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HANDLING POST COVID WORLD CHALLENGES IN HEALTH CARE SECTOR BY "FOOD IRRADIATION PROCESS" BY "PHARMACEUTICAL MANAGEMENT" WITH SPECIFIC FOCUS ON "OLD AGE HEALTH CARE" PEOPLE.

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ABSTRACT

The proposed Research article disseminates the "Peaceful Use of Nuclear Energy's Technology" for food irradiation for boosting the health care support and special caring of the old age people in Post Covid-19 world. The Proposed abstract encompasses the compressed diversity of knowledge from various domains of arts, science, commerce, engineering, pharmaceutical, design, and architecture by peaceful use of "Nuclear Energy" for "Food Irradiation Process" by help of "Pharmaceutical Management". The Key Rational is to open the multi variant doors for students of all the wings to participate in a common social catering mission of human health care by proposed feasible concept of "FINEST" Method (Food Irradiation by Nuclear Energy by Sustainable and Trustful)method"(*).

KEYWORDS:- (1)"Senior Citizen Friendly", *(2) "*Detection of Food Fraud"*, (3) "*Steel Strong shield of protective layer for Health Care", (4)"FINEST Method".

AIM

a) To introduce the significance of "Food Irradiation" by help of Nuclear Technology for increasing the overall health care support system for senior citizen, old age people.

b) To make aware the children age group and "Expectant Mother" for the health benefit of regular usage of "FINEST Method"(*).

OBJECTIVE

1) To introduce the Concept of "Food Irradiation" by help of Nuclear Technology for making "Senior Citizen Friendly" digestive food and other usable products.

2) To promote for "Detection of Food Fraud" by help of Nuclear Technology and assure good quality of healthy food and other daily usable Products for "Senior Citizens" and Old Age People.Also to make "Blended Mixture of Food Product with Nuclear Irradiated Food Product/Material".

SCIENTIFIC INTRODUCTION OF COMPANY

1) The Company is named "Kanabhuk" on name of Ancient Indian Sage "Kanad" as he was inventor of concept of "Atoms" around 3000 years BC.

2) Still some of his manuscripts are to be explored for bringing new ideas.

3) Our Company adopts method for "Food Irradiation" in various Food Products by Peaceful Use of Nuclear Energy. As well as mixtures of "Food Irradiated Products" with other edible products.

SCIENTIFIC INTRODUCTION TO CONCEPT

This Paper is to make a "Socket and the Ball Effect" between applications of "Peaceful Use of Nuclear Energy's Technology", Enterprise Resource Planning, Pharmaceutical Management and Human Health Care, as practicing Managerial skills are always for betterment of humanity. In Post-COVID-19 Scenario there has been a boom in domain of "Healthcare Professionals".

The world has changed in a very fast manner and has turned vulnerable in Post COVID-19 world. And any disease hits Senior citizen very fast and easily. The "Food Irradiation" will create a "Steel Strong shield of protective layer for Health Care" to enhance the immunity mechanism of Senior citizens so they may be prevented from any adverse impact of microbial, fungal and bacterial disease. Also the "Expectant Mothers'" and infants till age of three years are also very vulnerable towards any form of infection/disease.

SCIENTIFIC RATIONALE BEHIND RESEARCH STUDY

The paper focuses special care for Senior Citizen (Old Age People), as they turns very weak as per growing age and diminishing immunity and hence they become more prone for health problems with viral and fungal diseases. Also their Digestion turns too weak and cannot digest food even with a minor percentage of impurity in it. And they become very much easily affected by any form of health problems very easily. "Food Irradiation" eliminates all form viral, fungal and "Zoonotic Diseases" and makes the food products and other products absolute secured for senior citizens, Expectant Mothers and almost all age Group.

LEGAL PERMISSION IN INDIAN CONTEXT

The legal permission for any operation for "Food Irradiation" as a separate agency has to be taken permission by "Department of Atomic Energy, Government of India", to run the sole Businees in Republic of India.

INTRODUCTION FOR FOOD IRRADIATION[(1).]

a) The food Irradiation is an electromagnetic radiation, which covers the broad range of a spectrum of wavelengths, including the alpha rays, beta rays and gamma rays.
b) In process of "Food Irradiation" X-rays and gamma rays are used to treat food by choosing, right Wavelength and doses can be prevent vegetables, like potatoes and other vegetables and can maintain their freshness and taste and destroy the harmful bacteria that could be present in spices meat or seafood or vegetables.

c) Fresh fruits may get infected (rotten) from inside and vegetable from insects are spreading into other region of the world and has a diverse testing effect on environment and agriculture which leave lot of loss.
d) Food Irradiation involves shining electromagnetic relays or a beam of electrons in control frequency to give desire effect into food product.
e) The energy is transferred at a controlled intensity.

INTRODUCTION TO STEP WISE WORKING OF FOOD IRRADIATION[2]

a) "Food Irradiation" is done with controlled radiation given To give the desired effect and is a cold process. So spices and the food, hold their natural quality and flavour, which would be diminished by heating. The aroma and the taste of the food remain same, and unaffected.

b) "Food Irradiation" perfectly has avoidance of alteration of chemical methods, such as use of pesticides to combat bacteria or other spoilage is stopped. So pesticide not enters the food chain, which does not adversely affect the human body.

c) The radiation beam passes through packaging and food remains protected and fresh much longer than the normal period of time.

d) The chemical free and Heat free approach is adopted for the "Food Irradiation System".

e) The "Food Irradiation" makes the fresh food, quality and reduces the insect borne diseases to stop the spread of exotic disease by the global mode of secured trade.

THE ZOONOTIC DISEASE:-THE TIP OF ICE-BERG IN POST COVID-19 WORLD[3].

1) The zoonotic disease are the diseases which are transferred from animals to humans, such as covid-19, Ebola, monkey pox, swine flu all around the world.
2) Out of almost 7.50 billion population of world, the 2.6 billion population is affected directly or indirectly by the zoonotic disease and the same is the ratio share of the old age.
3) "Zoonotic Disease" has a wide spread transmission and it is known that there are more than 250 types of zoonotic disease all around world.
4) "Zoonotic Diseases" are organized from Wild water animals and also from farm animals and then slowly enters to the humans and then it in turns to the food chain. Also, by the mode of mosquito bites it is spread.
5) Zoonotic diseases also create food diseases for animals, which create a major loss to livestock. And there is a huge economic loss. And if the animal is infected, then the milk of the animal carries the infection and it directly or indirectly affects the body. Then it easily affect in an adverse manner to internal body of the senior citizens.
6) Nuclear Energy Techniques are there to control "Zoonotic Diseases" by help of "Food Irradiation Process" and the technology to track the pathogens, and to kill them at the very early stage immunity for any other future outbreak of any form of disease. The loss of the senior citizens' health by affecting their health Factor directly or indirectly being affected by "Zoonotic Disease".
7) The "Expectant Mothers'" and infant upto age of three years need more nutrition and healthy food and the same can be achieved by Concept of "FINEST".

8) Further the other products for Senior Citizens as Diapers, Tissue Papers, Oil for Massage can also be scientifically processed for ionization and to kill any form of Possible Germs in the Product. As Diapers and Tissue Papers are made of cotton. And hence Cotton can also be ionized under "Food Irradiation" Process. Also the oil seeds can be ionized under "Food Irradiation" scientific method before being crushed and skimmed for oil collection.
9) A majority of Agriculture based Crop can be "Irradiated" for further use in use of human edibles and also as a raw material provider to other Agriculture based derivate products.

CONFIDENTIAL WORK-PROCESS OF COMPANY IN NUTSHELL.

The following are the crucial steps of Work Process of Company for various products being manufactured with maintaining high confidentiality.

1) Procurement of "Irradiated Food(Edible Use) by Nuclear Energy" as well as to set up is in Objective of Company for "Food Irradiation".

2) Blending the Edibles with "Highly Confidential" Copyrighted Products and methods to serve finally with prior licensing as per law of land. The new food products are most unique products which suits the health of user as per ager group by help of curtailed/tailor made products. (Please Refer Table:-1 and Table:-4)

3) The following are the "High Confidential" copyrighted concept being used to blend the novel form of products and derivatives by "Food Irradiation" Process for specific population segments. They are as follows:-

   a) Matasya Sparsh:- A Confidential Copyrighted Design for producing the various products of Fisheries and Poultry.[4]

   b) Ratna Garbha Sewa Sadan.:- A confidential Copyrighted Design for producing special Food for "Expectant Mother" for "Maternity Care".[5]

   c) Devo Phal:- A Confidential Copyrighted Design for producing various Blended Food Products as per requirement of Age of customer. The majority of products are made of botanical herbs and Agricultural Products.[6]

   d) S.A.G.E.(Special Agro Garden Economic) Zones:- A Confidential Copyrighted Design for Production of "Food and Edibles" which can be "Irradiated by Peaceful Use of Nuclear Energy" as per requirement. Also this design provides enormous job opportunity at every corner of Country (Socialistic Republic of India). [7]

ECONOMIC BENEFITS.
1) The cost of medicine which would have been invested on any form of Disease curing as cholera, diarrhea, viral fever, flu becomes totally Zero as the Products of "Food Irradiation" makes the "Irradiated Food" 100% hygienic, secure to consume with a very nominal increase in cost of "Irradiated Food", which can be easily afforded by almost every user.

2) The manpower support of family member/s; needed when any old age person becomes ill almost becomes Zero when the old age people remain healthy with high immunity, with use of "Irradiated Food". As a single day of leave of Family Member/s turns into Economical Loss of that Particular number of working day/s.

3) There is also a huge damage to crops by insects (Zoonosis) and the same can be covered at a large scale by help of "Food Irradiation" Process.(Please Refer Table:-2)
4) The development of "Food Irradiation Process" will create a strong market and huge need of manpower will be needed in various categories of jobs. This wills additional lead for job creativity and elimination of Poverty.

ECONOMETRIC ESTIMATION FOR JOB CREATIVITY.

1) Per 1 million of population consuming "Nuclear Irradiated Food" on a regular basis, will be creating jobs on all scale for about workforce of 20000.00-30000.00(2%-3.5% of End Consumers) on a commensurate scale. A "Least Minimum" of 2.6% of the total End consumers will be an "Assured Manpower" in various scales.

2) For Covering just 20% of Global Population, i.e around 1.7 billion(of 7.55 billion), the job will be generated of about a minimum of 35 million jobs all around the world.

3) An immense job opportunity will be there for Women, Person with Ability to work in "Decent and Proctored" Environment in complete work Cycle of the various products of "Food Irradiation Products"

FINDINGS

1) A majority of Population in Republic of India don't know much about "Food Irradiation" and it's benefits.
2) The masses especially Senior Citizen welcomed the Products and blended products of "Food Irradiation" which boosts their health security.
3) The Mass consumption of "Food Irradiation" products will enable strong immunity to Senior Citizens in Same Cost of Food as well as it will reduce the probability of illness due to "Zoonotic Disease".
4) The Industrial Scale Production of Various "Nuclear Irradiated Food Products" will reduce the production cost when served to masses on a wider scale due to commercial production of "Nuclear Irradiated Food Products", and also enormous job opportunity.

LIMITATIONS

1) Introduction to Concept of "Food Irradiation" is very much unnoticed so a lot of people don't know..

2) People have perception of negative bias of adverse effect of radiation.

3) Sensitive subject as Importance of "Food Irradiated" products for Expectant Mother must be addressed in trustworthy manner.

RECOMMENDATIONS

1) Crucial Role of "Pharmaceutical Management" for positive dissemination of concept of Food Irradiation to eliminate all the probable negative and feared perception related to radiation.

2) Special Awareness Program is recommended for make aware about multiple products, by-products and Blended Products of the edibles of "Food Irradiation" Method.

FUTURE FORECASTING

1) By 2035 the world population will reach 7.38-8.00 Billion approx.
2) Huge food requirement will be there.
3) Even saving a minor percentage of food crop will result into providing food to millions population throughout the year.
4) Food Irradiation is a powerful tool for saving food from being destroyed.
5) Also the regular use of "Food Irradiated" products will boost immunity for fight from any form of disease of pandemic situation.

CONCLUSION

"Food Irradiation" is a Pure Scientific Method which keeps food fresh and safe from any form of "Zoonotic Disease". It is the need of the hour to develop more and more products of "Food Irradiation" so a better health care immunity can be provided to senior Citizens. It is also boon for all Age Group, especially "Expectant Mother" for nurturing healthy generations to come.

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7) Abhinav Kumar Shrivastava(Owner(Sole Propritor), 2010, Registration Number- L-3544/2010, Diary Number:- 6754/2010-CO/L, Grant Name:- "Special Agro Garden Economic Zone" issued by Registrar of Copyrights, Government of India.

8) (*)Denotes Author's Original Thoughts for Proposed Concept. Innovative Teminology Applied:- Abhinav Kumar Shrivastava, 2019, 6th IAA Planetary Defense Conference – PDC 2019, 29 April-3 May 2019, Washington, DC, USA(IAA-PDC-19-07-P03), Title:- "Scientific Correlation Of Occurrence of Tusnami-2004 With Astronomical Movement of Appophis(99942),and Highest Probability of Re-Occurrence of Tsunami in 2029, The Postulates and Disaster Preparedness Planning"; Reference Number:- "03(Three)".(Conference sponsored by NASA and European space Agency).

TABLE:-1(WORK PROCESS OF "KANABHUK NABHIKIYE URJA VIKASH SAMRIDDHI (OPC) PRIVATE LIMITED" FOR MANUFACTURING VARIOUS FOOD PRODUCTS USING "FOOD IRRADIATION" METHOD AND IT'S PRODUCTS.

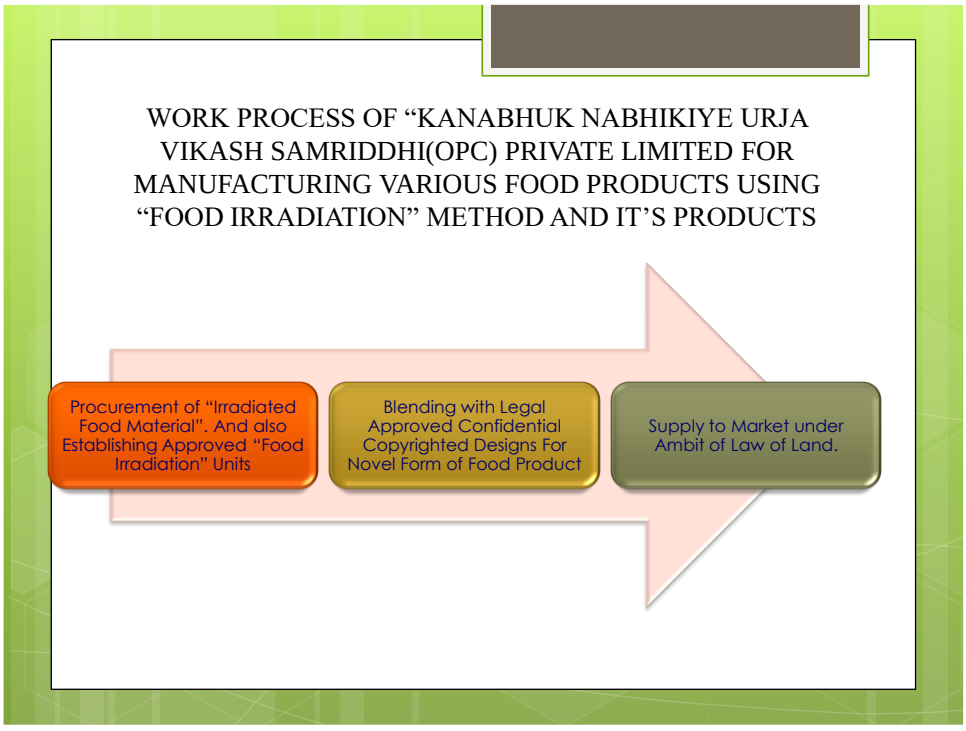
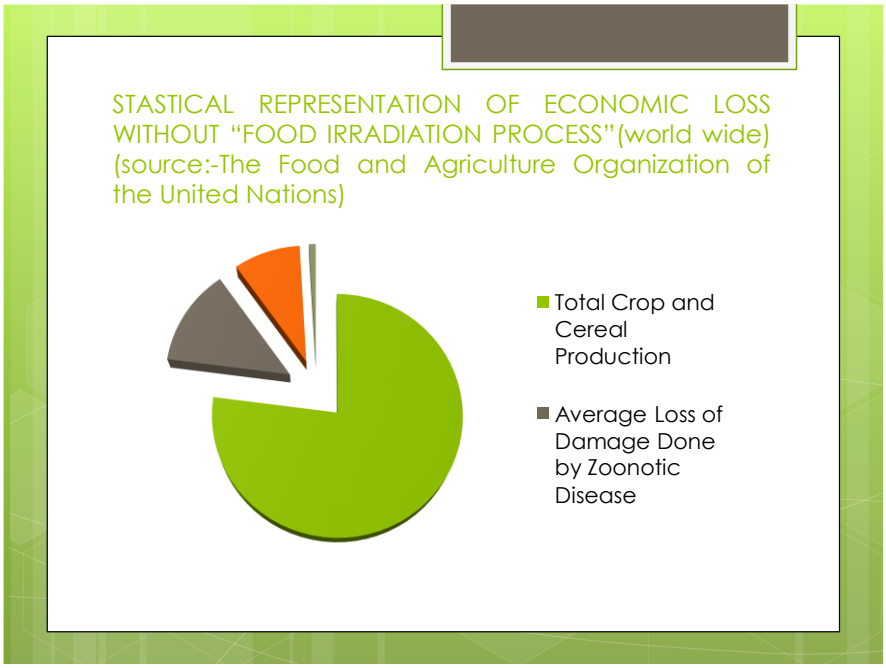


TABLE:-2 (STATSTICAL COMPARITIVE REPRESENTATION OF ECONOMIC ANALYSIS AND BENIFITS BY HELP OF "FOOD IRRADIATION" PROCESS.



