatshirt for euro, twenty nine? Was somebody with whatever insurance in India. So, we have this thing, it's always doing the same, but it's only one social to online assets and of it. So, this is the technology. But also comes under the spell of the subprime mortgage market. And so when they come to a question, which is when your or so on some organization, which is the response of some sort of investor and this is how do you buy things like this?	eDA
33.	I	When your clients come to you for some interview or interactions, do you perform some organizational maturity, analysis like SWORT or PESTL analysis, how do you move ahead at the initial stage.	
34.	R1	OK, we have two mature lines. The first is we need a baseline, the SES or status core. If the client already has this baseline, it's almost that huge. So [CompName] will have a baseline. [CompName] will have a baseline, but maybe a smaller manufacturing company in the middle of Sweden will not have a baseline. And after we identified the baseline and if they have already the baseline, so we need the baseline, it's a step zero.	SE

		Without the baseline does not start, then we will then we risk. Do you want to increase the entire supply chain, the manufacturing? Probably the sourcing part of the reason? Well, the only point of sale. And after this we would identify improvement levels, somewhat we call improvement areas, for example, and your network. And then we would start to identify the improvements in the labelling, a network, for example, restructuring for warehouses, rework your entire fleet to use renewable energy for use. As, for example, [CompName] has more than two hundred stores in Germany. So if they just change a little bit, for example, with bulbs overnight, they would have a decrease or increase in sales and then we would create a road map. This is your specific roadmap for the next months, for the next years and whatever. And then if the client tries to join us for the transformation project, here we are just the client says we can do this by ourselves, but we want another company, it's up to them.	
35.	I	So, there is firstly consultancy and if they want to implement like, there are two points. After implementation do they ask for repetition and will they ask for any repeatedness or something like that after the implementation.	
36.	R1	when we implement if they ask us to support the implementation phase, we implement the critical monitoring to control towers. These control towers, we support you by implementing your measures or you improve your levels of activities or whatever. Exactly. And then they will measure, if required by the client, your impact to sustainability throughout life. But this is not so often, let us say take asked for. So, the normal approaches are. Here we go. We are not sustainable. What can we do to be a sustainable two? One, two, three. OK, let's do one, two, three, four. Well, they had to reassess their twenty twenty-five, but I don't know.	RM, SE, OP
37.	I	So mostly it is consultancy and the implementation phase, with not that much of support.	
38.	R1	My point of view is that. The most comprehensive and the important is the first one, identify, calculate, discuss, align and so on and so on and so on and after these we have the implementation phase. Because, [CompName], I have to say it's very structured, organized and it's very experienced in IT implementation for digitization and transformation system and so that it's not a huge problem and not a biggest challenge for us., but nevertheless, sustainability is a huge topic for everyone.	SE
39.	I	how important is to provide some kind of the digital storytelling to the consumers of the clients, like they have to be aware of these phases.	
40.	R1	Well, not so much because they are unaware of digitalization. I think it would be my storytelling if we would not use digital assets if we said, yes, we could increase sustainability, but	

		without digital assets, then you say, OK, OK, you get this. Well, you know, you do not need the storytelling to be able to convince the client regarding this approach to the sustainability.	
41.	I	For the implementation phases, do you need to coordinate the team members or the clients or just the minimum stakeholders or how does it work, to get the required data from them?	
42.	R1	It's a difference to get the data. It's one of the most difficult parts within the project, but the data capturing and data gathering and data evaluation and so on and so on to calculate the baseline. It's at the beginning of the. Very difficult to go first. Maybe they do not have the data already or they have the data and it's confidential and so on, it's on its own. So very difficult to get the data for the implementation phase. Manageable. It's not a problem, but to receive the data, want to calculate the data, to identify the baseline. So how sustainable are your companies? It's maybe one of the most difficult parts within the project of.	RM
43.	I	So that actually will be my next question, what would be some of the bottlenecks during these digital sustainable engagements which your face.	
44.	R1	it's and it's not the mindset anymore. As we talked about the two ways before, I get the same interview with the mindset of the people. Sustainability is not important. This will not bring us a competitive advantage. But this mindset is not valid anymore. It's about the data.	RM, eDA
45.	I	So do you need to interact with the cross-functional teams of your clients, like finance and marketing teams or the IT of your clients, whom do you need to connect programs of the company,	
46.	R1	mostly will of course connected, and involved with the supply chain responsible sourcing, procurement, warehouse, network of logistics. And sometimes the return point of sales and something around this. We have the connection to finance for first, next to marketing and the second step to the IT. And yes, that's the most important. But as mentioned sometimes before, the supply chain perspective.	RM
47.	I	But so, we do say about any of the bottom lines or problems which your face is just to collect the data from the clients.	
48.	R1	The second problem is the scoping phase, because the client, if you said this is let's say let's keep with [CompName], [CompName] had the sourcing for the wood, whatever around the world that they have the manufacturing process, and they are selling the tables and furniture and so on around the world. Understood. But if we are now calculating the baseline, we do not have a benchmark because with whom I can benchmark [CompName]regarding CO2, with [CompName], no chance, with the other less furniture provider. And if I identify a furniture provider or identify it, say this concept of stores in the US, or some furniture company in Germany, then I do not have the	SE, OP, RM

		baseline of that because the data are not available. So this is the next one sort of benchmark. It's a difficult topic. And then the second thing, too, because if I cannot benchmark the three aspects of the [CompName], sourcing manufacturing, delivery. Yes. I do not know which part I should take care first. So last difficulty, and this is not a problem, but it's a challenge always. Yes, you're right. Go to a company as [CompName] and say, hey, let's increase the sustainability of the supply chain. And they have three parts sourcing, procurement, manufacturing, delivery for one or two parts outsourced. And then we have another stakeholder. I cannot go to the same sort of benefits to the sourcing company of [CompName]. I can ask them, hey, can I have your data? No chance. I cannot go to [CompName]and can ask them "Where are your sweatshirts and t shirts coming from." They said, yeah, it's a distributed in India and Bangladesh. I cannot go to them and say, do you Mr.XYZ where that can I have your data for sustainability? Well, because it's outsourced.	
49.	I	how do you manage to get over these kinds of challenges?	
50.	R1	Transparency. OK, go to the client and say, dear client, we do not do that SAP transformation, but we have a one big step old and new versions of SAP. No, we are doing a sustainability transformation. So we are going there step by step, to be honest. Let's start with your insource process for [CompName]. It maybe the warehousing, it maybe the distribution, and maybe it's the sale,a point of sale so that [CompName]warehouses the shops with its start there. And then the next step is we're going to find that some let's go step by step to one of your suppliers, maybe to a Swedish supplier, not a supplier from Brazil. So let's start step by step. And this is very important to go to, the client is very transparent. Well, not maybe increases for a store in Stockholm. And that's very different between the transformation process, if they want to implement a new software program because they did this 100 times before.	RM
51.	I	So it's kind of bottom up approach in terms of accessibility?	OP
52.	R1	100 percent and otherwise I think no chance for a huge company or small company who's going to talk about where those benefits and to find offsets in the Russian variety of options.	OP
53.	I	so do you think that there is lot of difference or not much difference from the industries with deadline. Are we working on the logistics and sustainability related to this logistics? Were they vary based on the industry of your client?	
54.	R1	not under industry. Industry is more or less the same. And they are using trucks or aircraft, or ships or the rails or whatever the same. But from the dimensional level matters,. Do they have one level from sourcing to factory or do they have six levels or	OP

		more. So, number twice why they have more than 10000 suppliers? Just to create a yes,	
55.	I	but that would depend on the scale of the client, I mean, how big the organization is.	
56.	R1	and how they are spread around and how many levels they have to be produced in Germany and deliver only from Brazil. What do they produce in Germany and in China? I can deliver sourcing in India. So, this scaling up the complexity enormous.	OP
57.	I	and while interacting with the clients, do you see that there is lots of knowledge gaps, as I said, that most of the companies are not aware of the sustainability goals. So that would you say that there is lots of knowledge gaps which, you know, can you end up in some gaps or a little more or less with the details?	
58.	R1	OK, we have two kinds of clients there or people. the first is one responsible for sustainability. Then he is very aware of this topic. He's going to have a huge knowledge about the topic. If he's not responsible for sustainability. The knowledge is. Very limited, very, very, very limited, because they are not forced to, let's say, get in touch with this topic, because nobody has said to them, hey, please read a book. Please go to Wikipedia. It's not relevant. But if the company assigned the task to increase sustainability for.	RM
59.	I	So, finding to interact the people who do not have much knowledge about it, then how will you proceed with this. I think, it will be difficult to get the data as they might not be knowing what kind of data you need to access and proceed.	
60.	R1	Exactly, exactly. So it's just the knowledge you have are talking to them ,to chat in the lunch time just to check this who provides the information. So we collecting information and we will identify very fast if this person is interested but not interested to get the data. Yes, we are, let's say, clear and transparent. And 'so dear Procurement department, we need from SAP the XYZ'. So 'dear logistic departments, we need from your information, it's XYZ. If you do not know how to get the XYZ that we can support you, please, can we use your computer and identify if you are collecting already the number of trucks, the number of miles per year, the number of empty miles per year? And if you are not collecting these and we can support you to get this data, although the data topic.' Yes, they have this data. We will find them. Oh, yes, no problem. But they do not collect the data because it's not relevant for.	RM
61.	I	I don't get you, the last one	

62.	R1	You're going to [CompName], or you going to a company. What about this companies in Sweden? A lot of those. And you're asking this company, please give me your revenue, OK? For the last 10 years, it's one thing. And then you have the revenue for the last 10 years. Maybe you're going through this company and ask this company. Can you please provide me all the employees you have in your company looking at it and then read the entire and read it. And if you go to the same company and Can you please give me the information regarding your CO2 emission last year.	RM
63.	I	But I have a subsequent question with that. So how does trust work? Do they trust you with data and how does it go.	
64.	R1	the	
65.	I	confidentiality,	
66.	R1	confidential issues? So, we do not have that confidential. So on the obvious level. So in the contract level, everything's fine. They have NDA's and everything. But what we need to increase is your level of trust. Very hard if you get a such a certificate, if you bring them a certificate, for example, if you are going to [CompName], and say Dear XYZ, if you are fulfilling these tasks, you are delivering these tasks and so on and so on. So you are certificated according to these 14001certificates, or you are certificated against a science based Target agreement or a certificate against Paris climate agreement. This will increase your level of trust because this is the official regarding the baseline, how to calculate future transparent and provide them how you calculated your CO2 level. Multiply X Y and you divide it by that. So just deliver them the way of calculation,	RM
67.	I	so, the certificates are from the governmental preference or what kind of Certificates?	
68.	R1	No. if you are SBI as we are in Europe, I was talking about environmental sustainability as we have not so much maybe some countries in Western Europe, but maybe we do not have so much, let's say, social and social programs. So, we do not have that child labour rates. We do not have the very, very, very huge inequality between men and women. Yes, we have inequality between men and women. We all know this, but it's not the same like in sub-Saharan Africa or other countries and so on. And so the companies are only focusing on environmental problems and not by financial oriented enterprise. So, it's not so, let's say, secret about legal aspects, governmental aspects, compliance aspects. We do not have so much.	PoO

69.	I	OK, so you have vast experience with other projects. Not related to sustainability, so how would you say that there is an difference as compared to other projects.	
70.	R1	Between sustainability and non-sustainability. OK, it's a target, not the objective. It's not a sustainable objective, So for example. So, what's different? They are less innovative. Because, for example, keep this SAP implementation, one of the most and famous aspects of [CompName], I guess with Accenture millions and millions of times around the world, SAP implementation or the SAP's implementation or transformation of the template already there. It's always the same if you want to implement this SAP and the software is almost the same. So, this is not the always the same for sustainability. There's no template will working then maybe only 10 best practices. The project maybe only take lessons from other projects. We might go to [CompName] or [CompName] and We can ask, [CompName], can you please provide all the reference this regarding SAP and I can send 1000 references, 1000 reference, and if that can ask them, can you send me some best practices regarding a sustainable project, and I may get five. So, you're always going to find it so inclined. Let's do this together. We only have 5 references and for experience, we only have six years of experience. But this SAP transformation, we have 40 years of experience. Whatever is then then OK, they're more open minded. They are more likely to use more innovative aspects. So that's the most difficult thing about the most. The difference between the second aspect is, yes, the sustainable project can be from the economic side, from the revenue side too. Of course, because we have to implement, let's say, new software for one million Euro and this software optimizing my process network and save me a thousand tons of CO2. But does not saves me a euro. So, the sustainable projects with the non-sustainable projects can have a negative revenue or negative outcome on the economic side and they except this. They already know that. They said, yes, we will. We have to pay for ten thousand tons of CO2 savings, one million euro, and know that we will not have a direct saving euro.	PoO, eDA, OP
71.	I	But some studies, some companies that	
72.	R1	if it's a country if it's a law if we have to charge for CO2. Then I have to say. Yes. I saw an example in an Asian country or in China. No, they do not have any charge for CO2. So, yeah, well, India or China, they do not have much of this. The entire South America do not have this. Even Canada, kind of do not have these fee. OK, so when we're going to Canada, they do not have this fee and say, OK, let's implement new software. OK, what was the benefit of the software? I say you would decrease your CO2 because it would cost one million euro or dollar. OK, we	DSr

		can do this, but it's just one negative outcome of the revenue on the financial side.	
73.	I	But I guess that is mostly related to the awareness and the legal aspects that is implemented by the developed countries rather than the developing countries. Right?	
74.	R1	And sustainability increasing projects only working in developed countries. It will never go to Africa.	
75.	I	So I think, we have done for now., So thank you so much for your input. So we are planning for a survey. We are still working on that. And we will send you also the link to the survey and try to answer if you feel comfortable. And that's something I want to add. Based on that, I know we are supposed to finish this interviewing and transcribing, we will do data analysis. So we find our work and defending the master thesis, then would like to share the thesis work with you.	
76.	R1	OK? So that would be my last question. Ask if it's possible I would not share this in a confidential way or the blacked-out way. I would just, let's say, skip or screened the script every day regarding your most. So I'm not expecting this response. And from my point of view or my last activity is to send you the NDA, Right? OK. It was a pleasure. I hope I can support you or your master's thesis and. Yes, see you soon.	
77.	I	Yeah, it was nice talking to you and you could very valuable insights.	
78.	R1	You are welcome	
79.	I	Thank you so much. Have a nice evening. Bye.	

Appendix 4: Interview Transcript-R2

Information
Respondent: R2 Position: Project Manager Sustainability and Strategy Start Time and Type: 2021-04-29, 17:36, eMail Participants: R2, Shradha Panda (I) and Rani Ranish (I)

Dimension	Color	Theme ID
Digital Sustainability readiness	Turquoise	DSr
Perception of Organizations	Yellow	PoO
employment of Digital Avenues	Pink	eDA
Strategic Evaluation	Grey	SE
Relationship Management	Green	RM
Outsourcing Performance	Red	OP

Row #	Per-son	Information	Code
1.	I	How companies are incorporating Digital avenues for achieving sustainability goals.	
2.	R2	Digitalization plays a critical role for the future of businesses across all various industries. Conventionally, companies adopt technology to be more efficient, increase productivity, simplify processes and reduce paper usage and waste management as part of its sustainability initiatives. Then as technology evolves, we understand it also presents data security concerns. Thus investment in technology and IT risk infrastructure goes hand in hand. However, the COVID-19 pandemic actually accelerates global digitalization across all value chains, to ensure business continuity and security of supplies. This impact both internal stakeholders (workforce etc) and external stakeholders (customers, suppliers, investors etc). We need to understand that COVID-19 is an ESG risk and if you refer to the Global Risk 2021 by the World Economic Forum, other ESG risks such as Climate Change are top in the list. That being said, as digitalization will play a greater role in the sustainability of businesses, moving forward, companies will align their digital strategy to ensure it meets the other business and ESG risks that will impact their business as well as providing competitive advantage via digital integration.	DSr, PoO, eDA

3	I	Are companies a) building in-house teams of sustainability experts, or b) outsourcing, by consulting and collaborating with sustainability experts of other firms, or c)both in-house and outsourcing	
4	R2	Depends on the maturity of the company. But primarily, it would be c) both in-house and outsourcing. Reason is that Sustainability issues are holistic, always evolving as well as require involvement and collaboration across various functions and from external parties. For instance, internal Sustainability teams might not have the capacity to manage the IT issues that relates to sustainability, vice versa, internal IT teams might not have the capacity to translate IT strategies into the sustainability strategies. For some cases, internal teams would require external experts to advise and develop sustainability-related initiatives (including for IT).	SE, RM
5	I	Based on the above context, we would like to apply its relevance with standard sourcing frameworks that have been established for many other classic implementation projects (for example ERP, IT, and other products and services) and how sustainability-specific engagements differ from any other project engagements.	
6	R2	This requires a lot more detail to derive. Overall, sustainability-specific engagements would also go beyond IT.	

Appendix 5: Interview Transcript-R3

Information
Respondent: R3 Position: Senior Manager Start Time and Type: 2021-05-08, 10:35, Zoom video call Participants: R3, Shradha Panda (I) and Rani Ranish (I)

Dimension	Color	Theme ID
Digital Sustainability readiness	Turquoise	DSr
Perception of Organizations	Yellow	PoO
employment of Digital Avenues	Pink	eDA
Strategic Evaluation	Grey	SE
Relationship Management	Green	RM
Outsourcing Performance	Red	OP

Row #	Per-son	Information	Code
1.	I	Hi, It's nice to connect with you. How are you?	
2.	R3	I am fine. I am fine. Thank you...I am looking forward to talking to you.	
3.	I	So, we thank you so much for joining today. We have mailed you the thesis premise and would like to explain again about what we are trying to do is research on the relationships between the stakeholders of people are working in sustainability engagements and trying to put it into a framework of outsourcing my research on IT outsourcing or submerging outsourcing logistical outsourcing, but not much about sustainability as such. So, companies who want sustainability initiatives do reach out to people who have has done these kinds of projects and how they interact what are the important metrics what are the success factors those plans we wanted to understand.	
4.	R3	if I understand correctly, what you are trying is, to understand how outsourcing would work on the sustainability factor of the organization. Is that correct?	
6.	R3	Ok, ok	
7.	I	so, you are connected with this more because you have done a lot of sustainable initiatives. So, I just simply wanted to know how you are connected with the stakeholders, what initiatives are taken to map initiatives and also what digital technologies are being used nowadays.	

8.	R3	When it comes to the air conditioning industry, from which I'm a part of. So as regards to outsourcing. See, If we talk about sustainability in relation to the air conditioning industry it's majorly related to energy efficiency. When it comes to outsourcing, the energy efficiency again depends a lot on the electronic components that are used in the air conditioning industry. So, I'm searching what to happen for the electronic components that is one thing and then maybe for integrating the systems that is the second major factor for which there are certain organizations, which specialize into this integration activity. So that was that outsourcing would happen.	SE, eDA
9.	I	So they are obligated with the sustainability aspects also?	
10.	R3	not technically, sustainability aspects, but it is majorly related to energy efficiency. USP when it comes to energy efficiencies cost savings, this is not really sustainability that people talk about, they talk about cost savings.	DSr
11.	I	So I'm actually really wanted to also ask that transcribing this interview, and would like to know if you want to be named or anonymous, so that that way we can say no, in the form if you want	
12.	R3	It's alright with me, it's not much of an issue.	
13.	I	Okay. And if you have any problem with recording this video session?	
14.	R3	no, no, that's fine. As long as you don't use my face, that's fine	
15.	I	It's just for transcribing.	
16.	R3	Of course. You can use it. That's fine.	
17.	I	Yep. So coming back to the topic, Could you tell us a little more about your role in the company and how important is sustaining aspects and what kind of work relates to it?	
18.	R3	I started my career by being in sales in the air conditioning industry. But currently, for past three to four months, I have been in service. So, after aftermarket service operations, is what I do right now. When it comes to sustainability, there's are some part in my role that talks about sustainability. And it's, as of now, it's majorly related to safety aspects. So safety is an important consideration for us. And so that is the only most important thing in my industry when it comes to sustainability.	PoO
19.	I	So, it's like the social aspects of sustainability.. Okay. So would you say that is one of the social aspects of, the safety and do you think it is the core strategy for the business ?	
20.	R3	Yea, it is a core strategy for the business. Because without safety, we cannot do anything. If it's an unsafe condition, we turn down the business or turn down the operations.	DSr
21.	I	and also Is there any legal aspects associated with it or is it just the company's goals ?	