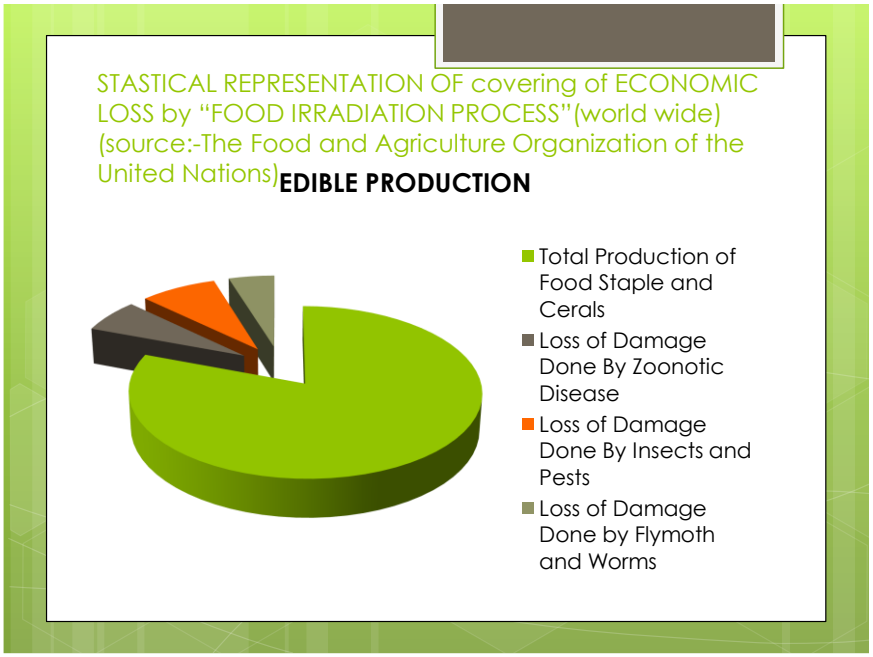


TABLE:-4 (LIST OF PRODUCTS IN PRODUCTION PIPELINE STEPS)

A few Key "Food Irradiation Products" with original "Food Irradiation Status" as well as Blended with Confidential Copyrighted Designs of Manufacturing are as follows

1) Nuclear Irradiated Tea Powder.
2) Nuclear Irradiated Fruits and Fruit Juices.

3) Nuclear Irradiated Cereals.
4) Nuclear Irradiated Vegetables.
5) Nuclear Irradiated Dry Fruits.
6) Nuclear Irradiated Fish, poultry products, Eggs.
7) Nuclear Irradiated Pulses.
8) Nuclear Irradiated Cotton to make protective Diapers and Tissue Papers.
9) Nuclear Irradiated edible Oil seeds.(To be processed later in Scientific Supervision).
10) Nuclear Irradiated Dairy Products.
11) Nuclear Irradiated Soups(Soup Powder), Health Drinks, Tea Powder, Green Tea Powder, Coffee Powder, Biscuits and Cookies.
12) Nuclear Irradiated Bakery Products and Sugar Free Products.
13) Nuclear Irradiated Medical Devices.
14) Nuclear Irradiated Dry Fruits.

AN ENTREPRENEUR-DRIVEN TECHNOLOGICAL INNOVATION SYSTEM FOR SUSTAINABLE AND INCLUSIVE INTERNATIONAL BUSINESS: A CASE ANALYSIS OF LUSOPHONE-AFRICAN MNES

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Abstract

For a more responsible and inclusive technological innovation system (TIS), entrepreneurs should strategically frame the technological innovation field in which they are inserted with diversity, equity, and inclusion (DEI) and environmental, social, and governance (ESG) criteria in mind. The literature on TIS system functions that need to be stimulated to successfully develop sustainable technologies that meet ESG criteria is scant. To investigate the applicability of the TIS framework from a DEI and ESG perspective, we reviewed the literature from the past seven years. We also conducted 29 semi-structured interviews with leading high-tech exporting companies in Angola and Mozambique to assess TIS in a socio-political and economically challenging environment. We found the TIS framework marginally aligns with the DEI and ESG. We propose a slight adaptation of TIS, focusing on the entrepreneur as a catalyst for sustainable and inclusive technological innovation.

Keywords: TIS, DEI, ESG, technology innovation, sustainability innovation, strategic collaboration.

1. BACKGROUND

Global communities must transform their existing energy and power use patterns and shift to a greater level of sustainability to moderate environmental changes from climate change (Sharp, 2002; Grin, Rotmans, & Schot, 2010; Van Vuuren et al.,2018; Jiang et al., 2021). Such a transformation can be accelerated by sustainable technologies (Galán-Martín et al., 2016; Hargadon, 2020).

The COVID-19 pandemic has accelerated digital technological transformations. The digital gap between those enabled through new technologies and those that are not suggests a need for more inclusivity and diversity within technological innovation.

Researchers (Musiolik, Markard, and Hekkert, 2012; Reichardt et al., 2016; Planko et al., 2017) have argued that actors should generate systems that legitimize emerging technologies to overcome adoption challenges. These actors are frequently risk-taking entrepreneurs (Davis, 2002; Hall, Daneke, and Lenox, 2010; Bocken, 2015; Shah et al., 2021).

Entrepreneurs often can strategically adjust to their technological environment (Ireland & Webb, 2007; Garud, Hardy, and Maguire, 2007; Agarwal & Helfat, 2009; Musiolik, Markard, & Hekkert, 2012; El-Awad, Gabrielsson & Politis, 2017). They can collectively develop a compliant technological system (Caniëls and Romijn, 2008; Musiolik, Markard, & Hekkert, 2012; Eckhardt, Ciuchta, & Carpenter, 2018). Empirically, although entrepreneurs play a significant role in innovation and commercialization processes (Brem, 2008; Markard & Truffer, 2008, Planko et al., 2017; Hojckova et al., 2020), the TIS framework has not been tested from an entrepreneurial perspective.

This study explores the applicability of a more sustainable and inclusive technological innovation system (TIS) from the entrepreneurial perspective. In reviewing the relevant literature and providing case studies, this paper explores a more responsible and inclusive TIS that fosters DEI and ESG to benefit society as a whole.

2. THEORETICAL BACKGROUND

This section standardizes terms adopted in this study related to the TIS framework, entrepreneurs, DEI, and ESG, and their link to the transition to a more sustainable and equitable TIS we propose.

2.1. Technological Innovation System Framework

TIS theory seeks to comprehend the essential environmental aspects and interactions needed to help foster the successful development of innovations. Developed by Carlsson and Stankiewicz (1991), TIS theory is based around the flow and exploitation of ideas and information rather than solely based on goods and services like other international business theories. A TIS framework supports the development of innovations, and as a result, technologies, and companies within industries.

In TIS theory, innovation is not only due to innovative firms, but also due to the systems that support them. While lack of investment may contribute, TIS theory rejects this as the sole reason innovation fails and considers the system essential (Jenson et al., 2016). Without the proper support framework, innovation cannot thrive.

The three system components of TIS are (1) actors, (2) institutions, and (3) technological factors. Hekkert et al. (2007) mapped out seven TIS system functions:

1. Entrepreneurial experimentation: Entrepreneurs conduct experiments in the market and are essential to the framework, fostering novelty ideas and transforming them to new opportunities and business ventures.

2. Knowledge development: Learning is at the heart of the process. There is both learning-by-doing and learning-by-researching. Knowledge can be about the new technology, markets, networks and users (Bergek et al., 2008; Hekkert et al., 2007).

3. Knowledge diffusion: The exchange of information is necessary. This can include 'learning-by-interacting' or 'learning-by-using.' Dissemination of knowledge can be through conferences, symposiums, workshops, alliances and collaborations.

4. Guidance of the search: The collection of defined areas of further investment and exploration, often guided by government, industry, or the market. Events and actions that may persuade actors to adopt TIS, including consumer behavior, price sensitivity, government policies and rules, and policymaker actions (Hekkert et al., 2007; Bergek et al., 2008; Hojckova et al., 2020).

5. Market formation: Activities that help create demand for innovation, and it may include forming niche markets or favorable tax regimes. New sustainability technologies often encounter obstacles when competing with incumbent, well-established technologies.

6. Resource mobilization: Allocation of sufficient resources, including human and financial capital.

7. Legitimacy Creation: Advocacy of differentiation and change via innovation to counteract opposition or the status quo.

From TIS studies, it remains clear that individual actors (i.e., firms) must adequately take advantage of the functions of TIS to succeed. This opens the door to considering theories investigating successful innovation beyond the system supporting it. Dyer and Furr (2014)

map out a process to successfully innovate based upon research of successful innovators. The five-step process is as follows:

- Step 1 - Gain insight
- Step 2 - Discover the Problem to Solve
- Step 3 - Prototype the Solution
- Step 4 - Create the Business Model
- Step 5 - Scale

In the context of the TIS, Dyer and Furr's process can be viewed as a formula for an actor to execute to innovate within a TIS that provides the necessary functions, as defined by Hekkert et al. (2007). The TIS provides the baseline support required for an actor to innovate successfully. Further, Wicki et al. (2017) found that the dynamics between the functions are also crucial for successful innovation. Given the appropriate TIS, including the proper dynamics between functions, an actor must successfully bring an innovation to market in a process that nurtures and sustains innovation, such as the process outlined by Dyer and Furr (2014).

2.2. Entrepreneurs as Catalysts for Equitable and Sustainable Technology Development

Entrepreneurial competencies are strongly correlated as predictors to business success. Often, entrepreneurs are catalysts of change in society. They also exert significant influence on reshaping industries towards sustainable development (Hall et al., 2010; Shane & Venkataraman, 2000; Vogel & Fischler-Strasak, 2014; Yu & Gibbs, 2020).

2.3. DEI and ESG for Equitable and Sustainable Technology Systems Development

Technological innovations are considered instruments of change, capable of stimulating economic expansion (Wieczorek et al., 2015; Stephan et al., 2017). Since the COVID-19 pandemic, digital technological transformations, especially internet-based ones, have rapidly evolved. Several digital technology innovations and applications have arisen and been broadly embraced worldwide (Ashford et al., 2020; Carolan et al., 2020).

If not planned with DEI and ESG in mind, digital transformations can increase the digital divide (Schejter, Ben-Harush, and Tirosh, 2017; Chetty, 2018; Švarc, Lažnjak, and Dabić, 2020). For digital transformation sustainability to thrive, policymakers must understand the reasons to stimulate it, and support the use of such innovations through socially responsible, diverse, equitable and inclusive means (Sætra, 2021). Hence, a need exists to determine distinctive elements that impact responsible, sustainable, and inclusive digital transformations. Recent research confirms the dependability of TIS as a tool for the investigation and analysis of the development of technological innovation (Bergek et al., 2015; Stephan et al., 2017; Liu et al., 2018; Lukkarinen et al., 2018; Švarc, Lažnjak, & Dabić, 2020; Sætra, 2021).

2.3.1. The Value of Diversity, Equity, and Inclusion

In this study, we define diversity, equity and inclusion (DEI) as a set of standards that may define policies, guidelines, and procedures fostering the articulation and engagement of diverse clusters of people, including those of distinctive generations, nationalities, ethnicities, age, gender, sexual orientations, capabilities and disabilities, faiths, cultures, etc.

Diversity is concerned with individuals' differences and preferences, as well as the various attributes that distinguish groups or individuals. Equity seeks to assure fairness in the way

someone is treated, including accessibility, equal opportunities, and development for anyone. Equity also fosters justice and impartiality among systems or organizations. Inclusion fosters a culture in which individuals feel accepted and welcome, actively involving all groups and communities to participate and contribute.

DEI matters because it enables the development of a society that is fair and offers equal opportunities to every individual. Promoting DEI through the TIS framework is critical to reducing disparities and improving outcomes. Several studies have revealed that a diverse and inclusive team displays enhanced problem-solving capability than more homogeneous ones (Anand and Winters, 2008; Rosenkranz et al., 2021). Organizations focusing on diversity and inclusion initiatives benefit from enhanced worker engagement and retention. More diverse executive committees yield improved profitability and overall business success (Weissmann et al., 2019; Rabl et al., 2020)

In the TIS framework, the importance of diversity is still a developing concept, less investigated, though it has been progressively acknowledged. It can be argued diversity directly benefits innovation. Christiansen et. al (2011) note networking, which in this context can be viewed as the act of gathering diverse viewpoints, and association as two of the five core characteristics of innovators. Through diverse viewpoints, diversity can enable innovators to associate novel solutions.

The COVID-19 pandemic has exposed the need for ethical dialogues about how technologies are developed and incorporated into society in ways that respect and foster diversity, equity, and inclusion (DEI). Possibly the ultimate value of ESG/DEI for TIS is the opportunity to improve product to market outcomes, reducing digital gaps. Researchers have shown that minority entrepreneurs and technological professionals are more likely to relate and develop innovative products and services to underserved communities (Renski, 2008; Hayden et al., 2011; Loosemore, 2016). Diversifying the structure of TIS to a more responsible and inclusive framework can offer many benefits, particularly with regard to adoption and narrowing the social inclusion gap.

The ethical justification for DEI as part of TIS is that everyone has something of significance to share. Without DEI, TIS implementations will likely lack new perspectives brought by more responsible and inclusive market demands and not be as competitive as other organizations embracing DEI.

2.3.2. Environmental, Social, and Governance Criteria

Environmental, social, and governance (ESG) are criteria for firms' operations that socially mindful investors should adopt when assessing prospective investments. ESG standards consider how enterprises perform as a custodian of the natural environment. Such social standards investigate how the firms' associations with workers, suppliers, clients, and the communities it operates are managed. Governance is concerned with the firm's management and leadership, policies driving executive compensation, auditing and other internal controls, shareholders' and stakeholders' rights. It evaluates a firm's pooled conscientiousness regarding social and environmental elements. They are often represented as scores assembled from information gathered across the firm encompassing detailed benchmarks associated with the organization's intangible assets. Researchers argue that these intangible assets constitute an increasing portion of the firm's future valuation (Eccles, Ioannou, & Serafeim, 2012; Puaschunder, 2016, 2020). These prominent attributes concurrently (ESG) comprise a designation embraced across the financial sector in the U.S. ESG scores have been adopted for some time now for a multitude of specific objectives, with the ultimate goal of calculating factors associated with sustainability, and the social impact of firms in their operations (Kell, 2014; Puaschunder, 2016, 2020).

In less than two decades, ESG as a movement evolved from a CSR (corporate social responsibility) initiative launched by the UN to an international and highly respected ambition

(Ramadhani, 2019; Henriksson & Grunewald, 2020; Puaschunder, 2020). Agencies rating ESG have become influential in the popularization of sustainable investments. Technology-driven ESG scoring has become progressively persuasive, although it continues to be overwhelmingly uninvestigated in sustainable transition literature (Puaschunder, 2016, 2020; Hughes, Urban, & Wójcik, 2021).

2.3.3. Sustainability of Technological Innovation

The term sustainability, in this study, is described as a competency to last, remain, or endure. There are three sustainability issues in the technology industry that have already been broadly debated: industrial sustainability, manufacturing, and corporate. Industrial sustainability is correlated to the physical factory in manufacturing, involving a myriad of activities comprising raw materials, process flows, facilities, production systems, and products; in manufacturing, sustainability is often correlated to production and operation systems; and corporate sustainability characterizes an engagement of processes, procedures, and strategies (Albani et al., 2017).

As an accelerated digital transformation occurs worldwide, both governments and enterprises face many challenges. In particular, the inability to incorporate technology into industries and a culturally diverse society lack the talent to foster a digital divide reduction. Thus, it is essential to comprehend the elements that affect sustainable digital transformations and, additionally, to offer guidance to define viable approaches to reduce the digital divide.

TIS is frequently adopted when exploring technology development, and it has been used extensively in various domains when analyzing innovative technologies (Wieczorek et al., 2015; Bergek et al., 2015; Puaschunder, 2016, 2020). As a framework, it is argued that a TIS lifecycle opens significant insights for technology sustainability transition studies (Bergek et al., 2015).

This study proposes the adoption of a reconceptualized, more responsible and inclusive TIS (RITIS) framework. Under a proposed RITIS, driven by entrepreneurs, digital innovations and transformations are more responsible and inclusive. An RITIS framework could better assess, compare and reduce existing gaps in digital literacy, social inclusion, and inequality, thereby promoting more socially responsible development and supporting digital transformations to foster DEI.

3. LITERATURE REVIEW

We performed multidisciplinary search queries on TIS in international business and management journals within the past seven years. Trying to identify correlation to DIS and ESG yielded limited results. A summary of the most significant findings| is provided in Appendix 1. Of 62 studies reviewed:

- 43 were general studies regarding technological innovation systems and were labelled "TIS"
- 12 were critiques or criticisms of TIS and were labelled "C"
- 7 considered TIS in emerging economies and were labelled "EE"

3.1. Critiques, Emerging Economies, DEI, and ESG Criteria

Notably, a primary goal of our research was to investigate studies connecting TIS to DEI/ESG standards. Due to the limited scope, one cannot ascertain that no studies exist. However, from a query and subsequent analysis of over 60 studies, there is a compelling argument that this is an area that has not been extensively researched. Critiques of TIS from different angles were identified and consideration of TIS in bridging economic gaps in emerging economies were included. However, no studies directly link TIS and DEI/ESG.