22.	R3	Legal aspects are obviously associated with it in the sense that if there is an accident or an unsafe event, then there are a lot of legal and financial repercussions of it. So, this safety is majorly used to avoid those repercussions.	PoO
23.	I	Yeah. Okay. So, but then, as you mentioned, that mostly this is to give a competitive edge to the company. right? Not much with the social values?	PoO
24.	R3	Yes, yes.	
25.	I	So, it is not much of an ecological aspect right now. Is it any how related to the UN sustainability goals or any?	
26.	R3	No, as of now, it is not.	
27.	I	Okay. So, would you say that these engagements, any digital technologies are being used for analytics or any?	
28.	R3	Digital technologies are being used, I mean, It's mostly electronic rather that IT, but yes, there are there are two major areas in which digital technologies. One, like I said earlier for integration of various systems, is the so-called building management system. So, what happens is that the building management system, users are the software to monitor the energy consumption of the system in a building, the major electricity contributing systems are people movement systems that are elevators and the air conditioners. The air conditioning is the biggest energy consumer system, especially in a country like India. So, what the building management system does is that it monitors that it optimises the working pattern of the air conditioner, so as to save the energy. So, this is one of my critical systems and the second part, where digital systems are used there are lots of cases going paperless and using digital technologies, right or whatever services we offer to eventually be we have to provide reports of the activity that is being done. So that activity is being done digitally. So, people could be provided digital.	eDA
29.	I	This has been a change in electronics, in terms of	
30.	R3	Yes, So there are some other components as well, when it comes to Building Management System, it will not be used in a broad concept. But then and there are small components of it which are used in advance system which you know, which synergize whether together to give proper savings to building management software. There will be actuators will be based on the occupancy of the room there will be fire actuators which work only in case of a fire. So, you don't need to run the machine constantly. So, these are small components which provide the transparency of the building management system.	eDA
31.	I	So, kind of like sensors, digital sensors okay. So, like we see in advertisements that, let's say, the products are energy efficient and all of the certain kind of these sensors.	
32.	R3	yes sensors. Yeah. So, sensors give major inputs to the system and then the system monitors itself and modulates the system	eDA

		itself to provide the highest benefits. There is no occupancy that the sensors senses it and then gives the inputs to the system and then the system wants to lower and lower down.	
33.	I	Okay. So, while dealing with clients like major clients and stakeholders, so, are they also concerned with these sustainability aspects or are they just concerned with just about the social and economic aspects	
34.	R3	A lot of customers nowadays are concerned with the digital sustainability aspects, especially the corporates and the start-up customers are quite large. Such a great number of customers are interested, because, See our customers, are at times, you know, suppliers to some other franchise. If we talk about a building, a builder will buy from us and then he leases out the space to the end consumers. So, it becomes a selling point for people to think that isn't one part of it. And secondly, if it's a corporate they have their own house recovering appliances covered on it	DSr, SE
35.	I	So, okay, they are also very much concerned about it. So, any specific challenges or do they highlight or any requests which corporate or other suppliers ask for them to achieve sustainability ?	
36.	R3	So I can say this whole period of last maybe seven or eight years also the request has become something mainstream. So, the industry has shifted from a non environment friendly region to an environment friendly region. The share of energy has gone up like anything. So far the market has consciously moved towards more sustainable products and technologies over the last seven or eight years. So, if we talk about current requests of the consumers, there is not much that can, you know, surprise us or be good in a position that can not satisfy the last seven or eight years. It has gone in a long way in the last seven eight years.	PoO, DSr
37.	I	So, corporate and consumers everyone has been kind of aware and okay. So, would you say that there are any particular strategies, which are being implemented for these requests or is it a generic growth strategy	
38.	R3	See now, this has come into a generic strategy. There was a time maybe 10 years ago when products were produced, which are more energy efficient than the environment friendly. So, during that time, there was a lot of efforts organizations had to done to educate the customers. At that time, there was also some level of demand and supply gap. So definitely, there was supply there was demand, but maybe they did not use to meet each other, but as of now, it has become so big that there's no gap anywhere that is present now.	PoO
39.	I	okay. So, coming to marketing So, is there any digital storytelling happening for the products	

40.	R3	yes or no at least for us organizations, they have moved to digital marketing platforms, mostly social media and websites Facebook and Instagram marketing has moved to social media.	eDA
41.	I	Do they highlight the sustainability initiatives as you have mentioned, the generic rules and all? Are they highlighted?	
42.	R3	yes. So, a lot of organizations talk about how efficient their products are. They also talk about all the CSR initiatives. If they stand, the social media and LinkedIn, they also talk about the CSR initiatives and they also talk about the employers stay with us, the energy efficiency of course, they also talk about maybe how efficient supply chains are, they are all talking about these.	SE
43.	I	Okay. Okay. So, in your company, do you engage with other sustainability specific NGOs. There are many small organizations who work on these aspects. So, they will engage with them or just being	
43.	R3	Yes, these all come under CSR initiatives. But apparently, for the past two years not much has happened at the individual employer for whatever CSR initiatives one they have been directed backwards towards this covid pandemic, okay. Other than that, not much external CSR initiatives	RM
44.	I	Could you please elaborate more on what has been done so far with or what you have come across?	
45.	R3	I don't remember but last year we did something related to arranging ventilators and software corresponding to that. I mean, I think honestly, they started and adopted it, but I was not a part of it.	
47.	R3	Sure, maintenance has to be provided to system run and obtain efficiency is actually ----------	
48.	I	So, while coordinating these. So, do you connect with the finance or marketing or HR related functional entities or is it just the top stakeholders	
49.	R3	There are cases when cross functional planning has to be done, but it happens quite at a higher level. So by the time when these activities come to me, it is just a routine activity so the integration happens but it happens at a higher level.	RM
50.	I	Okay. So, would you say that these sustainability problems vary from industries to industries or within different products, there are different variations or similar in every aspect ?	

51.	R3	Competition is ... by industries to industries you mean various companies in the same industry., right ? So, sustainability problems are similar across all the organizations of this industry related to energy efficiency. Okay the organizations may have different CSR initiatives, but the core business remains the same and the energy efficiency is a big key aspect that provides a competitive edge to the organization.	OP
52.	I	okay. So, what you say that there is better trust between the client and your clients these are on sustainability initiatives	
53.	R3	Yes, there is actually So, what happens is there are a certain amount of clients who value energy efficiency beyond anything. They value sustainability and energy efficiency beyond anything. In such cases we do have a certain competitive advantage over our competitors when it comes to the you know, there are always some customers who are quite expensive then even if they go for energy efficient technology, they may not go for the highest efficient product. Because there are customers who value that.	RM
54.	I	So, just wanted to know, your clients are mainly from India on outside also	
55.	R3	They are always from India.	
56.	I	So, so, you would say that, India is also getting a lot of awareness, the companies or the corporate companies are aware	
57.	R3	the people are aware as of now, there are awareness started to increase and organizations have their own goals. See, in air conditioning industry, there's something called green building. The concept of green buildings is quite an old concept. By old I mean around eight to 10 years old concept. So, it has been taking roots. The Indian green buildings have been working towards it. very, enthusiastically. So, people are aware about sustainability, they are aware about the advantages that can be gained because of focusing on sustainability. So, they are aware.	DSr
58.	I	And cost is not an issue for that right. So, they are ready to pay	
59.	R3	There's always a trade off between that. So, at times the cost has to go up, but then you know, they cut some corners and end up finding some high efficiency thing. It is always a trade off. So, they will spend higher rates on some aspects and not spend on those other aspects. So that is how it is designed.	PoO
60.	I	So, okay, so, in order to get an eco-friendly advantage, they are managing something else, prioritizing is still ….	
61.	R3	yes. Yes.	
62.	I	And, would you say that any upcoming future any more digital technologies are coming up or will be incorporated to enhance the better …..	
63.	R3	I honestly don't really comment on that because this this system, the product or the industry that you operate in is very, very	eDA

		hands on physical in nature. So, digital technology, whatever comes it comes in. This will always be more focused on the peripheral aspects of the being working of an air conditioner. The core will always remain the same and the core will contribute like maybe around 60 to 70% of the product features. So, yes digital may come up with some value-added services like maybe you know, you can monitor your air conditioner from your mobile phone investment, you can switch it on, switch it off, that sort of things, but the core is always going to remain very, very physical and mechanical.	
64.	I	What I meant was that these digital technologies can be an enabler for enhanced performance of the ecology itself ?	
65.	R3	that is already happening. So, okay, efficiency or because of using the building management system for eight to 10 years now, the software itself has become quite smarter, and it will continue to become more efficient. Then the second aspect where digital technology will go up is basically preventive maintenance and what is called predictive maintenance and all. And so that that will definitely come into picture.	eDA
66.	I	So it's like, if some problems will occur and	
67.	R3	So basically, sensors and essentials and it is an Internet of Things concept. So, you can read it, when a component is when and what are the life remaining services that you can take corrective measures before the failure happens. So avoiding unit downtime	eDA
68.	I	for the raw materials and resources, which are being used for the electronic components, so does your company show the carbon footprint along those stuffs?	
69.	R3	Sorry, I'm not aware of that. Okay	
70.	I	Okay, then I think we are almost done	
71.	R3	That one I just do, one thing you can do is you can go to my LinkedIn profile. And you can find all my classmates connected. So you just want that thing. And let me know if you want to, you know, if you find the right suit with the person and you can then let me know	
72.	I	Oh, check it out. Oh, yeah, it was nice to connect with you.	
73.	R3	Okay, I just have a one request. While at the start. I did not think of it. But I would prefer if you keep me and my organization anonymous, I hope that that would not affect your thesis.	
74.	I	We will send you a NDA form	
75	I	okay. Okay. Can we say that the industry that you're working on?	

76.	R3	yeah, that's an industry you can mention the name of the organization because I don't know whether it would be right or not, but can mention the industry. But don't name the organization and all that.	
77.	I	that's true. Also, that we got new insights that India is also going towards the path of sustainability.	
78.	R3	Yea, last few years, there has been quite a lot of progress in India. So when I was doing my thesis, I was also struggling to find and struggling to explain the concepts to people about my thesis. So the last two three years, there are probably either I have realized or dive in this industry or realized that more people are interested. So that might have happened. But yes, there are developments.	DSr
79.	I	Okay, thanks so much for your time. It was nice talking to you.	
80.	R3	You are welcome.	

Appendix 6: Interview Transcript-R4

Information
Respondent: Abhijeet Position: Consultant Start Time and Type: 2021-05-11, 15:50, Zoom voice call Participants: Abhijeet (R4), Shradha Panda (I) and Rani Ranish (I)

Dimension	Color	Theme ID
Digital Sustainability readiness	Turquoise	DSr
Perception of Organizations	Yellow	PoO
employment of Digital Avenues	Pink	eDA
Strategic Evaluation	Grey	SE
Relationship Management	Green	RM
Outsourcing Performance	Red	OP

Row #	Per-son	Information	Code
1.	I	Hi Abhijeet. How are you?	
2.	R4	Yea, I am fine, Thank you… How are you?	
3.	I	We are fine. We are happy to talk to you.	
4.	R4	Yea, My pleasure. I am also looking forward to see how I can answer you.	
5.	I	Great. So I will give a short picture about our thesis topic. Many organizations want to be sustainable they have a lot of sustain-ability initiatives, there are many 17 UN defines SDGs, which they want to be compliant with. Still many companies do not know how to perform the activities or strategies they want to they should apply to attain those things, those goals and yeah, so, they don't have that much more competency to achieve	
6.	R4	Actually, the thing is sustainability is not compulsory for these corporates, it's not mandatory for them. The corporates are not taking sustainability as seriously, in India.	DSr, PoO
7.	I	That is true for India Of course, but in Europe it's not the same, there are many taxes and legal compliances which companies have to follow. And because of that, it is very, they are very aggressive towards it. But you are true. In India, it's not that much, often not a serious motive right now	
8.	R4	it's not mandatory for them	
9.	I	Correct. So, but yet our premise is that companies will want to achieve it, but they don't have that much core competencies and they engage with sustainability providers, sustainability	

		consultants and experts who can help them drive these goals. And our premise is to research these relationships between the stakeholders, clients and vendors, and how they are interacting in the setup, in terms of the outsourcing framework, which we usually see in any ERP or IT projects, which happens like many consultancy like Capgemini TCS, they provide IT services, right. So they are outsourcing companies outsourcing IT services. So there is a, there's a lot of academic writing about these kinds of frameworks. So we want to put it in sustainability specific initiatives. That's where we wanted to discuss some of the questions with you. And also, shall we record the video, so that it helps for transcribing. Would you want to disclose your name on what you want to remain anonymous in our interviews.	
10.	R4	disclose, disclose My name no issues.	
11.	I	Okay. And it's fine for to disclose your company also.	
12.	R4	No, no, no, just my name. Okay.	
13.	I	That's fine. So we will send you an NDA, a nondisclosure agreement format, which our university provides. So you can have a look at it. Would it be fine, if we record the video from now?	
14.	R4	Sure.	
15.	I	So, we'll start with our questions. Firstly, we would like to know a little bit about your role in the company and how you are involved in the sustainability specific topics.	
16.	R4	Okay. Currently, I'm working with [CompName] and I have been placed in the client location in Odisha, Anugul district. Here I'm working for the state administrational level. And here I'm looking after various social development projects. As I said to you in the WhatsApp that I'm also focusing on the circular economic club. Then, the social development projects should include sanitation, agriculture, education and rural development, these are the aspects that I'm focusing on. And accordingly, framing the policies and how those things would be implemented at the ground level, how those projects are going to be implemented at the ground level and how to include benefits for the people will be directly in touch with these projects.	eDA
17.	I	okay, so it's more about the social perspective of the 3 pillars of sustainability.	
18.	R4	And generally, generally, as I'm working for the government thing, since, since my client is government. The strict margin is not considered here. So we focus only on people and the planet, not on profit. If we work for the corporate, typically they look for profit. Well , But the government doesn't think much about this profit. Coming back to this project thing in sanitation, they talk about sanitation and working on solid waste management, and plastic waste management. Currently, we have tied up with UNICEF, and UNDP. For the setting of faecal floods, management plants like MSTP treatment plan, we are planning to set up in Odisha that could happen for the first time. You might	PoO, RM, OP, SE

		notice, none of the districts has done this before. So we are planning to set up this treatment plan, SSDP faecal sludge treatment plan, for solid waste management, plastic waste management keeping circular economy as a model and then the fourth being is an innovative approach has been planned, it would be involving the self help groups or the self help groups SHGs you might have heard this term SHGs. Yeah. So we are planning to construct MCC and MRF MCC in the sense and this is a material composting centre that would like to compost out of all that dry waste. So, that would convert this dry waste into a compost. So, we are planning to set up within a 'Grama Panchayat' , village level in the rural areas to be specific and similarly, a treatment plan for plastic waste management also, and we will be handing this in this project, the funding would be done by the government, but it would be run by the SHGs and the village village committee. So in that case, the circular economy thing comes Yeah. So that's what was base management. And the third thing is we are planning to convert all the schools in our district to five in terms of an illustration, we will be providing them better sanitation facilities to all kinds of sanitation means better toilets, better hand washing facilities, all kinds of hygienic, proper hygienic facilities will be provided. And water availability then toilet for both physically handicapped results for normal students also.	
19.	I	That's a nice thing, that's nice to know.	
20.	R4	So this is the project we're doing with UNICEF. And similarly that SSDP project to faecal sludge management, we are tying up with UNICEF and UNDP. So this is sanitation. And in health, we have planned many projects. We have planned around 18 to 19 projects that have been planned in the health sector. Similarly in the education sector also we have planned around like 15 to 16 projects that will be grounded in the next one to two years. Yeah. Major focuses on like, as I said earlier, the major focus lies on the planet, and people don't look much upon this profit. Since it's a government funded project.	
21.	I	But then, when the model of circular economy is kind of the base of your projects, so there might be some revenues coming out of it like on the by-products and all. I'm thinking that those will be going to the villagers and the people directly, right?	
22.	R4	Exactly, for that also we are collecting these user fees from the villagers which will be 10 to 15 rupees. So, that would be the income kind of thing and the compost pit that is the byproduct if we sell it to the market and the profit that has been generated from that would be utilized for development of village activities.	OP
23.	I	So, would you say that the sustainability concept that you are engaged in kind of generates or rather supplements to the economics of the people as well as kind of it's a very nice strategic move that the government has is trying to implement,	

24.	R4	right. Yes, definitely, definitely.	
25.	I	So, these strategies and these projects, how often do digital technologies help you moving forward	
26.	R4	for digital in terms of digital technology, we have created a database management system being a record of all the beneficiaries, all the beneficiaries involved in these projects, for example, in annotation, we have data about different ram projects, approximately 1000 villages and that comprises maybe some lakhs of population. So, I want the databases where we keep a record of like, which type of beneficiaries are having access to what kind of facilities	eDA
27.	I	some kind of analysis also helps from the database?	DSr
28.	R4	It does. It does. Its not fully reached its potential, but, yes.. there is a promising future in this regard	DSr
29.	I	just wanted to ask, like, apart from the sanitation and waste management, are there any projects ongoing in terms of forestry like people to avoid deforestation or something like that?	
30.	R4	It is going currently it is going, Yeah. In terms of the deforestation, many, many, many activities has been planned previously.	
31.	I	Ok, like plantation drives?	
32.	R4	plantation or be it like this burning of the latest issue came like fire burning forest burning, it was the latest issue in Odisha. So, the department is also creating awareness and the banning of burning in this forest areas.	
33.	I	Is government or your team also does they take help from the social media to create awareness or publicise the efforts that you're making?	
34.	R4	Definitely, we have a Twitter page for this, we have our Twitter page, where we post all kinds of activities that will be awareness activities or be any project update things we posted in our Twitter handles page	eDA
35.	I	marketing and branding also right	
36.	R4	and we even tagged the CMO, CMO office and respective departments	
37.	I	will also come into digital influence towards sustainability.	
38.	R4	Exactly, Exactly	
39.	I	So, based on your interaction with multiple stakeholders and also you must be interacting with industry experts, right? how does it go, like while interacting with them do have to give some basic setup or Are they aware of the things that you're doing something.	
40.	R4	Talking about this industry, we have our NALCO you might have heard NALCO then we have JINDAL. We have TATA. So we have many public sectors here. So with the help of these corporates for funding some projects. The second thing is they even help us out in planning many initiatives in few of the areas as well, for example, NALCO might be if NALCO wants to do some activities in that very peripherals, that we coordinate with them, how it can be done easily. That is, firstly, if we want to	RM, SE

		fund a few projects, they also help us in funding the project. For example, that MCC MRF thing that I talked earlier, we were planning that one of in one of the Grama Panchayats chats, you will be taking the help of NALCO. So a completely funding project. And yeah, yes. And they're, they're also they're also involved in all these activities about sustainability.	
41.	I	So, would you say that it is their CSR goals or corporate goals or social responsibility?	
42.	R4	It is their CSR goals	PoO
43.	I	So, what do you see like, some specific challenges which you face while connecting, contacting or interacting with them?	
44.	R4	With the corporates Or with the government ?	
45.	I	With the corporates, with the government even you interact with the villagers also, I guess, to	
46.	R4	With the clients, with my clients you might be knowing these government structures, how it works, the progress is slow are very slow and so like, to project the things on the ground, it takes a bit of delay. It happens, but it's a bit delayed. So, regular follow up needs to be done with them. From them, to the client. And for the villagers. For the villagers, I don't think there is much of an issue with the villagers, but we need to do regular awareness campaigns or IC activities to make them aware about all the facilities the government is providing, or we are planning to provide our whatever facilities we are planning to provide a rigorous IEC activity are rigorous campaigns needs to be done to make them aware.	OP, RM, PoO
47.	I	What is IEC ? I didn't get it.	
48.	R4	IEC is information education and communication. It can be in the form of digital platform, or it can be in the form of a role play, any kind of thing, any kind of thing that attracts the villagers.	eDA
49.	I	While presenting any proposal, have you faced any challenges or difficulty to elaborate or make your clients understand or clear any knowledge gaps?	
50.	R4	You mean, pitching my strategies or pitching me I bring my ideas to my clients, right? Yeah. Sometimes it's a bit difficult to make them convince and sometimes, it's like it goes in the flow.	
51.	I	Okay. Would you like to elaborate one or two instances,	
52.	R4	For example, yeah, that, for example, this MCC thing that I discussed earlier. But my initial plan was that, to make that, to make that thing to be funded by someone rather than self sustainable, because that thing involved like, you might not say that all the beneficiaries would be willing to pay the user fees, some minority whereas some might even deny that we won't be paying the user fees in that case, that would become a big failure the project have become so for one or two or three years, we will be needing a help of some corporates who would be like literally funding that thing, whether like funding that thing	PoO

		in the in the sense are we providing this some kind of help to this SHGs, but like the client said that the let us make it self sustainable, why should we really focus on why we should initially for we should take the help of corporates let the project be self sustainable. So that was one incident.	
53.	I	Okay	
54.	R4	when they tell you I had to like convince my clients planter, this might be the issue, if we initially focus on self sustainability rather than going rather than taking the help of other stakeholders.	
55.	I	There is the need for certain investment in the initial pace, but once it is, it gives the benefits then it can be shifted towards the most self sustainable project.	
56.	R4	Yes, and here the concept of sustainability is slowly emerging.	
63.	I	So that's nice to know. So, okay, so, I would want to know, what kind of coordination and trust factors are present in the implementation phases of these projects. How do you coordinate? How do you build the trust with the various stakeholders?	
64.	R4	Yeah, in terms of coordination, the government is as I said earlier, the government is very slow. Because this file processing thing is there. In private, we take the help of emails, but in government we need to do everything in files, lots of paperwork, it's like extreme paperwork, if and extreme paperwork that to three to four channels. If one channel is absent while one channel is not in the office, then that file processing gets delayed. That has happened.	RM, OP
65.	I	Do you feel that everyone is going more digital? Right. So do you think that this will soon be easy task or rather, it will improve with time management?	
66.	R4	In terms of the government, I don't think it will improve it will come into play that soon. It will be difficult for them to handle actually. For them to manage.	DSr
67.	I	But the national government does have a lot of digital avenues right now. Not sure.	
68.	R4	No, in the state government most of the things will most all the things are done in paperwork, hardly do things in emails undertake the help of any digital platform.	DSr
69.	I	Okay, so I think with this COVID situation, How are things working? Because it has led or compelled us to work from home or avoid contact? How does it affect you with the project and the project work?	
70.	R4	Project is continuing for us. And it runs in like 50% attendance. Yeah, it's still physical, because of this filing process file process, yeah. They have to take precautions. Now, I have already done two COVID tests.	
73	I	It's an unfortunate situation that we have been going through for the last one year. So, one last question I had was, in your field of work, do you face any risks? And what kind of mitigation do you plan to overcome the risks and challenges?	