TIS has been criticized for shortcomings, particularly in emerging economies (EE), and specific limitations. Markard, Hekkert & Jacobsson (2018) provided an effective response to

common areas of criticism and felt that the TIS could outgrow its original scope. This theme is repeated across many studies - the idea that TIS is expansive and expanding. One example of this theme is in EE studies, where some found that it is necessary to supplement traditional TIS to understand the specific TIS being investigated (Esmailzadeh et al., 2020; Esband, 2017; Esband, 2017).

Enterprises perceived as innovative are valued at much higher rates than those that are not (Dyer & Furr, 2014). By extension, an argument can be made those national economies benefit from a similar valuation. Nations need to understand and adopt TIS to increase global competitiveness and international business, enabling them to provide the necessary environment to innovate more successfully.

Many characteristics are consistent between a successful TIS adoption and successful innovation processes executed by individual actors. These include the pursuit and dissemination of knowledge, entrepreneurship, experimentation, persuasion, and the self-perpetuation of successful innovation. These consistencies across systems and actors reinforce the importance of these characteristics within innovation.

The self-perpetuation of success is interesting. Since innovation fosters more innovation (Dyer et. al, 2019), a successful TIS that is responsible and inclusive (RITIS) theoretically reinforces its success. Countries that can develop RITIS, instead of simply a TIS, would theoretically be more competitive and provide residual returns by building upon their own success and contributing to a more responsible and sustainable world.

4. METHODOLOGY

A search query for "Technological Innovation System" and “TIS” was entered into the Boston University online library and Google Scholar, focusing on peer-reviewed journals over the last seven years. Results generated from this search were reviewed, documented, and assessed. The list was coded to quantify volumes for each topic. Table 1 provides the overall number (rounded) of results of these searches. Studies identified as Technological Innovation Systems (TIS) are papers only focused on analyzing TIS. Studies identified as Critical (C) are critiques of TIS. Studies identified as Emerging Economies (EE) focus on TIS in emerging economies. Finally, those classified as DEI and ESG are studies of these themes in the context of TIS.

TABLE 1 – HEATMAP OF AVAILABLE STUDIES OF TIS, ITS CRITIQUES, AND TIS RELATED TO EMERGING ECONOMIES, ESG AND DEI.

Classification	Studies available (hits in Thousands)
TIS	882
C	27
EE	16
ESG	13
DEI	6

According to Table 2 categorization, while a significant number of studies on TIS (882 thousand) exist, criticism of TIS is noteworthy but significantly less (27 thousand studies). Much less research exists investigating TIS in EE (16 thousand), even fewer related to ESG (13 thousand), and much fewer related to DEI (6 thousand).

4.1. Empirical Backdrop

Primary data gathered from Goncalves (2017) utilized a qualitative survey online and semi-structured interviews conducted with 29 executives of Lusophone African MNES (LAMNEs) in Angola and Mozambique. A subset of questions in the interview focused on TIS, and the

system functions of the TIS framework were adopted as units of analysis. Interviewees were successful in their innovative technological systems and represented various industries, including telehealth, fiber optics undersea deployments, machine learning, brewery, and micro-landing. There are limits to the research methods employed in this analysis, especially the generalizability of the results.

4.2. Data Collection

Data were gathered between early July and mid-August 2016. First, all interviewees were asked to complete an open-ended questionnaire to assess if they naturally cited anything about TIS, or alluded to any ESG/DEI criteria. TIS was quickly introduced to the entrepreneurs in the second step. They were invited to comment whether these processes were or should have been in place and the degree they considered these procedures as vital to their success. Finally, entrepreneurs were asked if any process was missing from an entrepreneurial viewpoint.

The list of potential interviewees was based on a compiled list of 36 relevant actors from the most innovative companies in Angola and Mozambique. All 36 executives were invited to participate, and 29 agreed to be interviewed. Out of the 29 interviewed, 26 were narrow sense entrepreneurs, and three were of the broad definition. All of them held senior managerial positions, including chief executive officer, chief technology officer, executive partner, and senior project manager.

4.3. Data Analysis

The interviews were transliterated and analyzed through MS Excel and NVivo. The analytical procedure consisted of two steps. First, data was coded according to TIS system functions. Different elements of the system functions depicted in the theoretical framework were considered to prevent codes from being too generalized. When a text segment could not be related to one of the TIS system functions, an open coding approach was adopted, which allowed the identification of any absent system function. Second, we contrasted these empirical findings with the TIS framework.

5. RESEARCH FINDINGS

The following section depicts semi-structured interview results according to TIS system functions. After a quotation, the abbreviations [I1] to [I29] refer to the interviewee's identification number. Several of the interviewees understood all TIS system functions, but many just noted a few.

5.1. System Function 1: Entrepreneurial Activities or Experimentation

All interviewees remarked TIS system function 1, entrepreneurial activities or experimentation, is critical and present. Users should not buy sustainable technologies for ideological causes or because of subsidy strategies, but rather because these products meet DEI and ESG criteria and are better than unsustainable alternatives:

> *To be more responsible and inclusive, we need to develop products that people desire and need, and such products must be economically feasible. We must develop novel and sustainable concepts that are better all around, not only with DEI in mind, focused on sustainability alone, but also more flexible and cheaper. [I12]*

5.2. System Function 2: Knowledge Development

Interviewees also noted system function 2, knowledge development, is essential in developing TIS, emphasizing the significance of developing a knowledge base regarding consumer behavior and preferences.

> *Knowledge development concerning the market and the consumers, especially those of different culture than ours, help us appreciate the importance of being connected to every day's networks of discussion and social media learning through which we can*

learn the shared connotations, have an insight into a collective intelligence, and carry onward the prospects of our innovation process and company's success abroad. [I9]

5.3. System Function 3: Knowledge Diffusion

The entrepreneurs interviewed noted that generating knowledge alone is not enough, and that knowledge diffusion is a central system function:

I wish I could influence society, and the economy, if we can. We have the knowledge and experience, but we cannot influence if we cannot share what we know and our experience with the community and our clients. [I18]

Throughout the data analysis, it became evident that from the entrepreneurial perspective system functions 1 through 3 were strongly interrelated. Most of interviewees did not express any distinctions among the functions:

The majority of professionals attempt to associate this with demo projects, combining entrepreneurism with knowledge-creation activities. [I22]

If I incorporate some aspects, I might be able to develop some prospects. I would think, joining efforts with other firms, there may be an opportunity to test and fit a new system, which may offer new opportunities. [I11]

5.4. System Function 4: Guidance of Search

Economic stimuli may encourage investors or foreign companies to consider joint ventures, mergers, or even acquisitions:

Clarity concerning the economic requirement or a institutional guidance is critical for these phases. [I18]

5.5. System Function 5: Market Formation

All the interviewees concurred that market formation was essential. The data indicated the importance of differentiating among procedures determined by government-actors and those by the entrepreneurs. The government drives the first process of market formation. These entrepreneurs noted that government institutions should pay more attention to the development of technological innovations:

Our government should do a lot more with regulations. You really depend on policymakers' business partnerships to foster better regulations, and not to issue more taxations, or even more subsidies, financial credits, or assistance. The marketplace can provide that. [I17]

Several interviewees noted the need to create a more conducive business environment, arguing it is essential for system-building. They also noted government should support new business models that could facilitate the adoption of new technologies, enabling businesses to reap financial benefits from investment into innovation. Markets should be developed so that economic incentives are allocated to those making the investments:

So, the first necessary thing is the economic value that exists, which should go to decision-making individuals, those who invest, but this is not what happens; it is very challenging. [I19]

Entrepreneurs mainly drive the second process of market formation. These entrepreneurs concurred that creating a marketplace, fostering the awareness of consumers, and increasing the need for their products and services were critical processes to consider in the commercialization of their technology innovation. Several accepted that workers benefit from a diverse workforce. Still, most of the interviewees were not yet involved in this process, many not even aware of the importance of DEI and ESG criteria, although some had limited involvement.

5.6. System Function 6: Resource Mobilization

All interviewees were invested in distinct strategies in the mobilization of resources. As resources mobilization for developing innovation systems was considered a must, a few entrepreneurs expressed how important it was to have resources to develop the entire TIS

system functions. Hence, they asked how distinct and critical the sixth system function process was.

5.7. System Function 7: Creation of Legitimacy

There is an expectation in the technology innovation system industry that lobbying is necessary to build legitimacy and endorsement for new technological innovations. Most of the interviewees had embarked on lobbying strategies, personally or through their enterprise, as well as collaboratively via professional networks, often resulting in grants directed to development. Such initiatives eventually help boost investment in technological innovations by suppliers, partners and consumers:

> *For me, developing legitimacy on the market is very important, as it assists in the growth of the marketplace. [I26]*
>
> *Legitimacy is crucial in our technological innovation agenda, affecting the projects we invest in and their dissemination on the market. [I18]*

6. DISCUSSION, CONCLUSIONS, RECOMMENDATIONS, AND FURTHER RESEARCH

This research aimed to explore how the TIS functions from an entrepreneurship standpoint, which we found several nexuses. The results illustrate how entrepreneurs instinctively engage in active system-building methods defined in TIS. Our findings further show that entrepreneurs see system functions 1 through 3 as essential and prevailing. From the entrepreneur's viewpoint, these system functions were considered an amalgam single critical method.

Government agencies and policymakers need to comprehend the many hurdles that entrepreneurs confront in developing technological innovations and the aspects that impact the evolution of innovation in international business. In this sense, the TIS framework is suitable for investigating the sustainability of innovation in international business.

From the entrepreneurial perspective, it is essential that commercial products and services are developed for technological innovations to succeed. It underscores the necessity entrepreneurs face in optimizing technology innovation processes and developing economically attainable products and services. Additionally, entrepreneurs emphasized how relevant attaining an understanding of consumers' behavior and integrating such knowledge into product and services.

Across a wide-ranging range of industries, from tech start-ups to red meat production, our literature review found that Hekkert et al.'s seven functions of TIS must be present for firms to have an environment conducive to successful innovation. However, the presence of these functions provides a baseline for innovation, and the actors still must bring these innovations to market successfully. As a result, TIS theory is an excellent framework to foster an understanding of the more responsible and inclusive TIS leveraging DEI and ESG.

Entrepreneurs can drive TIS functions. They can develop an understanding of the need for a more responsible and inclusive technological innovation system, raise consumer awareness of the development of such ESG/DEI technologies and stimulate shifts in consumer behavior to foster a market for their innovative products and services. The formation of market functions can be brought about by entrepreneurs. Market creation driven by entrepreneurs has not obtained much awareness in TIS literature (Hekkert et al., 2007; Bergek, Jacobsson, & Sanden, 2008; Hughes, Urban, and Wójcik, 2021).

Entrepreneurs can also join efforts and encourage transformations in consumer preferences and behavior. Prospective consumers and the public frequently demand a prolonged persuasion process until they feel comfortable with innovative technologies requiring changes in behavior; offering a more responsible and inclusive innovation may lower the consumer's resistance through a broader appeal. Entrepreneurs should consider consumers' behavior and consider changing (or adopting) their preferences earlier on in the development process.

While system function 6, resource mobilization, is predominant in the TIS framework, it can be argued whether this should be considered a distinct critical function from an entrepreneurial viewpoint. Entrepreneurs understand that they need to muster resources for innovation.

6.1. Recommendations and Further Research

TIS offers entrepreneurs invaluable insight on essential procedures to successfully creating and implementing innovative technology. According to the results of this study, we recommend a minor transformation of TIS implemented by entrepreneurs, to augment its applicability and focus on more responsible and inclusive technological innovation systems (RITIS). RITIS can encourage and foster more responsible and inclusive innovation and can be viewed as an essential foundation for success, similar to a building's foundation. However, once the foundation is laid, the innovation still must be built. Ultimately, this is the actors' job who bring the innovations to market.

We deem it critical to subdivide Market formation, system function 5, onto functions directed by governmental actors and the other directed by entrepreneurs. The functions driven by the entrepreneurs have yet to be further researched and developed, as it is not clearly mentioned in TIS literature, especially regarding a more responsible and inclusive TIS. While the current literature on TIS primarily concentrates on guidance for policymakers and distinctive sets of empirical analysis, a RITIS approach, from the entrepreneur's perspective, should emphasize ESG/DEI criteria. It should also include collaborative marketing in developing awareness, adjusting consumer behavior and preferences according to such standards, and generating equitable and feasible business strategies.

This study's findings contribute to TIS body of knowledge by proposing a more solid entrepreneurial basis in line with ESG/DEI criteria. While TIS literature has been pointed at researchers and policymakers (Meelen & Farla, 2013)\, entrepreneurs are at the epicenter of cyclic technological innovation, stimulating societal transformations through the development of new marketplaces (Berkhout et al., 2006). An RITIS framework would match the entrepreneur viewpoint. This study's findings can augment sustainable entrepreneurship literature regarding how TIS processes that drive sustainability transitions develop when entrepreneurs try to capture new business opportunities (Hall, Daneke, and Lenox, 2010).

This study has a few limitations. First, this research was developed based on a single case analysis, focusing on the internationalization of technology firms in Angola and Mozambique, limiting their generalizability. The intricacy and interdependency of internationalization in Lusophone Africa call for greater coordination. Therefore, entrepreneurs' relevance of the TIS framework should also be tested for a less complicated technological innovation system.

Second, it may be asserted that the outcomes are affected by the use of the broad description of entrepreneurs, that is, including intrapreneurs. Despite distinctions in the two different types of entrepreneurs (small start-ups vs. larger and incumbent companies), both entrepreneurs share the joint goal to capture new business prospects (Bergek et al., 2008). Therefore, it is doubtful that the two types have a different perception of the significance of the system function, and no suggestion for this was provided during the semi-structured interviews.

Finally, we only evaluated the TIS system functions individually, disregarding their dynamics. Given the systemic character of constructing a more responsible and inclusive TIS and the cyclicality and significance of feedback loops depicted in the entrepreneurship (e.g., Berkhout et al., 2006) and in the TIS literature (e.g., Bergek et al., 2008; Suurs, 2009), it would be worthwhile to explore how the emerging functions affect each other. This exploratory study happened at one moment in time, and it was not feasible to observe the outcome of and dynamics between the system functions over time. From an entrepreneurial perspective, the dynamics between emerging system functions, more responsible and inclusive, in line with DEI/ESG, constitute an interesting area for future research.

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APPENDIX 1 – LITERATURE REVIEW TABLE

This Appendix provides the following qualifications: significant research regarding technological innovation systems ("TIS"), criticism of TIS ("C") and TIS in emerging economies ("EE").

Year/ Author(s)	A highlight of findings and criticism
2015 Gosenz, Lu & Coenen	Researched global clean-tech innovation in emerging economies and considered the applicability of TIS. They focused on the shortcomings

	concerning transnational dimensions of TIS and then categorized these with TIS functions. By classifying international dimensions in TIS functions, they justify the application of TIS in emerging economies, though they caution policy-makers to recognize these transnational dimensions. Qualification: EE
Kern	Findings questioned whether TIS adequately addresses transitions and criticizes the conception of innovation processes in TIS. His research asserts that politics is more a transition feature than legitimation and argues for a more politically informed TIS. Qualification: C
Coenen	Offered a review on analytically engaging with changing spatial realities of clean-tech in the context of TIS and argued for a situated rather than the descriptive notion of context. Further, his research provided suggestions to incorporate concepts from geography into TIS. Qualification: C
2016 Jenson *et al.*	Conducted testing on TIS using Qualitative Comparative Analysis from a dataset of 100 respondents across 41 projects innovating in the Australian red meat sector. Their analysis found TIS functions were required for successful innovation but not solely responsible for producing innovation. In subsequent studies leveraging the same dataset, these researchers found that the same weaknesses repeatedly occurred in innovation settings. They concluded that the shortcomings can be overcome via policy and management action and that TIS conditions often require managerial effort. Qualification: TIS
2017 Wicki *et al.*	Used a qualitative case analysis research design to study the dynamics between TIS functions. Their study showed how TIS and its seven functions' dynamics could help nurture or hinder innovation within separate subsystems of the same industry, flywheel energy storage. In the automotive subsector of this industry, the TIS functions and the dynamics between them aided development. In contrast, the TIS functions and dynamics stagnated in the electricity sector. The comparison of subsectors in the same industry is compelling in highlighting the importance of the dynamics between TIS functions within a system. Qualification: TIS

Binz	The research attempted to combine information systems theories with the internationalization of innovation. Though the TIS framework embraces an international perspective, it has been criticized. The Global Innovation System Theory is not based on predefined territorial boundaries, but rather it is based on the actor-networks and institutions involved. Qualification: C
Kebede & Mitsufuji	Classified TIS into two subcategories, R&D-based and diffusion-based, to investigate the formation of diffusion-based solar photovoltaic TIS in Ethiopia. The study shows a broad application of TIS and recommends policy intervention in building strong TIS. Qualification: EE
Edsand	Research analysis wind energy in Colombia by considering TIS functions. The weaknesses of TIS at the landscape level are considered, as several landscape factors were found to have a significant influence on wind power TIS. Qualification: EE
2018 Chung	Research considers the sustainability transitions of TIS in multi-level governance frameworks by investigating biodiesel in Taiwan. The study concludes that international institutions have a role, while national governments should ensure consistent and appropriate policies based upon domestic TIS functions. Qualification: EE
Sixt, Klerkx & Griffin	Consider water harvesting in Jordan and use TIS to identify systemic problems in the TIS. They identify three principal blocking mechanisms, reinforcing the concept of donor contributions in emerging economies because they can influence priorities throughout the system. Qualification: EE
Markard, Hekkert & Jacobsson	The research addresses the main six areas of TIS criticism: (1) TIS context, (2) system delineation, (3) spatial aspects, (4) transitions, (5) politics, and (6) policy recommendations. They address shortcomings and highlight needs for further research. Importantly, they feel that the TIS framework has the potential to outgrow its original scope. Qualification: C
Jansma *et al.*	Researchers investigated whether TIS can be used in the management domain. Specifically, they investigated dynamics where technological start-ups were involved when developing innovations. They conducted

	semi-structured interviews with founders of 24 technological start-ups regarding their experiences with the developmental processes of their innovations. Interviews were in-depth and did not directly ask about the TIS functions but instead asked questions that allowed the researchers to ascertain whether these functions were present. Results highlight that TIS functions provide a promising framework for strategic management to guide technological innovation, especially the Resource Mobilization and Legitimation functions. Qualification: TIS
Su *et al.*	Researchers conducted secondary research considering 17 papers to analyze the concept of innovation ecosystems. An important takeaway of their findings was that the actions of specific companies affect the health of the innovation ecosystem and system, which in turn affects the company's performance. Common examples displaying this virtuous cycle of success are Apple, Google, Microsoft, and Amazon in the United States, Haier, Alibaba, Tencent, and Xiaomi in China. Qualification: TIS
2019 Frishammar *et al.*	Note that the TIS literature provides policy-makers with schemes to identify weaknesses. Still, the literature does not sufficiently elaborate on the roots of a 'weakness.' They find that system weakness may be rooted in four types of knowledge problems: uncertainty, complexity, equivocality, and ambiguity. These potential roots are employed to consider system weaknesses from a bio-refinery TIS in Sweden. Qualification: C
van Welie, Truffer & Yap	A study using the TIS framework on Nairobi's innovation initiatives in its sanitation value chain was conducted. They proposed an alternative TIS governance framework to overcome the system's capability failures, coordination, and institutional barriers. Importantly, this study is another example of extending conventional TIS, in this case, towards entire value chains. Qualification: EE
De Oliveira & Negro	Looks at biogas technologies in Brazil and considers contextual influences in TIS. Specifically, they suggest further study in three areas - (1) contextual structures' evolution, (2) contextual structures' interaction, and (3) translation of external events by said interactions. Qualification: EE

Esband	Proposes an extended TIS function approach augment TIS and make it more applicable to developing countries. Qualification: EE
2020 Aldersey-Williams *et al.*	Thirty-two interviews were conducted in the UK's offshore wind industry. They found that all seven functions of the TIS were necessary for technological innovation. However, they also hypothesized that an additional system function, defined as Demonstrating Value, was helpful in the context of their study. Qualification: TIS
Esmailzadeh *et al.*	Reviewed indicators introduced to TIS functional analysis, modified them based on developing countries' circumstances, and applied them to Iran's photovoltaic TIS to identify problems. They argued that evaluating some TIS functions in developing countries would require the adoption of new indicators. Qualification: EE
Esmailzadeh *et al.*	Again look at PV in Iran to uncover the most influential macro factors and explain the relationships between these (using the Interpretive Structural Modeling technique). Qualification: EE
2021 Ko, Zigan, & Liu	Investigate TIS in South Africa's carbon capture and storage deployment. They consider the contextual relevance of the politics in the energy sector and offer practical versus theoretical solutions. Qualification: EE

THE EFFECTIVENESS OF THE 'DECISION MODEL': THE IMPACT OF SELF-AWARENESS ON BEHAVIORAL SUSTAINABLE CHANGE IN COLLEGE STUDENTS WITH AD/HD.

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ABSTRACT
This study aims to investigate the effectiveness of the 'DECISION' integrative therapeutic model elaborated by the researcher, in creating a sustainable behavioral change in college students with AD/HD. The model is based on a conceptual framework suggesting that self-awareness is a core component for any behavioral change. Nine participants were enrolled in the model between 2017-2022. The quantitative data was collected using 'LASSI' and 'SAOQ' instruments. The qualitative data was collected through the 'DECISION-DEAR 2 ME' coaching model using semi-interviews, observations, notes, and reflections. A noticeable improvement was remarked among all participants in developing self-awareness, self-regulation, and executive skills, which led to a noteworthy behavioral change. The results showed that students who were enrolled in the program in 2017 were able to sustain this change. Coupled with the level of change that has varied visibly among the students was behind the development of the 'Self-Sustained Theory'.
Keywords: AD/HD, self-awareness, self-regulation, behavioral change, sustainability

INTRODUCTION

Studies have shown structural brain differences in people with AD/HD suggesting that it is a disorder in the brain linked to a delay in the brain maturation (Hoogman et al., 2017). Several neurotransmitters have been implicated in many regions in the AD/HD brain confirming that AD/HD is not just about being hyperactive or impulsive or having a short attention span (Barkley, 2006). Having AD/HD entails individuals that are struggling with managing their emotions, and learning critical executive skills (Brown, 2005). According to Barkley (2006), emotional dysregulation is a core symptom of AD/HD. The inadequate resolution of emotional distress leads to hyper arousal, not learning easily from previous experiences, and having difficulty in controlling behavior.

College students with AD/HD lack many critical skills that allow them to organize and meet their deadlines, prioritize their tasks, and regulate their emotions (Barkley, 2012). In such, they need to learn how to compensate for such barriers, by accepting who they are, how they think, and the way they do things. When they understand that they can choose how to respond to any situation; believe that they have the power to make changes in their life; and know what recharges their energy, then they can set their goals and attempt clear and realistic strategies to change their behavior, and thus let go of the victim mentality (Hallowell & Ratey, 2011).

Theoretical framework

Self-awareness is a temporary state of self-consciousness. According to Duval and Wicklund (1972) our thoughts are not us; we are the thinkers who observe our thoughts. We become self-conscious as objective evaluators when we focus our attention on ourselves, evaluate and compare our current behavior to our internal norms and ideals. Using these standards is a major component of practicing self-control, as we evaluate whether we are making the right choices to achieve our goals, we initiate the change paradigm through continuous learning (Boyatzis et al, 2019). This is where self-awareness contributes to one's own personal development (Silvia & Duval, 2001).

Focusing our attention on the inner self, is an ability that Duval and Wicklund (1972) termed as self-evaluation, which is a vital competency throughout which self-consciousness can prompt an action. When we engage in self-evaluation, we can give some thought to whether we are thinking, feeling and acting as we should. Are we driven by our standards and values? or are we following our automatic thoughts and personal beliefs? Self-awareness is initiated by being able to compare ourselves against our standards of correctness. Defining our values and aspirations aids us in figuring out our ideal self. Having an accurate sense of who we are allows us to set the goals we would like to fulfill, self-evaluate our strengths and weaknesses, and decide on our lagging skills to step forward to implement our action plans.

Although most people believe that they are self-aware, true self-awareness is a rare quality (Eurich, 2018). Eurich and other researchers suggest two distinct types of self-awareness to perform well in our roles: the internal self-awareness which represents how clearly we see our own values, passions, aspirations, reactions (including thoughts, feelings, behaviors, strengths, and weaknesses), and our impact on others; and the external self-awareness which is understanding how others view us with those same factors. It is easy to assume that being high on one type of awareness would mean being high on the other, but researchers propose that we progress through levels of self-awareness, identifying four self-awareness archetypes, each with a different set of opportunities to improve: Seekers, Pleasers, Introspects, and Aware (Eurich, 2018).

Hence, self-awareness touches every aspect of our life and requires an enduring practice to refine it. Neuroscientists support such notion when they propose that an area of the brain known as the anterior cingulate cortex located in the frontal lobe region plays an important role in developing self-awareness (Moeller & Goldstein, 2014), and suggest that awareness arise from interactions distributed among brain networks (Philippi et al., 2012). Such a concept verifies the various ways everyone adopts while proceeding in the change paradigm, based on the level of awareness they have reached and the clarity they have in each aspect of self-awareness. However, to move on through this spectrum, different competencies need to be cultivated to spot the key areas that affects our lives and act upon.

The Self-awareness theory and subsequent research, suggest that when a discrepancy between ourselves and our standards is detected, we find ourselves with two choices: either to work toward reducing this discrepancy, or avoid it entirely (Silvia & Duval, 2001) due to many factors: either missing that clear perspective of the ideal-self (Intentional Change Theory) (Boyatzis et al., 2019); or being under the 'Dunning-Kruger effect' thinking that we are more competent than what we truly are (Kruger & Dunning,1999); or focusing more on the standards than on the performance (Silvia & O'Brien, 2004); or failing self-regulating the hidden

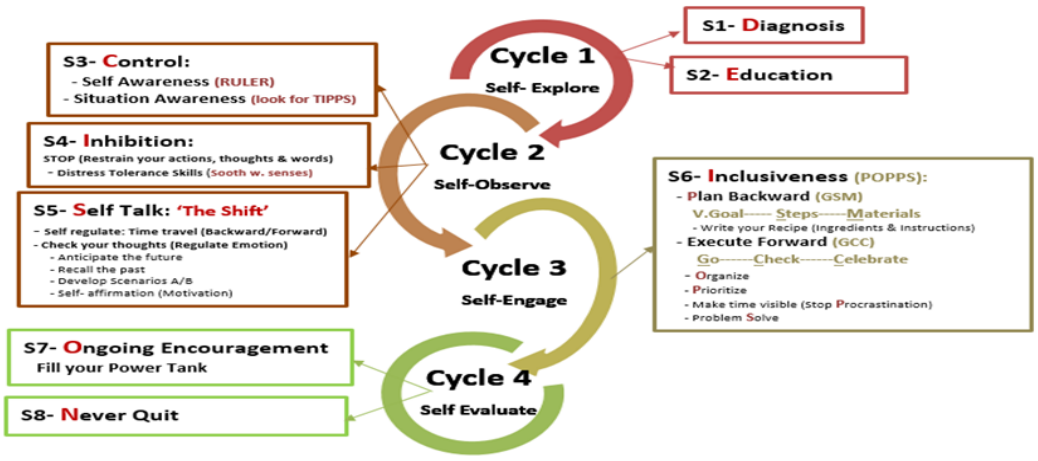
emotions and feelings that are keeping us crippled in our comfort zone (Boyatzis et al., 2019) facing a controversial self-awareness that is related to self-regulation ability.

According to Goleman et al. (2018), self-awareness is the key cornerstone for self-regulation. While self-awareness is a psychological state in which oneself becomes the focus of attention, self- regulation is the ability to monitor and manage our energy states, emotions, thoughts, and behaviors in ways that are acceptable and lead to our well-being. Developing self-regulation ability requires self-awareness to monitor our own behavior in relation to our own personal standards, judge the consequences and react to our own behavior in term of what we think and how we feel about our behavior (Bandura, 1991). Therefore, self-regulation is the continuously active process that is essential to preserve the change paradigm. Individuals would take the initiative and regulate their own learning if they had the opportunity to work on their self-evaluation, exert self-regulation, and learn how to pick the best strategies for success; then, monitor their performance and experience with the methods they chose; make real-time adjustments to their plans; and reflect after the task is completed (Zimmerman, 2002).

Conceptual Framework

Based on the vast research highlighting the new understanding of AD/HD as a neurological disorder that impacts self-regulation (Barkley, 2012) and executive functioning (Brown, 2005). The researcher developed the 'DECISION' integrative therapeutic model for college students with AD/HD suggesting that the students exhibiting high self-awareness are more readily able to develop self-evaluation, and subsequently exert the self-regulation needed to remediate their executive functions skills and emotional dysregulation which in turn will lead to employ efficient self-engagement. The model consists of four empowerment cycles, Figure 1.

Figure 1: 'DECISION' Therapy Model- Empowerment Cycles



The specialist's role -throughout the four empowerment cycles- evolves around encouraging the students to generate awareness, self-evaluate, self-regulate, and get engaged to reach their full potentials by learning four sets of critical skills: Collaboration and communication skills (Cycle 1); self-regulation skills (Cycle 2); problem solving and study skills (Cycle 3); and adaptability skills (Cycle 4). The 'DECISION' model was built to help students develop self-awareness aiming to ignite their curiosity and engage them in a constant dialogue about their strengths and areas for improvement.

Purpose of the study

When it was first developed in 2015, the 'DECISION' model proposed that college students with AD/HD who have an elevated level of self-awareness are better able to exert the self-

regulation required to improve their executive skills and, as a result, their academic skills. This assumption was supported by the continuous growth among the students enrolled in the program from 2017 till 2019. With the research being resumed in 2021 after the pandemic, an investigation was required to confirm the sustainability of the growth that was observed earlier. Additionally, with the new participants who presented themselves with prominent level of self-awareness but were trapped in their comfort zone, this study aims to assess if self-awareness will lead to employ efficient self-engagement, and as a result a self-sustained growth.

Hypothesis and Research Questions

The main hypothesis suggested that self-awareness is a core component for any behavioral change and the greater is the level of self-awareness, the greater is the self-growth and the behavioral change sustainability. The study addressed the following research questions:

1- Provided with the 'DECISION' therapy intervention model, what is the degree of self-awareness for college students with AD/HD, and does it affect their behavioral change?
2- Would all college students with AD/HD who develop self-awareness proceed to act and develop self-growth?
3- To what extent the college students with AD/HD who were able to improve their performance in 2019, sustained their behavioral change in 2022?

METHODOLOGY

Research Design

The study implemented an action research design, it started in 2017 and stopped in 2019, then it was resumed in 2021 till 2022. The study implemented the 'DECISION' model on college students with AD/HD. This model aims to empower college students with AD/HD to develop self-awareness and the critical competencies needed to initiate and sustain behavioral change: self-evaluation, self-regulation, and self-engagement.

Intervention and Participants

The study was developed in five phases, phase 1 (2015-2017): developing the 'DECISION' model based on the theoretical framework and literature review, shaping the hypothesis, selecting the cases, and getting ethical approvals; phase 2 (2017–2019): implementing the 'DECISION' model and collecting the first data; phase 3 (2019–2020): implementation stopped due to the COVID pandemic and analysis of the first data collected; phase 4 (2020): developing a coaching tool aligned with the conceptual framework and the International Coaching Federation eleven core competencies , the 'DECISION-DEAR 2 ME'; phase 5 (2021–2022): collection of new data and assessing the sustainability of the change that occurred in 2017.

Three college students were enrolled in the two- year therapeutic 'DECISION' model from 2017-2019. Due to the COVID Pandemic the study stopped in 2019-2020, then it was resumed with an additional six students that were chosen randomly to join the coaching program 'DECISION-DEAR 2 ME' during the academic year 2021-2022. All nine participants received individual coaching sessions, and their age ranged between 19 and 27 yrs. Table 1 shows the profile of the participants with the number and dates of sessions received.

Table 1: Profile of participants with number and dates of treatment sessions

Student number	Diagnosis	Age	# of Sessions	Implementation of the Decision Model
1	AD/HD/ PTSD	20	20	2021-2022

2	AD/HD	27	10	2021-2022
3	AD/HD/ Borderline	19	26	2021-2022
4	AD/HD/ Borderline	23	45	2017-2022
5	AD/HD	19	15	2021-2022
6	AD/HD/ Anxiety	20	45	2017-2022
7	AD/HD/ Borderline	21	11	2021-2022
8	AD/HD	22	38	2017-2022
9	AD/HD	20	15	2021-2022

Coaching model 'DECISION-DEAR 2 ME'

The 'DECISION-DEAR 2 ME' is a transformative coaching model that matches the International Coaching Federation-ICF eleven core competencies. It is based on a thoughtful relationship with the students aiming at encouraging them to self-accept and embrace their neurodiversity. The model uses a multimodal approach to treatment, and different types of methods that have been proved working for individuals with AD/HD (CADDRA, 2011).

The model protocol calls for a goal directed action plan developed by the students. Each session is tailored to target the individual's challenges. It is administered in 40 to 50-minute session a week. Two Intake sessions aim at connecting with the students and validating their emotions. Subsequent coaching sessions focus on each unsolved problem educating students about their neurodiversity to encourage them to compete with their brain, discover their hidden emotions, to explore tactics and strategies that would help them to self-engage and develop coping skills. Every session ends up with the "Monitor and Evaluate" component where the students are asked to reflect on their behaviors, evaluate their performance, learn what works for them and what should be altered and make any adjustments needed. Figure 2 represents the phases of this coaching model.

Figure 2: Phases of the 'DECISION- DEAR 2 ME' model

Data collection tools

Multiple data collection tools were used to enhance the credibility of the study. The qualitative data was collected during the implementation of the coaching model using: semi-structured interviews and observations depicting the students' attitudes while describing the unsolved problems and generating the awareness (Describe, Explore, Aware and Reframe phases); memos and notes taken during the follow up of the students' action plans' implementation, and portraying their commitment to practice the lagging skills (Reconstruct phase); reflections written at the end of every session, and audio recordings (Monitor and Evaluate phases)

While the quantitative data was gathered using two validated instruments. A standardized test 'LASSI' which is also termed 'Learning and Study Strategies Inventory' (Dill, 2014). It provides standardized score for ten different scales: Anxiety; Attitude; Concentration; Information processing; Motivation; Selecting Main ideas; Self-Testing; Test strategies; Time Management; and using Academic resources. These scales were used to track the students' 'WILL', 'SKILL' and 'Self-Regulation'. The 'LASSI' was administered at the beginning of the study in 2017 on students 4, 6 and 8 (pre-test), then after implementing the 'DECISION' model in 2019 (post-test) for students 4 & 6 only; then it was performed as pre and post-tests for students 1, 2, 3, 4, 5 ,6 and 7 in 2022 to measure behavioral change. In addition, the 'Self-Awareness Outcomes Questionnaire' (SAOQ) elaborate by Sutton (2016), which provides scores based on four factors: Reflective self-development (RSD); Acceptance (A); Proactivity (P); and Emotional Costs (EC), was administered at the end of the study in 2022 for all nine participants to measure the degree of awareness.