74	R4	In terms of risk, like we had done this initiative like we plan of planting holy 'Tulasi' plant to make people not to defecate openly. So, it created a big, big incident. Like villagers were not happy from that approach. So that was one of the biggest risk. And second thing was when we tried to involve school-children's for meeting people for meeting the parents aware about this benefit of sanitation or other facilities, so that also instigated them instigated the parents, like 'why are you involved in the children'. Yes.	
75.	I	So it was more of a social blockage which inhibits	
76.	R4	the social stigma kind of thing.	PoO
77.	I	But any problems from the corporate	
78.	R4	No, No problem from the corporate.	
79.	I	Okay. I think I don't have any questions after this.	
80.	R4	I feel I've given all the answers.	
81.	I	Yeah, it was. It was quite illuminating. And we got quite a lot of new information from this session. So many activities and planning going on for the betterment of the society. Good to know. Okay, then we can wind-up this call. Thank you so much.	
82.	R4	Let me know, if you have any doubts? Yeah, just let me know.	
83.	I	SurelyI will send you a survey link. We are doing a survey on the similar lines. Okay.	
84.	R4	Okay.	
85.	I	So thank you so much for your valuable time. It was nice talking to you.	
86.	R4	You are welcome. Take Care	
87.	I	Bye. Take care	

Appendix 7: Interview Transcript-R5

Information
Respondent: Julian Fox Position: Director, Sustainable Sourcing and Operations Start Time and Type: 2021-06-04, 11:00, Microsoft Teams video call Participants: Julian Fox (R5), Shradha Panda (I) and Rani Ranish (I)

Dimension	Color	Theme ID
Digital Sustainability readiness	Turquoise	DSr
Perception of Organizations	Yellow	PoO
employment of Digital Avenues	Pink	eDA
Strategic Evaluation	Grey	SE
Relationship Management	Green	RM
Outsourcing Performance	Red	OP

Row#	Per-son	Information	Code
1.	I	Good morning! First of all, thank you for accepting our request and spending your valuable time with us.	
2.	R5	Yea, Good morning! It’s my pleasure.	
3.	I	So, we have sent you an email with a short explanation about our thesis. Hope you got some idea about our work. Sustainability initiatives also. So that is what we want to understand. And even to go more, one step further, we want to understand, are these initiatives driven completely entirely within the companies internally? Or are they interacting with other companies? There are some niche companies who provide sustainability expertise. So, do they interact with them? Or have some assignments with them? So that's what we want to know.	
4.	R5	okay	
5.	I	I would like to start by saying that we want to record this interview if it’s fine for you.	
6.	R5	That's perfectly fine. Go for it.	
7.	I	Thank you and we shall start the interview. So could you elaborate to us a little bit about your role in your company and how you are involved in sustainability specific topics?	
8.	R5	Certainly. I'm Julian Fox. And I work as director, sustainable sourcing and operations in Tetra Pak, Central sustainability team. And I've been working there for three and a half years, just over three and a half years now. Before that, I worked in our supply chain organization. And before that, I've worked in	

		our Development Organization. So, and I've been attached back since 2005. So, I'm just about no longer a new boy. we have quite a complex value chain. So, I needed the experience of working in the Development Organization and then working in our supply chain to be useful in the role that I have now.	
9.	I	So in this role, so would you say that you are connected with internal teams, or both internal and external stakeholders,	
10.	R5	both internal and external stakeholders, I have a very small team. It's four people. And we work for operations, we work with I mean, just about every other, every other group in the company, particularly now with facilities and real estate management, because they are having responsibility for energy management, and for site management, so some of the environmental impact categories are managed by them. And then we have the business organizations like supply chain, like Development and Engineering, Services, and our processing and equipment. (This is a separate part of the business that installs, commissions and maintains our equipment at customers' sites. They also train customers and deliver consultancy services) So that that's on the operations side. And that work is about setting targets for environmental impact by energy, climate, energy efficiency, water, waste, biodiversity, and for a certain category of site, air emissions. Sourcing. I work with our procurement for Base Materials. And by Base Materials, we mean the materials that we turn into packaging materials for our customers, and we procure just over 3 million tonnes every year. If you go to our website, and look under sustainability and responsible sourcing, you'll find quite a bit more detail on how we work with our suppliers. And we work with our certification organizations like Forest Stewardship Council (FSC) with Bonsucro, which is for sustainable sugarcane, Aluminium Stewardship Initiative (ASI). And we're just engaging now with ISCC (International Sustainability & Carbon Certification) on certification for polymers from actual plastic waste.	DSr, RM
11.	I	So any digital technologies that are being used to enable these initiatives?	
12.	R5	Yeah, so everything is having some part in our enterprise requirements planning, software ERP. When it comes to climate reporting, we use a software from a company in Germany called [CompName]. And we know that internally as SoFi, and that that's where all of the organization's make reports about their environmental impact, energy used, water used, waste produced, and so on, it actually has a bit of a broader scope. But that is our sustainability reporting tool. And our suppliers are also reporting into it.	eDA
13.	I	Okay. Okay. I got it. So, would you say that, in your opinion, this sustainability is becoming a core strategic pillar for the business and cooperation?	

14.	R5	I can say that. We didn't call it sustainability then. But in 2010, when we launched our 2020 strategy, one pillar of the strategy was 'drive environmental excellence'. And then, of course, we should say that sustainability has three components economic, environmental, and social. And so, of course, that was a focus on environmental. Now, in our 2030 strategy, which was released during 2020, we have a 'lead the sustainability transformation' pillar. And that is covering product sustainability aspects and value chain sustainability aspects, then, we do have other social things like diversity inclusion, like protection of people, both inside the company and with the customers we work with and suppliers, we work with the cover under another pillar. And we see HR functions taking lead.	DSr
15.	I	So, marking it as a main strategy. So, would you say that it gives a competitive advantage and gives the good brand value? Also, will it complain with UN SDG goals? So are these considered while driving the stimulate initiatives	
16.	R5	yes, they are. We have if you like, our own brand, promise to protect what's good. That's people, food, and planet. And that that is because it's closely aligned to our company core values. Then our customers tend to have very similar sustainability, ground the that we support. So, we also do this for our customers. So therefore, it's very important because they place some part of their reputation with us when they buy from us.	PoO
17.	I	In these initiatives, how would you define digital sustainability. According to your opinion..	
18.	R5	I don't know. What I would say is that the group that I work in the group that I lead, we are mainly driving change projects. So identifying what the sustainability requirement is, and then driving a project that will embed that requirement into the operational activities to the rest of the business. And so, that means wherever possible, using workflow automation and digital technologies to support that it gets into the business. So we operate chains of custody from FSC from Bonsucro, so that we can put the FSC logo on our packs and the Bonsucro logo. And we have automated the claim transfers from receipt of the materials that are certified all the way through our factories and then through all the order documents. The sales document and so on. That's all automated in our ERP system. Then as I said, we have SoFi. We also have a tool that we call Package Master, that enables us to track quantities of materials that go into packages. Because we have, we have a large number of what you would probably know as SKUs- Stock Keeping Units, you know, you need to code for a product. And each one is different. And so when we want to show, for example, customers, the lower carbon footprint of a package with renewable polymer from sugarcane, rather than fossil farming, then we need to be able to track all of the quantities in each package. And it might vary from factory to factory. factories are largely standardized.	DSr, eDA

		And then on our sustainability website, you will see we have a carbon calculator, which is approved by the carbon trust. So that's another piece of software that allows anyone to look at our package portfolio and explore the carbon footprint, you can choose the different qualities.	
19.	I	Yeah, actually, I have seen that website because in one of my courses, we had a case study for Tetra Pak and using the RFID tags. So, we did some research for that case. And I have seen that website and the values. It's a nice webpage. Yeah, it was quite interesting.	
20.	R5	Oh, nice. Thank you!	
21.	I	Yeah. So based on your experience and interaction with your clients and suppliers as well. So what are the most common sustainability specific challenges that are usually highlighted as the main problem areas. So, what would you say?	
22.	R5	So, if you're talking about base material. Base materials, we use quite a bit of land for our base materials. It's about the size of Belgium. And 99% of that land is forests for our paper board. And we have everything from tropical plantation forest in Brazil, which is mainly Eucalyptus wood, which has a harvest rate of between seven to 10 years, all the way up to boreal forests in the Nordics where the harvest rate might be 70 to 120 years. It's, it's it's very…there isn't one simple forestry explanation for land use. And 0.7% of the land that we use is for sugarcane plantations in Brazil. And then the rest of the land, I think it's 0.16% is for aluminium, bauxite mining for aluminium. And then everything else is the land that our buildings stand upon. So, when we look at material aspects, then it's paperboard. That's the biggest impact. And when you look at sustainable land use, then the challenges are about, are we protecting biodiversity are we are using water in water stressed areas? Are there are people being treated properly that the local communities the indigenous peoples, the workforce, is there forced labour, things like that? I mean, all of the things that you can think about that you've seen in Greenpeace reports. Those are our challenges. And its challenges for our customers. for us and for our supply chain. We are quite aligned on our sustainability direction.	SE
23.	I	So I would like to ask a follow up question on the statement that yours is, about sustainable sourcing and operations. So are there any other divisions or teams involved with sustainability initiates the question?	
24.	R5	Good question! Yes, absolutely. There are. One that is very much in focus these days is the recycling operations. And we don't own any recycling operations. But obviously, we together with our customers want to make sure that the valuable material that's in the used packages is not just thrown away or burnt or landfilled.	PoO
25.	I	Are we talking about the four R's,..	