RESULTS AND DISCUSSION

The objective of the first question of research is to measure the degree of self-awareness of the nine AD/HD college students using the 'SAOQ' instrument; and to test the relation between the degree of awareness and 'LASSI' scores to detect behavioral change.

Table 2 presents the mean rank of each subscale in 'SAOQ'. Results showed significant self-awareness of the students in all questionnaire subscales after applying the 'DESCION- DEAR 2 ME' coaching model. Then, Friedman test was conducted to determine whether the nine students had a differential rank (1-4) ordered self-awareness in its four constructs. Results of analysis indicated that there was a differential rank $\chi^2 = 101.85$ with $p<0.05$, which validates the discrimination between the scales. Thus, the statistical results showed a significant awareness of the students after applying the 'DESCION- DEAR 2 ME' treatment.

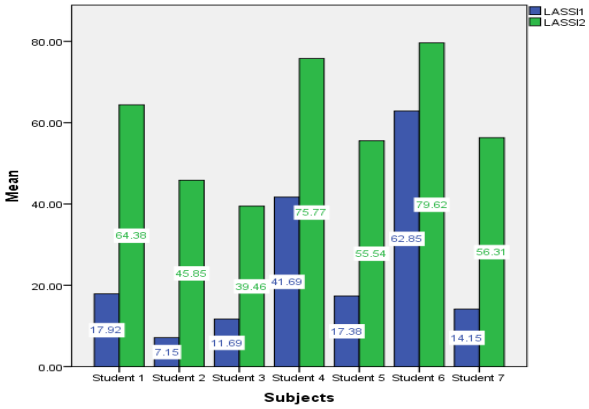
Table 2: Self-Awareness Outcome Questionnaire Subscale Descriptive Data

	N	Mean	Std. Deviation
SRD	9	3.46	.35
Acceptance	9	3.20	.56
Proactive	9	3.19	.58
Emotional Cost	9	2.76	.79

On the other hand, the 'LASSI' assessment was conducted on seven students as pre and post-test (Students 4 & 6 started in 2017 and resumed in 2022, and students 1,2.3, 5 & 7 started in 2021). The Model was employed in between with varied number of sessions depending on the particularity of each case.

The bar graph of figure 3 shows an increase in all the students' 'LASSI' scores after the intervention. However, the extent of increase depends on each student's case, number of sessions, and responsiveness to the 'DECISION-DEAR 2 ME' model. The greatest improvement is for student 1, from a mean score of 17.92 up to 64.38. Moreover, students 4 and 6 who were enrolled in 2017 instigated with high scores (41.69) and (62.85) respectively compared to the other 5. This is an indicator that the coaching model is effective.

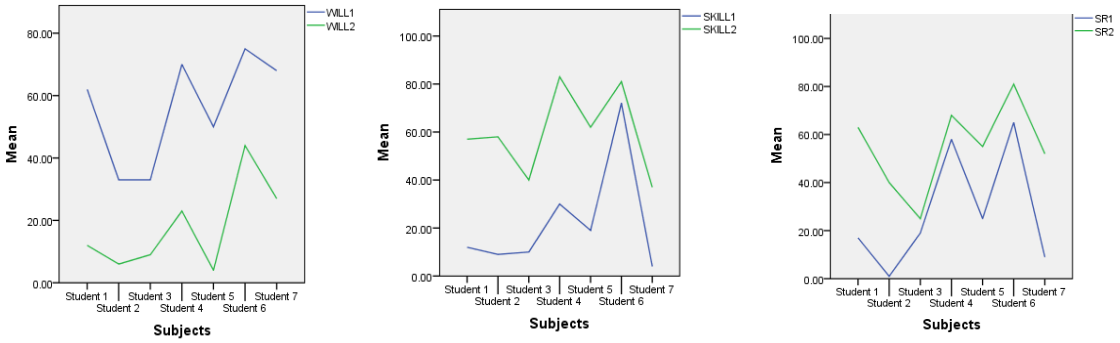
Figure 3: Bar graph of Students' Pre and Post LASSI Scores



Assuming that the data are not normally distributed, a Wilcoxon signed rank was used to test whether the coaching model implemented had an impact on students' 'LASSI' scores. Two hypotheses were considered: The null hypothesis H_0, there is no change in 'LASSI' scores from March 2022 to May 2022; the alternative hypothesis H_1, there is a change in 'LASSI' scores from March 2022 to May 2022. The statistics calculated showed a significant difference in all 'LASSI' score items for the seven students since $p<.05$ for all items. Thus, there is enough evidence to reject the null hypothesis and accept that there is a significant increase in students' 'LASSI' scores from March 2022 to May 2022. The fast change that has occurred among the students who joined the model for a short period of time verifies that students start experiencing a change as soon as they understand their symptoms and start self-evaluating their strengths and weaknesses. Thus, we can infer that a behavioral change is initiated due to the individual coaching that was able to trigger their curiosity to seek learning.

Similarly, the analysis of the qualitative data collected from the interviews, reflections, and notes taken during the sessions showed increased motivation in students to learn new skills, and increased ability in self-management which was solidified by their constant commitment to attend their weekly sessions. This verifies that the 'DECISION-DEAR 2 ME' model brought awareness and induced a positive behavioral change. This change was reflected in an increase in the students' study skills- measured by the 'SKILL' subscale their attitude towards learning- measured by the mean of the 'WILL' subscale, and their 'Self-Regulation', as presented in figure 4.

Figure 4: Pre and post scores of 'WILL', 'SKILL' and 'SR'



To answer research question 2 about the relation between self-awareness and development of self-growth in AD/HD college students, Spearman rank correlation was used as a non-parametric measure to compare this relationship. Results showed one significant correlation between item 2 of 'SAOQ' "I have insight into myself "and 'LASSI' pre and post measures. Spearman correlation with the pre- 'LASSI' score turned out to be .797 (p=.03<.05) while with post 'LASSI' it was .896 (p=.006<.01). Other correlations turned out to be negligible or negative. Figure 5 shows the relationship between 'SAOQ' item 2 and 'LASSI' pre and post scores. As the self-awareness increases, the 'LASSI' scores increase showing a strong positive correlation.

Figure 5: SAOQ Item 2 versus LASSI Scores

On the other hand, the interviews held with students noted an amplified ability in defining their unsolved problems and self-evaluation. As per session notes, they always appeared willing on moving to set new goals and develop new action plans. However, the improvement noticed varied from one participant to another. There has been a significant discrepancy in their scores and feedback suggesting that initiating the self-growth process by cultivating self-awareness seems not enough to have these students commit to the change process. Thus, self-awareness as a single competency the students have doesn't necessarily lead to actions and self-growth which raises up the need for addressing the various factors that would affect the change desired. As revealed in many personal interviews, other factors were seen playing a role in hindering the participants from moving forward from the 'Contemplation phase' of change to the 'Action phase'. Factors such as their inability to define their ideal-self, their controversial self-awareness which revealed many blind spots, as well as the intense emotional dysregulation that some participants took time to figure them out before continuing their transformative journey which again confirm that self-awareness is not a one size fits all concept. Thus, the results show that not all students who develop self-awareness proceed to act and develop self-growth. Some participants demonstrated self-awareness and understanding of their strengths and weaknesses but were stuck either in their 'Comfort Zone' or their 'Fear Zone' feeling crippled and unable to proceeding to act upon the plans they developed to modify their behaviors.

The third question of research aims to measure the sustainability of behavioral change from 2019 up to 2022 with a forced interruption due to COVID. The bar graphs in fig.6 show the progress in the 'WILL', 'SKILL' and 'SR' composite of 'LASSI' for the two students who resumed the treatment in 2022 (students 4 and 6). Student 4 score in 'WILL' subscale was 40 before the treatment in 2017-2019, increased to 48, then decreased to 23 after the interruption, then increased immensely to 70 after the second coaching trail. The same student score in 'SKILL' was 43, increased to 60 after the first coaching trail, then dropped from 60 to 30, but shifted enormously to 83 after the second coaching trail. The obvious increase in the scores propose a conclusion that behavioral change is sustained after the treatment in spite of the interruption. Moreover, students who joined the program in 2017, reported in their personal interviews that they were able to use the strategies taught to them to self-sooth. They were successful in dealing with the different situations using journaling, reflection, mindfulness. In addition, they showed a higher ability in using their self-awareness. They were constantly self-evaluating their needs. They showed a greater ability in self-regulating. They have mentioned that such a practice has become as their second nature which implies that self-awareness is a cognitive state that students need to continuously practice and refine by regularly revisiting their needs and acting upon their lagging skills. Thus, the findings suggest that a higher commitment to practicing self-awareness and learned skills would lead to more successful experiences and a sustainable self-growth.

Figure 6: Progress of 'LASSI' subscales: 'WILL', SKILL' and 'SR' over Time

CONCLUSION

This study aims to investigate the effectiveness of the 'DECISION' therapeutic model, together with the transformative 'DEAR- 2 ME' coaching model that is embedded within it, in creating a sustainable behavioral change in college students with AD/HD. The model was developed by the researcher in 2015 to improve college students' executive skills. The underlying conceptual framework suggests that self-awareness is a core component for any behavioral change, thus a greater degree of self-awareness results in a greater self-regulation and self-growth. The quantitative data was collected using two instruments: 'LASSI' and 'SAOQ'. The qualitative data was collected throughout the coaching model using semi-structured interviews, observations, notes, and reflections. The results of the 'SAOQ' showed significant self-awareness of the students after applying the coaching model. In addition, the comparison of the pre and post 'LASSI' scores revealed an increase in all students' scores after the intervention, suggesting a behavioral change. However, the improved in self-awareness and self-regulation varied between different cases according to their commitment to the intervention, as well as comorbidities that affected the ability to control their emotions. Recognizing different behavioral changes across participants, supports the notion that self-awareness is not just a skill, but a spectrum.

Additionally, a continuous growth amongst the students who joined the research in 2017 was identified. All participants sustained the change that was observed after the first implementation of the coaching model. This suggests that self-awareness triggers the desire to change which increases the capacity for self-growth when supported with the ability to self-evaluate and self-regulate, students will move to action. Findings suggests that college students, with most awareness of their inner self: their values, their aims, and their emotions, showed a significant desire to learn the skills needed to reach their aim and achieve a sustainable behavioral change. This further supports the notion that self-awareness is a core competence that other components continuously rely on to achieve the desired change, such as: self-

evaluation, self-regulation, and consequently self-engagement. The more they understand themselves (self-awareness) and appreciate the way they are (self-acceptance), the easier it is to decide what they should do to improve (self-evaluate). Furthermore, being able to exert self-regulation, they employ efficient self-actualization, maximise their strengths, and unlock the power of possibility proposing the 'Self-Sustained Growth' Theory that was formulated by the researcher.

Thus, we can conclude that the 'DECISION-DEAR 2 ME' coaching model is a significant tool that assisted the college students with AD/HD to embrace a substantial way to achieve the growth desired. Future studies will be implemented on a larger sample and on different age groups to analyze different tendencies and validate the constructed theory.

The 'Self-Sustained Growth' Theory

To sustain any behavioral change and work on one's self-growth, individuals need to refine their self-awareness till it becomes an integral part of who they are and can utilise it at different points depending on the situation and their personalities.

The 'Self Sustained Growth' theory evolved as a phenomenon where all components are in constant movement. Being the core component, self-awareness, exhibits radar like abilities observing our inner and outer world to detect one's blind spots, maladaptive habits, automatic thoughts, and hidden emotions to call for action. It recognises our successful experiences, cherish our values, to continuously set goals that align our 'Actual self' with our 'Ideal self'. When goals are set, a person then proceeds to the self-evaluation phase where the success factors are identified, strengths and lagging skills needed to fulfil the goals are examined, and action plans are developed. As the implementation stage might be intimidating for many people, the self-regulation phase is resumed, and the self-regulation competency must be practiced resolving the fears and automatic thoughts that are consuming our efforts to move forward. When self-regulation is achieved, we become able to focus on the change and hence elicit that inner desire to self-engagement phase. That desire further encourages us to implement new skills to achieve our goal. This is known as the self-engagement phase. The continuous tuning of abilities and refinement of skills will then allow one to progress to self-growth. At this phase we would be fully capable of having a new perspective on our goals. A fully aware, determined outlook. These skills could be constantly improved. The five phases of the 'Self-Sustained Growth' theory can be envisioned as an individual atom that illustrates the journey taken to achieve an experience or a goal, figure 7.

Figure 7: The 'Self-Sustained Growth' theory

On a larger scale, we can come to understand how each atom bonds together to form the molecular structure that defines us. This is the 'Self-Sustained Growth' theory developed by the researcher, and the 'DECISION' model is the tool that can be used to reach the self-sustained growth.

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RESOURCE CAPACITY AND FIRM COMPETITIVENESS AMONG SMALL AND MEDIUM-SIZED ENTERPRISES IN KIGALI CITY, RWANDA

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ABSTRACT
This paper examines the influence that resource capacity has on competitiveness of SMEs in Kigali city. Data was collected from 61 managers of SMEs in Kimironko cell who were selected by convenience and purposive sampling. Only SMEs registered with Rwanda Development Board, which have been in operation between 2010, and 2022. Data was analyzed by use of descriptive and ordinary least squares analyses. Results show that human and management capacities had negative influence on SME competitiveness but the effect was not statistically significant while the effect of financing capacity on firm competitiveness was positive and statistically significant. Enhancing teamwork among SMEs and effective environmental analysis to exploit opportunities and mitigate risks are recommended. Further studies also need to explore all SMEs to generate representative data. This paper contributes to understanding the importance of financial resources in fostering firm competitiveness and encourages SME to leverage human resources and management for firm competitiveness.
Keywords: *Resource capacity, firm competitiveness, micro-enterprises, small enterprises, medium enterprises*

INTRODUCTION

The government of Rwanda has set a development road map through Vision 2050 with the goal to improve citizens' living standards and attaining top middle income status before end of 2035 as well as being among advanced economies by 2050 (MINECOFIN), 2015 pp.11-31). The key objective of Vision 2050 is to spur prosperity and economic growth and achieve higher standards of living for all Rwandans. This vision is based the foundation of 5 key components of: 1) human capital development, ii) economic competitive advantage and integration, iii) creation of wealth through agriculture development, iv) developing urban centres, and v) effective and accountable institutions.

Regarding competitiveness and integration, the country's interest to become a highly developed country is hinged on her ability to accelerate economic competitiveness at all levels (MINECOFIN, 2015 p.15). As stated in Vision 2050 (MINECOFIN, 2015 p.15), in the next three decades, the country targets to rank among top twenty economies in competitiveness by 2035 and top ten by 2050.

Small and medium enterprises (SMEs) are considered as key actors in fostering the country's drive to achieve economic competitiveness by 2020. SMEs in Rwanda can be classified in three broad categories of micro, small and medium (MINICOM, 2020 p.9). According to MINICOM

(2020 p.9), micro-enterprises are those firms employing 1-2 people, with maximum annual sales revenue turnover of Rwf 1million. Small enterprises are those that employ 3-20 people, with annual sales revenues of Rwf1-20million. On the other hand, medium enterprises are classified as those that employ 21-100 people, with annual sales revenues of Rwf20-500million.

In terms of resources, SMEs in Rwanda remain resource constrained and less competitive to their peers in the East African region. This phenomenon can be explained by the resource-based view (RBV) theory of firms. RBV is considered appropriate because it focuses on the importance of resource capabilities in achieving sustainable competitive advantage. The theory as developed by Barney (1991 pp.99-120) suggests that a firm is considered an entity formed out of combining both tangible and intangible resources that are organized to enable that entity engage in business competition with other entities or firms. In order to achieve long-term competitiveness, Barney (1991 p.105) says that the resources of the firm must have four heterogeneous qualities of being valuable (have value), rare (very scarce and not easily accessible by competitors), inimitable (unique and not easy to copy or duplicate), and non-substitutable (have no substitutes) (VRIN). Barney (1995) later added the fifth attribute by stressing that firms must organize to exploit resources, thus VRIN attributes changed to VRINO (valuale, rare, inimitable, non-substitutable and organization) attributes.

Resource capacity is defined by Xie and Suh (2014 pp.2-4) as the capability of an organization to acquire and utilize physical and non-physical assets to improve its competitiveness and performance (. Even though resources appear in different categories, this study considers resource capacity in three dimensions of management capacity (Xie and Suh, 2014 pp.7-10), human capacity (Pollyn, et al., 2016 pp.63-79 and financial capacity (Jayasekara, et al., 2019 pp.1-11). Therefore, SMEs are unique in terms of resource possessions, which are the ultimate source of their competitiveness. Firm competitiveness can be defined as the capacity of the firm to develop and gain rare capabilities that enable the firm to delivery better quality goods and services to their customers than the competitors (Dobbin and Baum, 2000; cited in Zainal and Zainal, 2020 pp.776). In this study, the competitiveness of SMEs is examined based on efficiency, market share, profitability, product and service quality, price, delivery time, labour productivity and customer loyalty.

The government of Rwanda has invested in stimulating the growth of the SME sector in the country. This can be exemplified by emergence of entrepreneurship ecosystem drivers such as centers for business incubation and acceleration (MINICOM, 2020 p.26); higher institutions of learning with focus on entrepreneurship, etc. Similarly, as noted by the MINICOM (2020 p.2) the government also introduced the new entrepreneurship curricula in secondary schools that is enhancing the training of young entrepreneurs.

However, despite this effort, SMEs remain less competitive compared to larger corporations. For example, SMEs such as agri-businesses have diminished labor productivity and product/service quality (MINICOM, 2020 p.20), have limited market share compared to larger firms, experience high costs and reduced profitability (MINICOM, 2010 pp.6-10). Furthermore, Rwanda Development Board (2020 p.17, 27) shows that SMEs are denied access to finance and lack adequate resources to execute their strategies and mission. The researcher believes that resource capacity in terms of human, financial and management capacities have a bearing in firm competitiveness in 2010-2021.

Research objectives

Our study is guided by three specific research objectives as stated below:

1) To establish the effect of human capacity on firm competitiveness among selected SMEs in Kigali city
2) To determine the effect of financial capacity on firm competitiveness among selected SMEs in Kigali city
3) To find out the effect of managerial capacity on firm competitiveness among selected SMEs in Kigali city

THEORETICAL FRAMEWORK AND HYPOTHESES

Theoretical review

The RBV theory (Barney, 1991 pp.99-120; Barney, 1995 pp.49-61) provides the theoretical basis for this paper because it explores the link between resource capacity and firm competiveness. As emphasized by Barney (1991 p.101), resources include a collection of the assets, organizational processes, capabilities, unique attributes, experiences, information and knowledge, etc. under the control of a firm which facilitate the owning firm to generate ideas and execute strategic actions with the ultimate goal of improving firm competitiveness. The RBV theory was formulated by Barney in the 1990s as proposition on how firms gain competitive advantage over their peers. The theory assumes that resources are uniquely different, non-transferable and are not equally able to sustain competitiveness.

Since resources do not provide the same competitiveness, Barney (1991 p.105) argued that for resources to be considered as possessing competitiveness, they must satisfy four VRIN (valuable, rare, inimitable and non-substitutability) attributes. In other words, a) they should be able to provide value in form of exploiting opportunities and neutralizing threats in the organization's operating environment, b) they should be not easily accessible to the organization's current and future competitors, c) they must be not easy to copy or duplicate, and d) they should not have substitutes. Barney (1995 p.56) later expanded the four resource attributes by adding organization, which indicates that the company should be properly organized and coordinated to be able to utilize its resources.

Empirical review

Empirical literature regarding the effect of human capacity, financial capacity and management capacity on firm competitiveness is full of inconsistencies. In regard to human capacity, Marimuthu, et al. (2017 pp.265-270) argues that human skills and competences are important for developing firm competitiveness and performance. Similarly, Kithae and Keino (2016 p.139) observed that human capacity was a very important factor for competitiveness, performance and growth of SMEs in Kenya.

In terms of financial capacity, Grozdic, et al. (2020 p.1) observed that financial capacity had a negative (and statistically significant) effect on firm competitiveness in the short term. However, the results showed statistically significant and positive effect on long-term competitiveness. However, Fonseka, et al. (2014 p.14)'s study in China observed that companies' internally0generated financing capabilities had no significant effect on firm competitiveness but the ability of firms to access bank finance was positively related to competitiveness. This demonstrates the contradictory nature of financial resources on firm competiveness.

Further research on management capacity (Day and Nedungadi, 1994 p.31-44) indicated that the organization's achievement of higher returns over a long-term might be due their managers' efficiency in decision-making, which is influenced by possession of managerial skills, which enable them to develop sustained competitive advantage. It is therefore worth to note that

managers with superior human capital and commitment to represent firm interests generate more than average rate of firm competitiveness. Nevertheless, there is no accessible literature that focused on resource and capacity and firm competitiveness in Rwandan context.

Hypotheses

From the theoretical and empirical review of literature, we adapt the following 3 research hypotheses for the current study:

1) H_a1: There is a statistically significant relationship between human capacity and firm competitiveness among selected SMEs in Kigali city
2) H_a2: There is a statistically significant relationship between financial capacity and firm competitiveness among selected SMEs in Kigali city.
3) H_a3: There is a statistically significant relationship between managerial capacity and firm competitiveness among selected SMEs in Kigali city.

Conceptual framework

The research model in Figure 1 illustrates the hypothetical relationship between resource capacity (RC) as the independent variable (IV) and firm competitiveness (FC) as the dependent variable (DV).

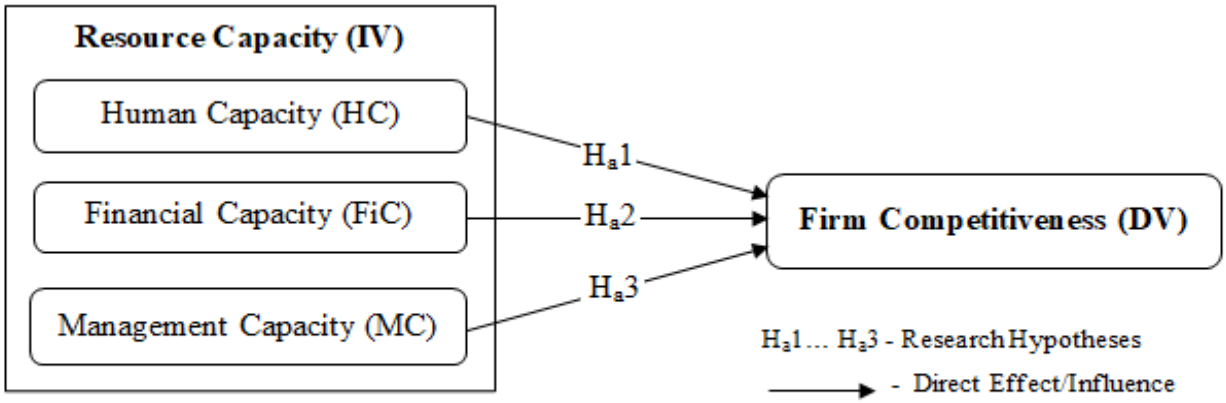

Figure 1: Hypothetical Conceptual Framework

Source: Author (adapted from literature)

As Figure 1 shows, the predictor variables for RC include human capacity (HC), financial capacity (FiC) and management capacity (MC). It has been indicated in the literature that firm's resource capacity plays a key role in improving firm competitiveness (FC).

METHODS

Study Design

The study was based on a correlation research design because the researcher was interested in establishing the effect of resource capacity on firm competitiveness. The correlational research design was preferred for this study because according to Bujang and Baharum (2016 p.39) correlation designs permit a large sample size and this improves the accuracy of average values, enable the researchers to identify and remove outliers from the data and generate smaller error margins.

Population and Sampling

The study covered a total of 102 SMEs in Kigali city's Gasabo district, Kimironko sector, Kimironko Cell. From each SME, only one SME representative was purposely and conveniently selected to act as a respondent. The selection of such respondents was because

they were presumed to have adequate information on the resources available for their SMEs and how those resources have contributed to SMEs' competitiveness. Only SMEs registered with Rwanda Development Board and having been in operation between 2010 and 2022 were covered. Secondly, respondents who expressed willingness to participate in the study, who were easily accessible and were the proprietors of SMEs or their agents were considered. However, only 61 respondents were able to fill the questionnaire.

Data Collection

The data collection instrument used for this research was the closed-ended survey questionnaire which was designed after comprehensive and careful review of literature. The questionnaire was designed with five-point lickert scale responses where: 5 represents strongly agree, 4 represents agree, 3 represents neutral, 2 represents disagree while 1 stands for strongly disagree.

Validity and Reliability

In order to improve research reliability, the questionnaire was pilot-tested before being applied among respondents for data collection. Pilot-testing process involved administering the questionnaire to 5 randomly selected chief executive officers from 5 firms that were not covered by the study. The consistency in their responses proved that the questionnaire was reliable and appropriate for this study.

Data Analysis

The researcher used two methods of data analysis (descriptive and inferential). Descriptive analysis was represented by frequency and percentages (for section 1) and minimum, maximum, mean and standard deviation for sections 2-5.

Under inferential statics, the researcher used ordinary least squares (OLS) regression to determine the statistical significance of the relationship between human capacity (HC), financial capacity (FiC) and management capacity (MC) on one hand and firm competitiveness. The OLS regression adopted the following model:

$Y=\beta_0+\beta_1(HC)+\beta_2(FiC)+\beta_3(MC)+Ɛ$, where:

Y=Firm competitiveness

β_0=Intercept/constant

$\beta_{1...}\beta_3$=Regression coefficients/parameters

Ɛ=Error term

FINDINGS

The subsequent sections show the findings of the study about the effect of resource capacity on firm competitiveness among SMEs in Kigali City. The results cover the background of respondents, descriptive statistics and inferential statistics.

Table 1: Background characteristics of respondents

Background attribute	Response Item	Frequency	Percent
Gender	Male	34	55.7
	Female	27	44.3
	Total	61	100
Education level	Secondary	18	29.5
	Vocational	26	42.6
	University	17	27.9
	Total	61	100
Managerial level	Senior staff	32	52.5
	Mid-level staff	17	27.9
	Frontline staff	12	19.7
	Total	61	100

Period working with the firm	Two years and below	10	16.4
	Two-four years	13	21.3
	Four or more years	38	62.3
	Total	61	100

Source: Primary Data, 2022

As Table 1 shows, it can be observed that there were more females (55.7%) than males (44.3%). This can be attributed to the fact that Rwandan women have been empowered to engage in economic activities. However, being involved in SMEs shows that women still face challenges in seeking opportunities to grow their businesses into large corporations. Regarding education, all respondents were literate up to secondary level (29.5%), vocational level (42.6%) and university level (27.9%). This indicates that they had the capacity to provide valid data for this study. In terms of management ladder in their SMEs, it can be observed that 52.5% were from the top level, followed by the middle level (27.9%) and the lower level (19.7%). This indicates that majority respondents had insider knowledge of the firm that improves data validity. Regarding work duration, 62.3% ad been working with the firms for 4 years and above at the time of the study, followed by 21.3% who had worked with the firms for 2-4 years and 16.4% who had worked there for two years or less. The findings demonstrate that participants had adequate experience with the surveyed SMEs thus enabling them to understand those SMEs' resources and competitiveness which improves the validity and reliability of results.

Descriptive Statistics

The descriptive analysis for this study presents summaries of responses on each of the research constructs under human capacity, financial capacity and management capacity.

Human Capacity among SMEs

Items HC1-HC6 in Table 2 focused on research constructs related to human capacity in the surveyed SMEs. It is observed in item HC1 that majority respondents agreed that their staff were knowledgeable and multi-skilled (Mean=4.1, SD=1.4). Item HC2 also shows that there was a high level of agreement that SME staff were empowered and motivated (Mean=4.1, SD=1.5). Similarly, there was high level of agreement in item HC3 that staff among the surveyed SMEs were highly productive (Mean=4.5, SD=1.1). However, it is indicated in item HC4 that majority disagreed that there was teamwork in the surveyed SMEs (Mean=2.9, SD=2.2). Item HC5 further shows that majority agreed that their staff participated in continuous learning programs (Mean=4.9, SD=0.6) thus giving them skills. Lastly, item HC6 shows that majority also agreed that their staff were efficient (Mean=4.6, SD=1.0). Therefore, from the above presentation, it can be concluded that human capacity among the surveyed SMEs was high. This suggests that there is high productivity rate, high quality products/service, efficient service delivery, etc which signify sustainable competitiveness among the surveyed firms.

Table 2: Human Capacity (HC1-HC6) Among SMEs

No.	Response Items	N	Min.	Max.	Mean	SD
HC1	My staff are knowledgeable and multi-skilled	61	1	5	4.1	1.4
HC2	My staff are empowered and motivated	61	1	5	4.1	1.5
HC3	My staff are highly productive	61	1	5	4.5	1.1
HC4	There is teamwork in our organization	61	1	5	2.9	2.2
HC5	My staff participate in continuous learning programs	61	1	5	4.9	0.6
HC6	My staff are efficient at work	61	1	5	4.6	1.0

Source: Primary Data, 2022

Financial Capacity among SMEs

Table 3 shows findings from research constructs related to financial capacity (FiC1- FiC5) among the surveyed SMEs in Kigali City. Accordingly, items FiC1-2 show that majority respondents agreed that their firms generated satisfactory sales revenues for financing their strategic operations (Mean=4.3, SD=1.2) and that they were profitable (Mean=4.0, SD=1.5). Similarly, item FiC 3 shows that majority respondents also agreed that their firms had adequate liquidity to finance firm operations (Mean=4.8, SD=0.8). Further to note, item FiC4 shows that majority agreed that their firms had adequate firm assets (Mean=5.0, SD=0.1). Lastly, item FiC5 also indicates that respondents agreed that their firms operated at low costs (Mean=4.5, SD=0.9).

From this analysis, it can be observed that the surveyed SMEs had strong financial capacity to finance their operations since most of the proprietors agreed with the statements.

Table 3: Financial Capacity among SMEs

No.	Response Items	N	Min.	Max.	Mean	SD
FiC1	We generate satisfactory sales revenues	61	1	5	4.3	1.2
FiC2	Our firm is profitable	61	1	5	4.0	1.5
FiC3	Our firm liquidity is adequate	61	1	5	4.8	0.8
FiC4	We have adequate firm assets	61	1	5	5.0	0.1
FiC5	Our firm costs are low	61	1	5	4.5	0.9

Source: Primary Data, 2022

Management Capacity among SMEs

Items MC1-MC7 in Table 4 present the findings generated from responses regarding the effectiveness of management capacity among the surveyed SMEs. It is indicated in item MC1 that majority respondents agreed that they can easily mobilize resources (Mean=4.1, SD=1.1). However, item MC2 shows that majority disagreed with the statement that their management could easily identify and exploit opportunities (Mean=2.0, SD=1.2). Furthermore, item MC3 shows that majority agreed that they can easily identify and mitigate business threats (Mean=4.8, SD=0.8). In the same vein, item MC4 indicates that majority agreed that they were engaged in continuous learning to develop new management skills and knowledge (Mean=5.0, SD=0.3). Item MC5 also shows that majority agreed that they motivated their subordinates to love their work and be productive (Mean=4.7, SD=1.0). It is further observed in item MC6 that majority agreed that they had emotional connection with their subordinates (Mean=4.8, SD=0.8) which improves employee loyalty and productivity. Lastly, item MC7 also shows that majority agreed that they were open to ideas and influence of others (Mean=4.7, SD=0.8). Based on the high rate of agreement with the response items, it can be argued that the surveyed SMEs enjoyed effective management capacity, and this is an important factor for sustaining firm competitiveness.

Table 4: Management Capacity (MC1-MC7) Among SMEs

No.	Response Items	N	Min.	Max.	Mean	SD
MC1	I can easily mobilize resources	61	1	5	4.1	1.1
MC2	I can easily identify and exploit business opportunities	61	1	5	2.0	1.2
MC3	I can easily identify and mitigate threats	61	1	5	4.8	0.8
MC4	I continuously learn to develop new skills and knowledge	61	3	5	5.0	0.3
MC5	I motivate subordinate to love their work and be productive	61	1	5	4.7	1.0
MC6	I have emotional connection with subordinates	61	1	5	4.8	0.8
MC7	I am open to ideas and influence of others	61	1	5	4.7	0.8

Source: Primary Data, 2022

Firm Competitiveness (FC1- FC5) among SMEs

Table 5 shows findings from the responses on items related to firm competitiveness (FC1- FC5) among the surveyed SMEs in Kigali. It is observed in item FC1 that majority respondents agreed that their business processes were efficient (Mean=4.8, SD=0.6) which highlights incurring lower business costs. Item FC2 also shows that majority agreed that their firms had big market shares (Mean=4.3, SD=1.3) which represent more sales revenues. Regarding profitability, item FC3 shows that majority agreed that their businesses were profitable (Mean=4.8, SD=0.6) which indicates financial competitiveness. Similarly, item FC4 indicated that majority respondents agreed that they delivered quality products and services (Mean=4.8, SD=0.5) which shows production competitiveness. Lastly, item FC5 shows that their firms were highly reputable (Mean=3.9, SD=0.9), which indicates that they enjoyed customer loyalty. Based on the above responses, it is worth to conclude that the surveyed firms in Kigali City were competitive because of the high level of agreement with the response items.

Table 5: Firm Competitiveness among SMEs

No.	Response Items	N	Min.	Max.	Mean	SD
FC1	Our business processes are efficient	61	1	5	4.8	0.6
FC2	We have a big market share	61	1	5	4.3	1.3
FC3	Our business is profitable	61	2	5	4.8	0.6
FC4	We deliver quality products and services	61	3	5	4.8	0.5
FC5	We have high firm reputation	61	1	5	3.9	0.9

Source: Primary Data, 2022

Inferential Statistics

The inferential analysis based on OLS regresion model was also conducted for the purpose of testing the research assumptions/hypotheses as well as the statistical significance of the relationship between resource capacity and firm competitiveness among surveyed SMEs.

Summary Output

Table 7 shows that there is a moderate multiple correlation of 0.538 (53.8%) between resource capacity and firm competitiveness among the surveyed SMEs in Kigali city. Farther to note, the Adjusted R^2=0.289 demonstrates that 28.9% change in the competitiveness of the surveyed SMEs was contributed by the resource capacity of those firms.