26.	R5	Yes, whichever scheme, you want to talk about the Ellen MacArthur Foundation, and they have a good concept to think about when to that circular economy with the two loops, the biological route and the technical. The butterfly diagram, then you have the European packaging and packaging waste directive. It encapsulates things like the 4Rs but I don't think they use four, I think they use five or six. Why make it simple when with a bit of effort it can become more complex? So yes, we have all those things. And those are built into our procedures. So we have a waste management procedure internally. And then we use the same sort of thinking when it comes to working with actors outside our value chain outside our direct influence, yeah, we work with the countries where we operate on customers operate, we work with the public to build awareness. So we have school education programs, we have advertising programs, to make sure that people understand those valuable materials in the used packages, and that they should they should be recycled, meaning that there should be collection points and that should be sorting. And there should be recycling and then there should be economically viable use of the recycled materials. And that this is, by the way, it's something we've been doing for three decades. It's not something that just started. it's just that the spotlight is really shining on it at the moment. So, we work also with legislators to set up collection schemes. You might be familiar with them, called extended producer responsibility, or packaging recovery organizations. So, these are legally obliged schemes to make sure that collection sorting and recycling happens. Then we work with the recyclers to make sure they have the right equipment. Actually, the equipment is pretty simple. It's standard repulping equipment, you take our packages, you put them in water and grind them up like a liquidizer. Then the wood pulp floats off and the aluminium foil and polymer mix sinks to the bottom. That's technically the recycling is not a problem. The problem is more about economics and the cost of collection sorting, recycling, transformation. So that's one; then we have another team that works with product sustainability. So, they operate SoFi and they work with The Carbon Trust that you know, to put in place all of the IT infrastructure that's needed and to do the climate calculations, we work with the greenhouse gas corporate accounting protocol and we also get it verified by an outside consultancy. Coming back to your original frame for the research, yes, we also work with expert groups, particularly when it comes to getting verification of results.	PoO, eDA, DSr, RM, SE
27.	I	Okay. So, while interacting with these third parties or sustainability experts, so what kind of relationship management comes into play? How the trust and coordination works there?	
28.	R5	Well, we have normal tools for managing relationships. So, we have nondisclosure agreements, we have a supplier code of	RM

		conduct, we have our environmental policy that everyone has to sign up to. We don't treat any supplier differently. The only supplier that we make more stringent requirements on are ones where we see risk. So, we use tools like Verisk Maplecroft. To assess risk, and the whole of the base materials category, we require sustainable sourcing FSC Bonsucro, ASI (Aluminium Stewardship Initiative) and so on. Otherwise, they all have to comply with our responsible sourcing procedure whether it's pencils or steel for filling machines or mops for cleaning the floor.	
29.	I	but with the variation of products that are that are being sourced or for the clients. So of course, I think maybe the metrics will also change or vary based on sustainability, the materials that are being sourced must be varying?	
30.	R5	when we deal with about 50,000, tier one suppliers and so, we do use (we are members of Sedex) the suppliers ethical data exchange. And so we ask all of our suppliers to sign up and run a sedex self assessment questionnaire. Then as I said, when we do risk assessments, if we see there are either suppliers in countries which have a high risk for any reason or that there are categories which are associated with a higher risk, then we will have them audited with the Sedex Members Ethical Trade Audit often called SMETA. We mainly use sedex, but sometimes we use Ecovadis depending on and caught on.	SE
31.	I	sorry 'Ecovadis	
32.	R5	ecovadis	
33.	I	Ok, Thankyou.	
34.	R5	No worries!	
35.	I	So, what steps or phases are involved? for your team to go through the… I mean, to carry out the sustainable sourcing and operations? Are there any specific phases? Or how do you..	
36.	R5	so when we have 'change projects', we use a process of internal process that we call business transformation. And it will come as no surprise to you that it's you know, the first stage is initiate, analyze, and design then plan and then it's implement. No big surprises there. It's just that way we can provide a structure and we which we decide whether we're still headed in the right direction and whether we carry on to the next phase. That general framework that we use in the company, and it was initially created with it enable changing when we have a general name ISP Information Systems platform, which includes enterprise requirements, SAP and everything like that. I think we have something like 50 major systems that come under ISP, and we know that SAP which is the major system we have, they are they have released S/4HANA. And we will have another huge transformation project within the next five years to update all those, not just SAP everything up because everything's interfaced.	OP, eDA

37.	I	Yeah, yeah, the cloud is the main goal right now for your systems.	
38.	R5	We have we already had some cloud operations. If you look at office productivity tools, we were reluctant because of security issues, but when we had all those sorted out, then we move to Office 365 maybe that should be office 340. And it and operational technology security have been very big topics during the last five to 10 years.	eDA
39.	I	Yeah, of course. So, as you said, that many other things are quite Not, not that new. It's the sustainability as such has been considered as a mean matrix for Tetra Pak. So, any new things that are coming right now, or any new innovations that are coming right now, or are being worked on..	
40.	R5	By can say that we, the recycling, we talked about the major interested party in recycled materials of paper mills, because we only use what we term virgin fibre. Now, paperboard because of food safety, yeah. So it has to be from only used for the first time, because it's a food contact material. So the fibres are long and strong. And a very interesting for paper mills to add to the pulp that that they make. Then when it comes to the, the, what we call polyal residue (the residue of polymer and aluminium left after the used packages have been repulped), then that is less valuable. Because unfortunately, fossil based polymers are still much cheaper. This is something where we see that we need regulators to step in, to make it more attractive to use recycled polymers. And indeed, if you look at what the European Union is doing with the single use plastics directive, that is, in fact happening, mandating proportions of recycled plastic in packaging. So that that's good, then what we are doing is trying to develop packages, packaging systems, where we significantly reduce the amount of Polymer. And where we take where we find a replacement for the aluminium foil as a barrier. Aluminium foil we carry on using it even though it's not a renewable material, and it has a relatively high carbon footprint. We're working with our suppliers to reduce the carbon footprint. So, they use renewable electricity, for example, for the smelting process. But it really, it is the thing that allows our food to customers food to be in a pack for 12 months without spoiling. If you look at food waste, roughly a third of all food that is produced that is grown is wasted. And given that agriculture is responsible for about a third of global climate emissions, so by protecting the food, you actually have a significant impact on reducing climate emissions associated with food waste. So that's a major innovation. Then if you look at a major challenge that's coming up. Another part of the European Union Green Deal is about mandatory due diligence to show that there is no deforestation or land degradation in your supply chains. If you're placing products in the European Union, that means it's effectively around the world in the forest industry isn't going to	PoO, SE, eDA

		be a huge challenge, but it is going to be a challenge for industries that use power more, for example, or cattle. In Brazil, cattle and soy are responsible for huge deforestation and land degradation in the Amazon and Cerrado biomes. But anyway, it will be a challenge for us because it will mean that we and our suppliers need to be very transparent about which pieces of land were using, which isn't the case today. It's something we've been working with our suppliers anyway, in order to improve supply chain transparency, and there will need to be some direct measures like using remote sensing data, or satellite images and processing those. And then there will be other things like supply chain traceability. Again, this is another area that you are no doubt very familiar with, for use, perhaps of blockchain or other distributed ledger systems, be they public or private. We hope that it's not going to be blockchain because of the proof of work requirements, being so energy hungry, and you will have probably seen that China has outlawed Bitcoin mining because of its energy signature. If China wants to achieve its published climate targets, then Bitcoin mining has to stop.	
41.	I	Also, drone systems are also used for doing, the forestation also right?	
42.	R5	We have everything from satellites, we have a LIDAR (Light Detection and Ranging) sensor mounted on the International Space Station GEDI project, thinking GEDI, run by NASA. And that's for assessing carbon stock in forests. Then we have drones absolutely can also do that. We have companies like Satelligence which they're they take information from satellites, and they've developed algorithms for, for example, being able to predict where deforestation is going to take place in a couple of years time. So for example, you look for evidence of roads being built in forests, that's always the first thing.	eDA
43.	I	Yeah. And also about the food waste is that you were talking about So also, I think there's the optimization routings, the supply chain would also be using data analytics for optimization processes of distribution and collections.	
44.	R5	Like I can talk about, I can't talk about what our customers do. But I can say that we use a software called Supply Chain Guru which was richly developed by Lama Soft. It's an SAP partner, or maybe it's even an SAP module now, I don't know. But that allows us to do scenario investigation for our inbound and outbound logistics. So that means for our factories, what's the best supply configuration and into those choices? We have factors like tax, border, shipping modalities, you know, I'm sure you're familiar with that sort of thing. And then we do the same thing with outbound logistics to our customer. And that's very helpful for us during business continuity planning, as well as for making sure that we reduce carbon footprint and cost of our logistics.	eDA, OP

45.	I	So, as we had discussed about the website of sustainability and the storytelling, could you elaborate of the awareness which you were talking about? How you are interacting with awareness programs for sustainability products to your clients, maybe customers also?	
46.	R5	Yeah, so we have a group within our communications function called marketing communications. They work to produce information for our sales teams to use for the customer. So that ..That's one avenue, then we also go out every year or a couple of years. The frequency varies to consumers in typically 14 markets around the world and surveyed them on sustainability topics. And you can find that on our external website. And it's called the Tetra Pak index survey. And so that's another way of building awareness. We also speak at conference on sustainability topics. We are quite active.	RM
47.	I	Yeah, of course. Any other legislative bottlenecks or challenges that we haven't discussed yet?	
48.	R5	No, I think we've covered it. I've talked about the European Union and the Green Deal. And it's not that we just focus on what the European Union and the Commission and the parliament are doing. But they seem to have been in the lead. And what they do is, is then spreading out across the globe and picked up by other regulators. Main regulatory groups that we follow in with our public affairs function is the European Union, the US and China, then, of course, we do. We do mean daily contact with all of the markets that we operate in the main focus area that drives our strategy, those three groups of regulators.	DSr
49.	I	So, lastly, in this pandemic situation, has the work environment been affected in any ways? What would you say, how's the work culture?	
50.	R5	Yeah, yeah, it's another great question. We've had some positive and some negative effects. When it comes to our factories, we've had to rebuild our ventilation systems. So the teams working in the factories can be sure that there's been no possibility for airborne virus transmission. So we've, we've built in HEPA filters, and so on, and that has consumed more energy. Okay. significantly more energy. And then, at the other end of the scale, we've done everything virtually pretty much everything. Virtual factory acceptance tests, virtual commissioning tests, where we use information from people on our customers site, either with simple things like FaceTime, or even Microsoft, HoloLens, everything in between, so that we can do things that we would have done on site remotely. And we saw that we haven't got all of the data in yet for 2020. But our travel fell to between 25 and 50% of the level in 2019. A really massive fall. And that is we don't expect travel to come back to its former levels. Because we have clear proof. We can continue to work and deliver without needing to be physically together. Obviously, there are still things where we will want to have	OP

		physical meetings, but they will be much less, yes. When it came to our supply we had for example, our Nordic paperboard suppliers couldn't supply to some of the cluster Europe and Central Asia customers those factories that we weren't and so we had to reorganise supply from other paper mills in other parts of the world. And we ended up with airfreight for some of that because, you know, to avoid disappointing our customers, when I talk about disappointing our customers, actually one thing that we realized too, I mean, we knew intellectually but we didn't really feel it, that our company because of its size, is a significant & systemically important part of the global food system. And we also saw a shift in consumption patterns. So, the bulk food supply to the hotels, restaurants and caterings because all of those has been closed down. So, we also saw a massive increase in demand for the domestic consumption packages, the family packs and caution packs. We actually ended up in running our factories about 100 percent utilization with no headroom without anything going wrong. On the same time, we are organizing our teams to protect them and the shifts working in the factories. I am filled with admiration for all of our colleagues who did that and there are procurement teams who helped in Tier 1 and often Tier 2 suppliers to carry on supplying us in these conditions. We need to work with governments to support special transport authorizations. I can't really believe that we did managed it together.	
51.	I	Yea, Yea…necessity is the mother of invention! But I do agree that Tetra Pak has very large impact on the consumers and well. Because in India we use to call the cartons as Tetra Pak and we didn't know that. I mean it's like the xerox for photocopying.	
52.	R5	Yea, Yea	
53.	I	I think, we can conclude..! Thank you very much for your valuable insights and your time as well. We would definitely send you the transcripts once it is ready and you can verify it.	
54.	R5	Yes, we have to each do a quality check on it. I know, I have spoken rather fast, and I may have forgotten myself to use some acronyms that I have to explain. So, we have to do that and it will be helpful!	
55.	I	Thank you very much. Have a great day!	
56.	R5	Yea, Thank you. Wish you the same and a nice weekend!	
57.	I	Bye!	
58.	R5	Nice to meet you guys! Bye!	
59.	I	Thank you. Bye!	