Table 7: Summary output

OLS regression statistics	
Multiple R	0.538
R Square	0.289
Adjusted R Square	0.252
Standard Error	0.248
No. of observations	61

Source: Microsoft Excel Data Analysis ToolPak

Analysis of variance (ANOVA)

Table 8 demonstrates the ANOVA with the probability value (p<0.05) based on a five-percent level of statistical significance which shows that the OLS regression was suitable in predicting the model outcomes well.

Table 8: Analysis of variance

	df	SS	MS	F	Significance F
Regression	3	1.429	0.476	7.737	0.000
Residual	57	3.509	0.062		

Total	60	4.938	

Source: Microsoft Excel Data Analysis ToolPak

OLS regression Coefficients and hypothesis testing

Table 9 shows the OLS regression coefficients and the probability values that were used for testing the research assumptions/hypotheses.

Table 9: OLS coefficients, p-values and confidence intervals

	Coefficients	SE	T Stat	P-value	CI Lower 95%	CI Upper 95%
Intercept	4.038	0.471	8.567	7.921	3.094	4.981
HC	-0.133	0.067	-1.969	0.054	-0.268	0.002
FiC	0.208	0.082	2.549	0.014	0.045	0.372
MC	-0.02	0.136	-0.148	0.883	-0.293	0.253

Source: Microsoft Excel Data Analysis ToolPak

The first hypothesis stated that HC has a significant effect on FC among the surveyed SMEs. However, the regression analysis shows that HC had no significant effect on FC (β_1= -.133; p=.054>.05) among the surveyed SMEs. This indicates that a unit increase in HC results into a 13.3% reduction in firm competitiveness. Therefore, we fail to accept the first hypothesis.

The second hypothesis stated that FiC has a significant effect on FC among the surveyed SMEs. This is also corroborated by the regression analysis which shows that FiC had significant effect on FC (β_2=.208; p=.014<0.05) among the surveyed SMEs. This indicates that a unit increase in FiC results into a 20.8% increase in firm competitiveness. Therefore, we accept the second hypothesis.

The third hypothesis stated that MC has a significant effect on FC among the surveyed SMEs. However, this is contrasted by the regression analysis which shows that MC had no significant effect on FC (β_3= -.020; p=.883) among the surveyed SMEs. This indicates that a unit increase in MC results into a 0.2% reduction in firm competitiveness. Therefore, we accept the second hypothesis.

DISCUSSION

It is observed that resource capacities affect firm competitiveness in different ways. Firstly, results show that HC had no significant effect on firm competitiveness (β_1= -.133; p=.054>.05) among the surveyed SMEs. This is in contrast with Kithae and Keino (2016 p.139) who observed that human capacity contributed to firm competitiveness.

Secondly, it is observed that FiC had significant effect on firm competitiveness (β_1=.208; p=.014<.05) among SMEs. Ayyagari, et al. (2008 p.44) also finds that informal financial resources strengthen firm performance but do not facilitate faster growth while Fonseka, et al. (2014 p.14) finds that firms' internal financing capabilities did not have significant effect on firm competitiveness.

Thirdly, regression analysis shows that MC had no significant effect on firm competitiveness (β_1=-.020; p=.883>.05) among SMEs. This contrasts Davis and Kochhar (2002 p.289) found that management competences and ability to transfer of appropriate best practices across firms facilitate performance and competitiveness.

CONCLUSIONS AND IMPLICATIONS

Resource capacity (RC) is important factor for enhancing the sustainable competitiveness of firms among the surveyed SMEs in Rwanda.

The capacity of an organization to execute its mission can be reflected in the organization's resources that include human, finances and management.
From the study results, it can be emphasized that human capacity has a significant effect on firm competitiveness (β_1=-.133; p>.05) among the surveyed SMEs in Kigali.
Management capacity also has no significant effect on firm competitiveness (β_1=-.020; p>.05) among the surveyed SMEs, thus contradicting empirical and theoretical literature.
Nevertheless, financial capacity has significant effect on firm competitiveness (β_1=.208; p<.05) among the surveyed SMEs in Kigali.
There is limited teamwork among human resources in the SMEs (item HC4). The management also has limited capacity to identify and exploit opportunities (item MC2), thus posing a negative effect on firm competitiveness.
Therefore, SMEs need to leverage on the key role of human resources to ensure that they work in teams and make a significant impact on sustainable competitiveness and performance. Management of SMEs also needs to improve their environmental analysis skills in order to quickly respond to business opportunities.
Implications for policy and practice
The study will influence managers and proprietors of SMEs to foster a culture of teamwork among their staffs and motivate them to do effective environmental analysis so that they can easily exploit opportunities and mitigate threats. The study will influence MINICOM and concerned stakeholders to work together and formulate strategies for improving the operating environment of SMEs so that they can grow into large businesses.

Limitations and suggestions for further research
The study did not cover SMEs in the whole country and this make findings non-representative. Further research should cover SMEs in the whole country. Secondly, resource capacity is a broad concept that covers technology, infrastructure, partnerships, patents, etc which were not covered by this study. Further research is necessary on all variables of resource capacity.

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Developing Student Critical Thinking Skills in Higher Education Post Covid-19 Pandemic

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Abstract

The covid-19 pandemic has highlighted numerous challenges within higher education institutions which require students to utilise various skills for educational progress. The transition from traditional face-to-face teaching pedagogies onto virtual teaching methods utilising technological platforms, have resulted in students encountering challenges, ceasing higher education, or differing a year. A component of this relates to a student's ability to apply their critical thinking skills to overcome existing issues.

This study aims to identify challenges requiring students to utilise their critical thinking skills during the covid-19 pandemic to continue education. There is an endeavour to identify methods through which students can develop their critical thinking skills in higher educator post pandemic and face new future challenges with resilience.

A systematic literature review of published and grey literature sources is carried out. Results have identified that students encounter the following challenges in higher education requiring critical thinking skills during the covid-19 pandemic: Digital inequality including access to appropriate hardware/ software and its navigation; internet connectivity; adapting to new teaching pedagogies and negative mental health impacts. Logical fallacies, cognitive bias, conceptualisation, analysing, synthesising, and evaluation are also discussed.

This study has deduced that through cultivating motivation to learn, peer-to-peer interaction, good communication, and appropriate teaching pedagogies, critical thinking skills can be developed to help students achieve their educational goals post- covid-19 pandemic.

Keywords: Critical thinking, Higher education, Development, Covid-19, Students

Introduction

The array of disruption caused by the covid-19 pandemic has affected global societies in numerous ways. Social, political, and economic factors have been largely affected due to enforced regulations imposed on societies by international governing bodies (Somani, 2021). Their aim was to protect the health of societies globally and reduce the transmission of the deadly covid-19. The closure of non-essential businesses to cease physical face-to-face human interaction resulted in educational institutions facing physical closures. This decision has affected 1.2 billion learners around the world (Somani, 2021). Higher educational institutions, students and educators were faced with an array of challenges relating to continuing education (Somani, 2021).

As societies are gradually reaching a new normal world it is clear to see that the covid-19 pandemic has highlighted numerous challenges within higher education institutions which require students to utilise various skills for educational progress. This can include soft skills, hard skills, and life skills. “Soft skills can be defined as ‘personal qualities that enable you to communicate well with other people’. They are ‘non-technical, intangible, personality specific skills, which determine individual's strength as a leader, listener and negotiator, or as a conflict mediator’ (Somani, 2020). Therefore, soft skills are not our technical aptitude, nor are they knowledge based. They relate to the traits and abilities of attitude and behaviour (Ramesh & Ramesh, 2010). They can be viewed as an umbrella term of skills comprising of communication, people and social skills, emotional intelligence, personal attitudes, personality or character traits and career attributes. Soft skills also allow individuals to navigate within their environments, demonstrate leadership skills, work well in group situations and motivate others whilst being self-motivated (Hurrell, 2016). It can also be viewed as a synonym for ‘people skills.’” (Somani, 2020). In contrast hard skills are knowledge based skills and skills that are technically specific. They are qualifiable skills that are taught for example “language proficiency, speed of typing, the type of degree certificate an individual possesses, computer operation and programming” (Somani, 2020) . While life skills are “a behaviour change or behaviour development approach designed to address a balance of three areas: knowledge, attitude and skills” (UNICEF, 2021) and "the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life" (WHO, 1999).

The pandemic forced a transition from traditional face-to-face teaching pedagogies onto virtual teaching methods utilising technological platforms to ensure continued education. However, this resulted in students encountering challenges like ceasing higher education or deferring a year due to financial implications or a lack of resources to continue education. In addition, a vital component of this relates to a student’s ability to apply their critical thinking skills to overcome existing issues. Critical thinking can be defined as “the process of analysing information in order to make a logical decision about the extent to which you believe something to be true or false” (Dictionary, 2022). Through critical thinking skills students can make judgements that are clear, with good reason and necessary for continuing education and remote learning. Prior to attaining a solution to problems encountered, it is important for students to undergo critical thinking which can include reflection, reviewing, action, management, practice, awareness, appreciation, evaluation, understanding, care, interpretation, analysis, and appraisal (Asrita & Nurhilza, 2017).

Objectives

This study aims to identify challenges requiring students to utilise their critical thinking skills during the covid-19 pandemic to continue education. There is an endeavour to identify methods through which students can develop their critical thinking skills in higher education post pandemic and face new future challenges with resilience.

Methodology

This study is carried out via a systematic literature review comprising of a thorough literature search of published and grey literary sources. The following databases are searched including Google scholar, JSTOR, Scopus and Gateway. A well-planned process is devised to search, identify, extract, analyze, evaluate, and interpret existing literature sources. The preliminary search comprises of the following key words: 'students' 'covid-19' 'higher education', 'critical thinking', 'post-pandemic', 'skills'. Numerous literature sources have been identified therefore the following exclusion criteria has been devised:

- Literature relating to critical thinking skills prior to the covid-19 pandemic were omitted
- Papers in languages other than English were not used
- Papers providing insufficient information within their approach were excluded
- Papers focusing on educational institutions other than higher education are ignored

In total, twenty-nine literature sources have been identified. Upon further analysis, three literature sources were duplicated and as a result they have not been used. Having read the abstracts and introductions, two literature source was disregarded. Hence, twenty-four literary sources remained for further investigation. Upon completion of full literature analysis, one had a lack of implementation details and excluded from the study. Therefore, a total of twenty-three literary sources met the overall criteria and were used as primary sources within this study.

Results and Discussion

Results have identified that students encounter the following challenges in higher education requiring critical thinking skills during the covid-19 pandemic: Digital inequalities; internet connectivity; adapting to new teaching pedagogies and negative mental health impacts.

Digital inequalities

During the pandemic Digital inequalities have been highlighted (Aristovnik, et al., 2020). Learning through digital mediums have been the dominant method through which students have had access to learning. According to UNESCO, UNICEF & The World Bank, 95% of high-income countries reported remote learning was predominantly completed through online platforms closely flowed by 89% who utilised take home materials. In contrast low-income countries which relied on using low-maturity digital devices like radio comprising of 93% and television at 92%. Although there are numerous terms used like 'digital divide', 'digital exclusion' and 'digital inequality', essentially, we are looking at "a division between people who have access and use of digital media and those who do not" (Van Dijk, 2020).

Financial instability due to redundancies and unemployment during the pandemic has largely affected students from a lower socio-economic background. This has caused a digital divide which has resulted in digital inequalities including a lack of access to appropriate hardware and software or the inability to pay higher education institutional fees (Somani, 2020). Students with inconducive learning environments, or the need to share hardware with siblings or parents hindering learning when they require it at the same time. In addition, for students to continue

learning, software navigation is vital. This highlights the importance of competent critical thinking skills and digital skills to ensure appropriate learning materials are used, examinations and assignments are submitted in a timely manner. Students with insufficient critical thinking skills and inadequate educator and peer support have found continuing education challenging. For students to attain optimum benefits from digital technologies they should utilise their critical thinking skills. This will ensure they cultivate the desire to remain inquisitive and facilitates their ability to navigate around the software. Through interacting with educators and peers, students will develop the ease to ask questions to overcome challenges and create an awareness to distinguish between legitimate and fake news. In addition to identifying reliable sources and bias views (Somani, 2020). Research has revealed that students practicing critical thinking skills and evaluating situations are more likely to consume content. It also enables students to participate within online platforms through empathy and compassion.

Internet connectivity

A contributing factor to digital inequalities is internet connectivity which has been a vital element of continuing student learning during and post-pandemic. This has been particularly evident as remote learning has become the new normal way of educating students. A lack of internet connectivity has been proven to impinge upon student learning within live teaching sessions, particularly when using interactive video conferencing. This has been due to connectivity issues and low bandwidth, constituting to a lack of understanding in content dissemination and inadequate skills to face these challenges. Speech distortion and low video quality then impinges upon student learning (Lange & Costley, 2020) affecting desired student results. This is most noticeable for students residing in remote locations and rural areas with limited or no internet connectivity, minimising chances of attaining quality education. Submitting assignments online through higher education portals or completing virtual assessments can be most agitating to students when there is limited internet connectivity as this can result in resubmissions and re-sitting examinations.

Students and educators must ensure they maintain open-mindedness inviting creativity, resulting from solutions attaining through critical thinking skills. Students must strive to go beyond a positive thought process and utilise creativity developed through critical thinking. They must take advantage of learning opportunities that can be applied within their daily lives towards self-development, improving mindsets and self-efficiency (Labusch, et al., 2019). Critical thinking skills provides an opportunity for students to cultivate and implement innovative ideologies and adapt to changing lifestyles despite challenges encountered post-pandemic.

Adapting to new teaching pedagogies

Adapting to new teaching pedagogies: Educators have had to develop new teaching pedagogies to ensure continued student learning. Due to technological advancements the use of nanotechnology, automation, artificial intelligence, and big data have all been incorporated within educational software. Hence requiring educators to adapt teaching pedagogies. However, students must be aware of logical fallacies like concepts of traditional students, the notion that only good education can be acquired on campus, cost increases faster that quality, accreditation guarantees success and learning only occurs during the week from 9am to 5pm. When students and educators start to develop critical thinking skills, they will stive for

continuous self-development through challenging pedagogies that may not work effectively. They will allow for innovative developments and better solutions to challenges. This will facilitate within positions of employment in the future particularly as only seven percent of employers value undergraduate degrees while ninety-three percent of employers value critical thinking skills more (Thomaszewski, 2022).

Research has identified that student creativity can be improved via online instructional approaches due to the fact they promote online problem solving. The challenges encountered in contemporary life utilising online mediums, despite within blended learning or remote learning require the implementation of alternative teaching styles. The pedagogies incorporating the need for educators to continue learning and be willing to alter their teaching styles has become necessary. Particularly due to continuous novel technological advancements as this can facilitate teaching efficiency (Wang, 2021). New learning materials may result in students aiming to problem solve through trial and error opposed to utilising examples provided by educators if they are inaccessible, due to limited internet connectivity or inaccessible examples to facilitate learning. The problem-solving exercises students implement within educational situations utilising critical thinking skills provide individuals with skills they can utilise in the new normal world. Students can amalgamate existing knowledge and available resources and apply them to challenges faced in contemporary life. However, it is evident that solutions can result in unpredictable outcomes, hence student's must cultivate the capabilities to cope with situations. They will need to interact with individuals in a particular culture and a changing society post-covid-19. Hence, teaching pedagogies should consider bespoke student situation like their performance levels and their learning abilities opposed to generalising pedagogies. In addition, elements pertaining to creative value and efficiency must be incorporated aiming to facilitate the utilisation of critical thinking skills and enhance academic performance.

Negative mental health impacts

The covid-19 pandemic and associated lockdown regulations have contributed to heighted negative mental health challenges like anxiety and depression in students (Somani, 2020). Approximately 83% of students who suffered with pre-existing mental health challenges experienced heightened psychological issues. There was a rise in 25% of students who reported mental health challenges without and previous issues (YoungMinds, 2020). This was due to a combination of a disruption in daily routines, loneliness and being disconnected from the external world. Other reasons included future uncertainty, educational and financial challenges (Cao, et al., 2020) and a fear of contracting the virus (Somani & Saraswathy, 2021). In addition, the continued use of social media to keep students and educators connected, and utilised for research purposes through untrusted websites, has highlighted that fake news is prevalent and can form a cognitive bias. Hence it is vital to conceptualise, analyse, synthesise, and evaluate information, particularly as examination questions comprise of multiple-choice questions requiring student critical thinking skills to succeed.

Conclusion

This study has deduced that through cultivating motivation to learn through intrinsic and extrinsic motivation, peer-to-peer interaction within group situations either face-to-face or online, good communication including verbal and non-verbal communication, and appropriate teaching pedagogies, critical thinking skills can be developed to help students achieve their

educational goals post- covid-19 pandemic. Within the new normal world, students should be provided with the choices regarding their educational needs, as face-to-face learning and remote learning are both widely accessible. It is largely determined by culture and training.

During the covid-19 pandemic students have learnt via online platforms which has enabled them with the ability to develop their critical thinking skills due to the immense problem solving they have undertaken. Remote learning has allowed students to examine personal ideas and search for new knowledge to help facilitate personal learning. Within the new normal world, students have had the ability to make decisions, develop imagination and seek for educational tools to aid their educational process. This can still occur in a world post-covid-19 with more problem-solving approaches being available. Students can focus on attention to details, memory recall and devise strategies to progress through; deeper thinking, the utilisation of new technological advancements, diverse teaching pedagogies and use globalisation to connect students and educators with flexibility.