Appendix 8: Interview Transcript-R6

Information
Respondent: Lyndsey Parette Position: Sustainability Manager Start Time and Type: 2021-06-10, 13:50, Zoom voice call Participants: Lyndsey Parette (R6), Rani Ranish (I) and Shradha Panda (I)

Dimension	Color	Theme ID
Digital Sustainability readiness	Turquoise	DSr
Perception of Organizations	Yellow	PoO
employment of Digital Avenues	Pink	eDA
Strategic Evaluation	Grey	SE
Relationship Management	Green	RM
Outsourcing Performance	Red	OP

Row#	Per-son	Information	Code
1	I	Hi, good afternoon! I would like to thank you for accepting our request and spending your valuable time with us.	
2	R6	Good afternoon. I am also looking into how I can help you for your master's thesis.	
3	I	Yea, that's nice. So we have provided a short description about the topic we are going to discuss today. Hope you got some idea about our work.	
4	R6	I understand and it's quite interesting!	
5	I	So, basically, we are working on, the three concepts. Digitalization, sustainability and outsourcing and all of the digitalization is the key word in every business now. Everywhere the transformation is going on. And with that sustainability has also gained a lot of attraction. And there are also several SDG goals like which companies want to achieve and the footprint and that is the case with the digital sustainability. So, we think that we have seen so that companies what have the core competencies or much more focused on digital sustainability that they try to seek out consultancy or business transform or other companies outside. So, we want to analyze how different this from the normal outsourcing of any IT projects and what are the success factors, involved in such engagements.	
6	R6	Our company, Duni Group values sustainability and its concepts to protect people and environment. We supply innovative tabletop concepts, napkins, other products, creative packaging and take-away solutions to professionals and consumers.	DSr

		Everything we offered is designed to create sustainable Good-foodmood and reflect decades of specialization materials and design. Our products are available in more than 40 markets across the world.	
7	I	Nice to hear that your company is promoting sustainability and your company is specialized in materials and design. Other thing is, would you give the permission to record this session, so that we can transcribe it.	
8	R6	Yea, sure… you can do that.	
9	I	Thank you. Also, I want to check with you that our university provides consent forms and the non-disclosure agreements in case you want us to keep you anonymous.	
10	R6	I don't think a nondisclosure agreement is necessary because I don't think you'll, have so much information or I will need an NDA.	
11	I	Ok. So we can keep your name or the company name. Is that fine for you?	
12	R6	Yeah. If it's, yeah, I guess the Lund agreement is that that shouldn't be an NDA. That's just an agreement that we okay.	
13	I	Okay, then. So with that being said, I think we can start with some questions. Yeah. Could you please tell us your role in your company and how you are involved in sustainability specific topics?	
14	R6	Yeah, sure. I started at Duni three years ago, and started out as an environmental coordinator, and now I'm a sustainability manager. And I'm working with, I guess, all of the parts and sustainability. So, it's, it's only two of us currently, within the sustainability department. So, it's so much to do, you have to take on the role of having to put on many hats. So, I work, you know, with sourcing, so I said, you know, sometimes when supplier meetings and so on, with our sourcing team, and I also work, you know, to the very end of that supply chain, with customers, or end of life solutions, waste disposal solutions, and so on for our products. So it's more or less everything in between there. So it's also, you know, the carbon emissions and reporting and so on. I think in the future, that will change, because we were hoping to get more and more people on board to take more areas definitively. But so far, I'm a little bit and everything.	DSr
15	I	In this role, would you say that you are connected with the internal teams, or both internal and external stakeholders?	
16	R6	Yeah, yeah, I'm definitely working with both the internal and external stakeholders, mostly internal, and sometimes it's internal to the external stakeholders. So, it will be you know, through a sales or key account manager or something that as and I talk through them to inform the customer. And sometimes it's with the customer directly. And then also with other actors, so for example, waste managers or other, you know,	RM

		NGOs or other stakeholders, I will also have direct contact with them.	
18	I	Okay. So, any digital technologies that are being used to enable these initiatives? Or where do you see the technology playing a role in sustainability specific goals?	
19	R6	I see a big role . And I think if you're already not thinking about how technology can play a role in sustainability, you're already behind, I would say that I do any, we're a little bit slow with technology, but we have an ambition to catch up. And we're, we would like to provide, you know, not just a product, but also a solution. So we're, in order to do that, I mean, that often comes with digital solution. And we have a few different projects where we have, you know, worked on that. So we have one where we did a cart, we'd call it the carbon footprint tool, where it's a salesperson that works together with a customer to show the carbon footprint of all of our products. So we have an interface where you enter the article number, and then it's all of the calculations are behind that. So we're going to show you the breakdown of the carbon footprint for that product. And then you can use it to compare another product. So then it's a comparison tool. And the idea is to help customers choose a more sustainable product.	DSr, eDA
20	I	That's nice. So, in your opinion, the sustainability is becoming a core strategy pillar for the business and cooperation? How would you say that?	
21	R6	Oh, yeah, absolutely. We have made sustainability one of our core blocks, and a new strategy that I think was developed as late last year 2018. And we are adding on to that strategy to better define it, and of course sustainability is right at the centre there. So Duni has recognised that if we want to continue as a business, then that's the direction that we need to head and put sustainability as a core focus.	DSr
22	I	So marking it as a main strategy. Would you say that it gives a competitive advantage, or whether it gives a branding value to the company? Or also will it comply with the UN SDG? goals? So are these considering while driving or are these stimulating these initiatives?	
23	R6	Yeah, exactly. I mean, it's sufficing a big domain from our customers that we have sustainability as the core agenda, because for our customers, their customers are also demanding sustainability. So it's, I mean, it's very clear that this is the way forward for everyone, and that there is a demand for it and a business advantage to it as well. We are not currently working with the SDGs. But we plan to incorporate that in a better way. I mean, of course, if, you know, I was asked to, to say what, what SDGs were working with, I could come up with something, but I wouldn't I would be very careful, too, because I don't want to greenwash either and that in that respect, but we do, of course, work with it. I mean, my background was SDGs. Before as	PoO, SE

		well. So I'm, it's quite important to me. So I think we have a new sustainability director. And the previous sustainability director did not work with this, but I think the new one is quite keen on working with the SDGs. So I can see that coming more in the future that we put a little bit more focus on that and the Global Compact as well.	
24	I	So you say SDG goals are something you are making into practice in the coming future. In this initiative, how would you define, according to your opinion, what is digital sustainability?	
25	R6	That's a difficult one to say. I mean, I think it's part of it is, it's becoming more efficient. It's, you know, also understanding the data better. It's providing different kinds of solutions. It's looking for very clever people that are already working with this. I know there's a lot of new organizations that have popped up like normative, I don't know if you've heard of them, but they have found a digital solution with sustainability reporting. So they have a solution where they're connected to an ERP system. And then it runs through that the data runs through that. And I know there's quite a few of them popping up that are quite interesting. But I think we all need more digital competence. And we need to figure out what that means as well. I am not going to claim to be an expert there. Oh, be careful on answering that. But I know it's definitely needed.	PoO
26	I	So based on your experience, and interaction with your clients, and suppliers. So what are the common sustainability specific challenges that are usually highlighted? What are the main problem areas that you want to say about?	
27	R6	Yeah, so one of them is definitely the carbon emissions. So looking at the carbon footprints, especially two products, I mean, of course, you need to include, you know, kind of all of the scopes 123. And that, but it's for our customers, it's the products they want to lower their carbon footprint via their products. So that's a big one that's being asked about. And then the I would say, either that's on parallel or second is the waste management. So we are a single use company. And there is currently a lot of regulations from EU and member state level that, you know, are saying that we need to do better when it comes to single use and fully agreed. And we need to solve the waste issue in a better way. So it needs to be part of a circular loop. And that's something that we're heavily looking into now. So whether that be you know, designing the product so it fits a current infrastructure, or it's working with partners to ensure that it finds you know, a circular waste stream. For example, composting or recycling or other there's many interesting other technologies that are popping up that are quite interesting as well.	SE, RM
28	I	Yea, I got it. You are speaking about the four R's..	
29	R6	Yeah, exactly. Yeah. So the first one is reduce, reuse and reduce. Yeah.	

30	I	Yea, That's sound interesting!	
31	R6	But that one's not so good for our business model, though.	
32	I	So, so in this sustainable sourcing and operations, are there any divisions or teams involved with sustainability initiatives	
33	R6	Yeah, yeah, there. Yeah, we have I mean, we try to involve everyone. So from the sourcing, all the way to, you know, sales. So in especially marketing, communication, and our product managers, our product managers, and our marketing teams, and our production teams. So I mean, everybody at some point is involved.	RM
34	I	Okay, and then, yeah, by interacting with these sustainably experts or third parties, so what kind of relationship management comes into play? So do you think that trust and coordination works or how, how it will be that the relationship management takes place?	
35	R6	between us and customers?	
36	I	Yes	
37	R6	yeah, that comes primarily through usually our key account managers, our sales teams, and so on, I mean, they're responsible for, for having those relationships with customers. And then when experts are needed, and they bring experts on, and we're very happy to support in whatever way. And we also want to be more proactive, I think, and, you know, already having a solution for customers to go forward, which would then increase that trust, but it's very important for our customers that, you know, they see us as experts in the industry, which a lot of them do, and they rely on us for information, and so on. So we have, you know, we need to make sure that our sales, our sales team have the correct education and experience so they can support in this way.	RM
38	I	Because from our research, we have come to know, like, trust and coordination are some of the important factors that need to be handled while collaborating with clients.	
39	R6	Yeah, absolutely. And transparency. I mean, that's also something that's really important that we're very transparent. Yeah.	RM
40	I	what steps or phases are involved for your team to go through? I mean, to carry out the sustainable sourcing and operations for Are there any specific phases for doing that?	
41	R6	No. we're not a process-oriented company. So there's not really. We have you know, some informal phases, we have meeting groups and so on. And when a new supplier comes on, we make sure that we have a checklist that they have to check, you know, required boxes and check, you know, want to have boxes. So we do have the system and process for that, when we bring suppliers on so that they are vetted accordingly, especially when it comes to safety and sustainability. And also, we also have our code of conduct. So it's really important also that we interview and audit suppliers and suppliers as well. We have a very strict auditing programme.	SE

42	I	Okay, so sustainably has been considered as a main metrics for a company like Duni Group. So any new things that are coming right now or a new innovations that are coming right now are being worked on?	
43	R6	Yes. But none that I can see. Yeah, so we do have new innovations we do have. And we plan to be more innovative, or we're putting no proper resources towards innovation. because historically, we have been a very passive company where it's we've had more or less the same types of products. And we, you know, adjust a little bit to customer's needs, but we've never come out with anything that was revolutionary or new to the market, or special in any kind of way. And now we plan to change that or be more proactive about it. And I'm sure there's things that I don't even know about, that we plan to do. But I can say that, yeah, there's a few new projects that I mean, they probably won't be finished for a little bit yet.	DSr
44	I	There will be the optimization routings, the supply chain would also be using data analytics or optimization process of distribution and collection. What would you say on this?	
45	R6	Oh, I mean, ideally, we should. I actually can't comment on that still being planned? Or if it's been planned? I don't know. But it's, oh, it would be nice. Yeah.	
46	I	Do you provide any digital storytelling or any other avenues that could generate awareness to the consumers?	
47	R6	Yeah, I think the carbon footprint tool might qualify as that. So the one I talked about earlier, where sales work with customers to look at the carbon footprint, we also have another digital solution where it's like, you remember the name of it, but it's, it's an like an AR, app. So you, our products are listed in there. And a customer can you know, download this app, and then, you know, pull it up, and then see how a product would look on a set table. And then you can change the colors, and you can you know, add new things. If you know, I think actually I have something similar. So if you know, I have seen it from IKEA, then it's more or less the same.	eDA
48	I	Okay. Okay. Other than that any storytelling to the customers on your website. So how you will promote the awareness	
49	R6	Yeah, we're in the process right now of switching to, we're in the process of updating to the 21st century. So we have a new website, and more is to come there. And then everything, all the products and so on will be listed on this, this website. So we have been traditionally a paper company. So it's a catalogues physical catalogues, and that was about it, but now we're actually updating where we have the, the products, and of course, sustainability will be a big part of that. So we'll have a lot of sustainable information. And then we plan as well to have there now or in the future to have QR codes on products. So then you can scan it, and then it will pull up information on for example, how to dispose of the product, or if the product	eDA

		has, you know, a carbon neutral label, what does that mean.. more background information to it. And other you know, sustainability aspects of the product or certifications.	
50	I	Aactually, we come to this thesis topic from a white paper of a company. So we were quite interested from that. So that's where I think this storytelling is a good awareness to the customers and the common people like us.	
51	R6	So yeah, exactly. Yeah. And I mean, we are planning to do a bit more in terms of social media storytelling through social media and those avenues. But I'm not the best person to talk to about that.	
52	I	Then we keep on researching how many companies are involved, and it's a pretty big number in this Nordic regions. So yeah, we are also excited to see how it goes.	
53	R6	Yeah. Okay. Yeah	
54	I	So any other legislative bottlenecks or challenges that we haven't discussed yet or you want to mention about?	
55	R6	Challenges from legislation? Yeah. I mean, that's probably one of our biggest threats right now is legislation. It's so we have the "single-use plastic directive" that was published two years ago and will come into force. And July 3, so there are certain products will be banned. So we can no longer sell certain products. And there's going to be marking requirements on certain products. So then you have to put a little icon that says contain and plus contains plastic. And then we have I mean, there's more coming from that as well as in there's certain consumption reduction targets, where member states will have to define how you should reduce some products. So either it needs to be replaced with a reusable option, or it can be banned or you put taxation on it. So that's definitely a big threat to our business. So we're making sure that we can put ourselves in the front. So we have really good innovative solutions. So we make sure we're in compliance and also offering another solution to these regulations. And then more regulations will come around the packaging and packaging waste directive, which will probably require that we have a certain amount of recycled content and products and also that the product be recyclable. So it'd be designed to be recycled. Right now, recycling is a it's, it doesn't work as well as we think it works. So it needs to get better. And part of that is the producer responsibility to ensure that and part of it is also making sure that the infrastructure stays updated, and that they can actually there's infrastructure, updated the infrastructure, so their products can actually be recycled.	SE, DSr, PoO
56	I	Lastly we would like to know, in this pandemic situation, how your work environment, or the work culture has changed?	
57	R6	Yeah, I mean, I think most of us work from home, there's very few of us that go into the office anymore. So I mean, we have had to be a little bit more digitally competent when it comes to meeting on us, Microsoft. So it's teams. And also, I think that	OP

		has definitely changed the way we interact. I love it. I like it. I don't get bugged all the time, because nobody can come to my desk. People have to think a little bit more before they write an email, or they feel a little bit. Yeah, they second guess before they just call you up, which I quite like. So yeah, and we've had to, I think, learn so that the upper management has also learned how to learn a bit more how to communicate. So that's, you know, recording videos, and now making sure that it's especially in a pandemic that the employees feel supported, and that you know, that that management hasn't just gone away. So they've had to become a little bit more digitally competent with that, which has been a little bit of a funny process. It's all the usual. Oh, no sound. Oh, there's bad sound. Oh, there's no video..So yeah, no, I think it's, it's been interesting. And I hope that we keep a lot of these new things that we've learned that we've had to adjust. When there's some kind of new normal.	
58	I	Does it affect your work in any way or your target or the project completion? Something like that?	
59	R6	The No, I mean, yes, and no, I mean, for me, I feel like I've become more productive, because I'm not being bothered all the time. So my productivity went up a little bit. Then there probably is some areas where it's affected. I know, I mean, we've been hit quite hard, because our customers are, you know, restaurants and the Duni part of our brand duties, the napkins and table covers, those are mostly aimed at hotels and restaurants and hotels and restaurants have been closed. So that had us whereas Of course, the takeaway that has gone up, but it still has affected us financially. So we tried to be a bit more careful financially. But I think, you know, in the quarter one of this year, I mean, we, you know, felt the, the corner where things will start opening up again. I mean, we have to, you know, be prepared and run with what we have, then I think it's been handled in a good way.	OP
60	I	So I think we can conclude this interview. You gave answers from your and your company's perspective, which will be valuable insights to our thesis. And I would like to thank you for joining with us. And if you want us to give you the thesis interview transcript, I can do that.	
61	R6	Yeah, sure. I mean, I yeah, that's always good.	
62	I	So with that being said, I would like to thank you for this interview session and your valuable time with us.	
63	R6	Yes, of course. Thank you. And if you have any questions, I need to follow up on something. You can reach out.	
64	I	Yeah, sure. Thank you for that. Have a nice day!	
65	R6	Yeah, you too. Bye.	
66	I	Yeah. Bye. Thank you.	

Appendix 9: Survey Scores

Sl no	Question details	Themes	Scoring Criteria	Weightage (%)	Respondents Avg Scores
Q1	To what extent sustainability is considered important in developing organizational strategy (on scale of 1-10)	SE	1-10	10	8,48
Q2a	How do you prioritize or score EES (Environment, Economic, Social) initiatives within sustainability goals for your organization currently [Environment]	SE, DSR	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	4	6,78
Q2b	How do you prioritize or score EES (Environment, Economic, Social) initiatives within sustainability goals for your organization currently [Economic]	SE, DSR	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	6,92
Q2c	How do you prioritize or score EES (Environment, Economic, Social) initiatives within sustainability goals for your organization currently [Social]	SE,DSR	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	6,35
Q3	To what extent digital technologies are being explored to define and measure sustainability goals/KPIs (digital sustainability)	SE, DSR	1-10 (Increasing order)	10	8,07
Q4	To what extent sustainability initiatives/engagements (including digital technology specific engagements) are outsourced to external experts at present (1-10)	SE, OP, RM	1-10 (Increasing order)	10	5,83

Q5	In case the current sustainability engagements are completely driven internally , are you willing to consider external expertise in future	SE, RM	Not likely- 2 Likely- 5 Very Likely -8 Currently in discussion- 10	10	5,75
Q6a	What could be the criteria while selecting outsourcing service providers (OSPs) for sustainability initiatives/engagements [Cost Efficiency]	SE, RM	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	6,63
Q6b	What could be the criteria while selecting outsourcing service providers (OSPs) for sustainability initiatives/engagements [Reputation of OSPs]	SE, RM, OP	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	6,28
Q6c	What could be the criteria while selecting outsourcing service providers (OSPs) for sustainability initiatives/engagements [strong competency and value proposition]	SE, RM, OP	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,35
Q6d	What could be the criteria while selecting outsourcing service providers (OSPs) for sustainability initiatives/engagements [Focus on innovative solutions]	SE, RM	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,15
Q6e	What could be the criteria while selecting outsourcing service providers (OSPs) for sustainability initiatives/engagements [Cyber security/Data Handling]	OP	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,42

Q7a	What factors could be considered in establishing trust between your organization & external partners engaged in sustainability specific engagements [Transparency]	RM, POO	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,77
Q7b	What factors could be considered in establishing trust between your organization & external partners engaged in sustainability specific engagements [Commitment]	OP, RM, POO	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,87
Q7c	What factors could be considered in establishing trust between your organization & external partners engaged in sustainability specific engagements [Domain Knowledge]	RM, POO	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,47
Q7d	What factors could be considered in establishing trust between your organization & external partners engaged in sustainability specific engagements [Certification from regulatory bodies]	POO, DSR	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,08
Q7e	What factors could be considered in establishing trust between your organization & external partners engaged in sustainability specific engagements [Strong credentials]	OP, DSR, POO	Very Low- 1 Low - 3 Medium- 5 High- 7 Very High - 10	3	7,05
Q8	Which of the following critical factors you rate the most important in managing digital sustainability outsourcing relationships	DSR, RM, POO	Process- 8 Value addition- 10 Communication- 7 Quality- 10	10	9,58

Q9	What could be the risks involved in driving sustainability engagements with external partners	DSR, SE, POO	Single ans- 2 Double ans- 5 Tripple ans- 8 All ans - 10	10	4,93

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