Through each identified challenge it is vital for students to follow a process through which their critical thinking skills can be applied. Students are required to identify the challenge and interpret what why they feel it is a problem for them. This allows students to understand and express the significance and meaning of the challenge relating to their current situation, past experiences, and events, supporting data, their personal judgements and beliefs. It also encourages students to better understand processes, criteria and rules surrounding their challenge. After having interpreted the challenge, students should learn to analyse the situation and identify what they perceive as similar and different. This will aid them to understand relationships between opinions, beliefs and other forms of representation extracting what is actual and what is intended. Students should strengthen their ability to evaluate the challenge and seek credibility within representations or statements that can include individual perceptions, judgement, opinions, or experience. It also allows students to understand logical strength of representations or questions that they may be faced with. Thus, the need to determine credibility is very important.

Upon evaluating the challenge, students need to have the ability to identify and reach a reasonable conclusion from hypothesis. Therefore, the ability to understand consequences of their actions is important. Students should be able to explain and justify their rational and reasoning behind making decisions. In addition, students should have the ability to self-regulate consciously, monitoring their cognitive activities and be aware of the results. Skill analysis should be used to evaluate personal judgements ensuring that questions, validation, confirmations and having the tenacity to correct one's reasoning and result. Thus, the students must not be bias or be guided by personal opinions during the process of self- regulation.

There is a need for students and educators to be open minded so that all possible viewpoints can be accounted for. Problem solving is a major critical thinking skill that requires attention post-pandemic, particularly as there are possibilities of unexpected challenges that may preside. In these situations, students and educators needs to utilise their problem solving skills so that conflicts can be resolved to ensuring societal progression opposed to digression. Students must be encouraged to think and generate creative ideas through which challenges can be overcome. Peer-to-peer interaction allows students to modify their thought processes and transition to reaching their goals. Traditional pedagogies must be modified to generate interest through providing diverse learning materials and free will, allowing flexibility for students to select their most suitable available learning tools. However, outcome is dependent on how the tools are used (Aşik & Erktin, 2019).

Without modelling examples facilitating students to reach a solution within educational contexts, students can explore answers without limitations. This process can facilitate students to utilise personal experiences and aids unique personality development. Student success within education relies on a combination of hard skills and soft skills and a positive attitude enabling students to face challenges within the new normal world in a logical, creative, and skilful manner utilising critical thinking.

Recommendations

- Students should be given reassurance pertaining to equal learning experiences without segregation or proximity bias helping to minimise digital inequalities.
- All students should have access to appropriate hardware and software with adequate support to minimise cognitive bias and logical fallacies.
- Students and educators must understand that developing critical thinking skills takes time, patience, and practice.
- Collaboration between governmental and non-governmental organisations to help improve student and educator critical thinking skills would benefit societies globally.
- It is necessary for students to reason, undergo multi-dimensional perspective analysis, illustrate positivity, and seek support when required to strengthen critical thinking skills and face challenges with resilience in the new normal world.

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INDIAN GREEN PURCHASING PREDICTORS – A CONSUMER BEHAVIOUR ANALYSIS

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Abstract
Environmental safety has become a grave concern globally. "Social, economic and environmental" deterioration is the result of individuals' ignorance of their purchasing patterns impact and unplanned consumption impact on society and the environment. Hence, the matter of sustainable consumption has appeared as a central aim for scholarly researchers in the current green consumerism arena. It has been argued that varying consumer behaviour plays a vital role in society's reaction to issues concerning sustainability, particularly in developing nations like India. The green behaviour phenomenon has evolved as an innovative paradigm for marketing discipline researchers and marketers in the area of modern-day consumer research. In the Indian setting, green purchase behaviour (GPB) term is comparatively new and the majority of prior studies have focused on studying consumer attitudes towards GPB; very few have studied consumer GPB per se and the literature on sustainable consumer research is a bit scarce. This study is an exploratory and quantitative one, which determines the antecedents of Indian consumers' GPB and examines the causal relationships between them using SEM.

Key Words: Green purchase behaviour, Environmental attitude, Determinants, Structural equation modelling, Indian consumers

INTRODUCTION

The current industrial and technological revolution in the world impacts the environment and our quality of life (Akehurst, Afonso and Gonçalves, 2012). The issues like global warming, deforestation, air/water pollution and other environmental issues forced consumers to think of sustainability issues and these concerns have led to a gradual change in their attitudes, behavioural approaches, and finally rise in demand for green products. (Akehurst, Afonso and Gonçalves, 2012; Biswas and Roy, 2015; Kanchanapibul et al., 2014). Green products are the ones which are recyclable, non-toxic, biodegradable, and have no detrimental impact on the nature all through their life-cycle aiming to preserve the natural environment (Biswas and Roy, 2015). Lee's (2008) in their study stated that the consumers' perspective and their actions toward green products and green marketing have gone through several stages since the 1980s. The notion of green marketing (GM) is first emerged in the late 1980s. The industries and marketers engaged in different forms of green marketing activities and are expected to generate goodwill and sales from positive consumer responses. In the 1990s green marketing entered its second stage, where the companies experienced a backlash where the marketers realised that the consumer's environmental concern and their desire for eco-friendly products did not translate into buying behaviour. The reasons behind the consumer backlash are green cynicism about the products, company claims and practices. In the mid-1990s, consumers became more

environmentally aware and demanded a social responsibility from the companies leading to ethical consumerism. From the time of the beginning of green and ethical consumerism, consumers started to have a demand concerning resourcing, production and processing. In late 1990 the concept of sustainability marketing emerged where the GM entered "self-adjusting" mode, where the companies with a proper aim of enduring sustainability persisted to stay in the green business. Since 2000, with the advancement in technology, government rules and regulations, and media and environmental organizations cooperation, consumers gained confidence in green products and green marketing entered the third stage. Finally, with the rise of universal anxiety on environmental quality, green has picked up the energy again and now making a comeback. In the 21st century, the business environment has witnessed stakeholders and consumers becoming more responsive and conscious of ecological issues, specifically, deforestation, pollution and global warming, now for future generations' well-being, they are shifting to sustainable consumption practices (Jaiswal and Singh, 2018). India is among the rapidly rising economies is being characterized by a rise in pollution levels and natural resource depletion due to this growth (Joshi and Rahman, 2016). Moreover, companies in India and China have started observing the consumer acuity related to ecology and have begun reshaping their operations to support ecological practices. (Sharma et al., 2020). Developed countries specify that eco-conscious customers have an activist part in lessening ecological problems (Uddin and Khan, 2018). Collaborative efforts at developing green products are accelerating globally (Uddin and Khan, 2016). Concerning the need for sustainable progress, the research relating to the antecedents that influence eco-friendly behaviours has been increasing rapidly over the last ten years particularly focusing on green purchasing (Do Paco et al., 2019), yet the understanding of determinants Influencing green purchase intention(GPI) and GPB remains inadequate in developing countries like India. The lack of proper explanation regarding the imbalance of consumers' green purchases and additionally, the environmental damage, and the resultant augmented emphasis on manufacturing green products by companies gave undeniable reasons to determine the predictors of Indian consumers' GPB (Joshi and Rahman, 2016). According to Uddin and Khan (2016), globalization is converging the Indian and western cultures, and parallels in GPB of consumers can be expected. Therefore, the next rational step would be to conduct the Indian centric research for mapping out the cultural dissimilarity that may have a connection to GPB. GPB can motivate society and firms in the search for sustainability whilst balancing the business cycle's demand and supply along with addressing the ecological and social benefits (Jaiswal and Singh, 2018).

THEORETICAL BACKGROUND AND RESEARCH HYPOTHESIS

In the countries other than India, the researchers investigated various factors including green awareness (Ogiemwonyi et al., 2020; Suki et al., 2016), perceived environmental knowledge (Ghazali, Mutum and Ariswibowo, 2018; Kanchanapibul et al., 2014), green behaviour (Akehurst et al., 2012; doPaço et al., 2013), subjective norms (Sun and Wang, 2019; Taufique and Islam, 2021). The exploration of these factors and their casual relationships with the extensively used variables like environmental attitude, GPB and GPI in the Indian scenario is scant. The purpose of this research is:

1. To observe the cognitive or the "attitudes-intention-green purchase" behaviour hierarchy.

2. To study the affect of perceived environmental knowledge on environmental attitude and GPI.

3. To study the impact of subjective norms on GPI and GPB.

4. To study the relationships among the perceived environmental knowledge, subjective norms, and GPB via a holistic approach based on the Theory of Reasoned Action (TRA)

and environmentally supportive behaviour (ESB) to identify with consumer actions based on the Straughan and Roberts's (1999) ECCB scale.

Theory of Reasoned Action (TRA)

The TRA by Ajzen and Fishbein (1980), states that the better antecedent of purchase behaviour is the intention which is determined by the attitude and social normative perceptions. This study extends the TRA model by adding on the three additional contemporary and less explored variables like perceived environmental knowledge, green awareness, and green behaviour, and testing it in the Indian scenario.

Environmental attitude (EA) and Green awareness (GA)

EA is the ability of a person to favourably or unfavourably evaluate the environment's condition (Uddin and Khan, 2018). According to Ogiemwonyi et al., (2020), Green awareness refers to the person's emotional judgements on the consequences of their impact on the environment. Consumer's green attitude is a better antecedent for measuring the awareness. Green awareness influences the attitude of the consumers in making a determined choice. Thus, H1: Environmental attitude significantly influences the green awareness is formulated.

Environmental attitude (EA) and Green behaviour (GB)

According to Ogiemwonyi et al., (2020) and Akehurst, Afonso and Gonçalves (2012) the terms like "Green Behaviour", "ecological conscious consumer behaviour", "environmentally supportive behaviour", "pro-environmental consumer behaviour" is often used interchangeably and explains the behavioural orientation like re-using, re-cycling, green activism participation. If there is a more attitude toward a specific behaviour, there is a high chance to perform that behaviour and also it can be altered based on the attitude. EA is the most relevant factor in pro-environmental behaviour (Uddin and Khan, 2018). Accordingly, the following hypothesis is established. H2: Environmental attitudes have a significant influence on the green behaviour.

Environmental attitude (EA) and Green purchase behaviour (GPB)

GPB is the buying of eco-friendly products that have no harm to the environment (Jaiswal and Kant, 2018). If the consumers think positively about nature, they will perform in an eco-friendly way, in that way positively affects the green purchase decision. So the environmental attitude is a significant variable influencing the green purchase behaviour of consumers. Hence H3: Environmental attitudes have a significant impact on green purchase behaviour is formed.

Environmental attitude (EA) and Green purchase intention (GPI)

GPI is the consumer's readiness for purchasing sustainable products for the sake of the environment (Jaiswal and Kant, 2018). A favourable attitude toward green products stimulates the purchase intention and serves as the primary determinant (Kumar et al., 2019; Jaiswal and Singh, 2018). Hence the below hypothesis is formulated. H4: Environmental attitudes positively affect the green purchase intention.

Green awareness (GA) and Green behaviour (GB)

An individual who has a considerable environmental awareness will perform the green behaviour, and also who are sentient of the sustainable behaviour will be self-confident to perform for that reason (Ogiemwonyi et al., 2020). Thus the H5 is formulated. H5: Green awareness significantly affects the green behaviour.

Green awareness (GA) and Green purchase intention (GPI)

The awareness of the consequences of their impact on the environment will predict the purchase intention for eco-friendly items (Suki et al., 2016). From the above reasoning, H6: Green awareness significantly affects purchase intention of green products, is posited.

Green behaviour (GB) and Green purchase behaviour (GPB)

It is more reasonable to evaluate the ecologically conscious consumer behaviour before than the effective green purchase behaviour, as we expect that green behaviour does have a

significant effect on the GPB (Akehurst, Afonso and Gonçalves, 2012). So we predict the following hypothesis. H7: Green behaviour will positively affect the green purchase behaviour.

Green behaviour (GB) and Green purchase intention (GPI)

Consumers who avoid plastic bag usage buys natural ingredient products, prefer bio-degradable packaging, and are against animal testing products do have a constructive intent to buy the eco-friendly products (Akehurst, Afonso and Gonçalves, 2012). Hence, the below hypothesis is posited. H8: Green behaviour significantly affects consumers' intention to purchase green products.

Green purchase intention (GPI) and Green purchase behaviour (GPB)

The stronger the intention to buy the sustainable products, the greater will be the intensity that the purchases will be made (Ghazali, Mutum, and Ariswibowo, 2018). The expressed intention of the consumers is the key determinant for predicting their purchase behaviour (Jaiswal and Singh, 2018). Therefore, the study postulates the below hypothesis. H9: Consumers intention to purchase green products significantly affects the green purchase behaviour.

Perceived environmental knowledge (PEK) and Environmental attitude (EA)

It is an individual's cognitive ability in understanding environmental issues (Jaiswal and Kant, 2018) and the necessary actions to be taken (Ghazali, Mutum, and Ariswibowo, 2018). In emerging economies like India, the PEK will have a direct relation with the EA (Jaiswal and Kant, 2018). Hence, we hypothesize that H10: Perceived environmental knowledge significant influences the environmental attitudes.

Perceived environmental knowledge (PEK) and Green purchase intention (GPI)

There is a direct effect of the subjective knowledge of the green phenomenon on the buying intention of sustainable products; that is a stronger level of PEK will lead to a stronger intention to buy the eco-friendly products (Jaiswal and Kant, 2018). From this evidence, the H11 is formulated. H11: Perceived environmental knowledge significantly influences the purchase intention of green products.

Subjective norms (SN) and Green purchase behaviour (GPB)

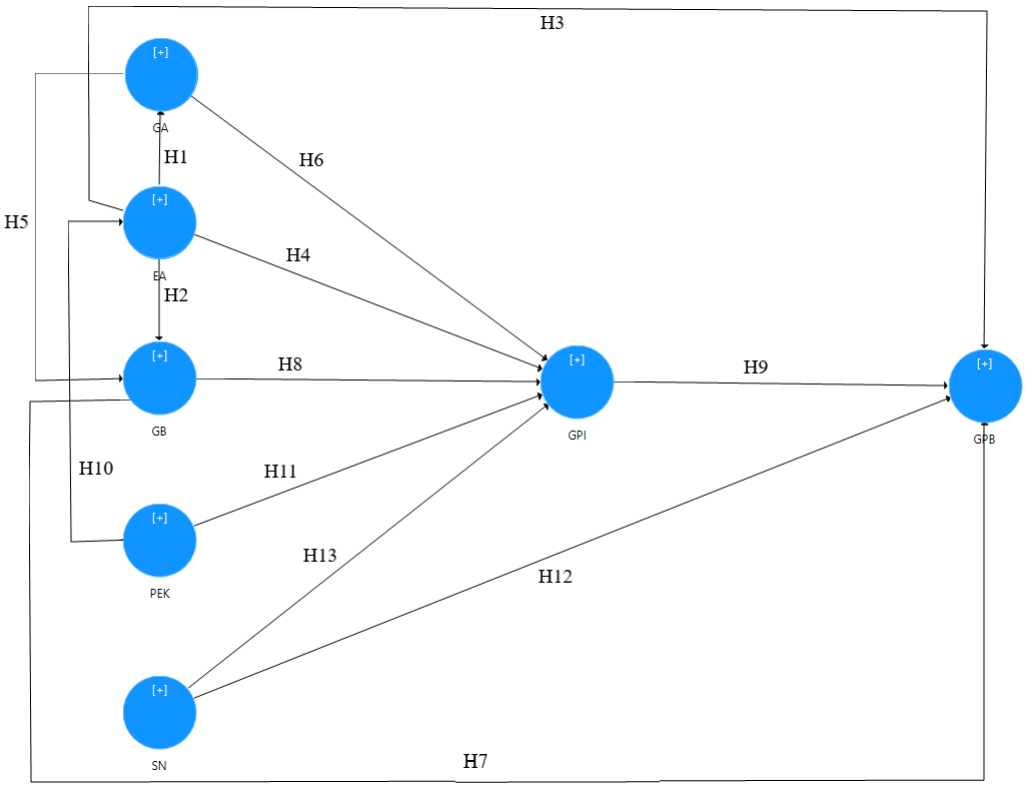
It is the perceived peer pressure for performing or not performing the behaviour. In emerging markets, it is found to significantly influence the GPB (Taufique and Islam, 2021). Hence, H12: Subjective norms significantly affect the green purchase behaviour, is proposed.

Subjective norms (SN) and Green purchase intention (GPI)

When the individuals realise that if their significant others prefer sustainable products, their intention to purchase the products will develop and increase (Sun and Wang, 2019). Hence, this study assumes the following hypothesis. H13: Subjective norms positively affect the consumer's green purchase intention

Figure 1 depicts the conceptual model, built on the TRA incorporating the perceived environmental knowledge, green awareness and green behaviour.

Figure 1: Conceptual model



METHODOLOGY

Questionnaire development

The survey instrument was a structured questionnaire consisting of demographics and the items of study constructs. The items for PEK were adapted from Mostafa (2006); EA (Mishal et al., 2017); GA (Chen et al., 2018); GB (Roberts, 1996b; Ahn, Koo and Chang, 2012's GPB construct and Lee, 2014's recycling participation items); SN (Sun & Wang, 2019); GPI (Chan, 2001); GPB (Lee, 2009).

Sampling

The study is exploratory and quantitative; the sampling technique used was stratified random sampling. A total of 129 questionnaires were collected from Hyderabad which is a metropolitan and smart city in the Telangana state of India. This city is chosen because of its various sustainable and green initiatives implemented in recent times like haritha haram, green India challenge, green fund, mission kakatiya, LED street lighting, smart cities mission, swachh bharat mission. This study used stratified sampling for selecting the particular city, and potential Gen X, Y and Z respondents were chosen randomly. These three generations were chosen to ensure that the study covers a wide range of behaviours. The data is collected online from Feb to April 2022.

Analysis methods

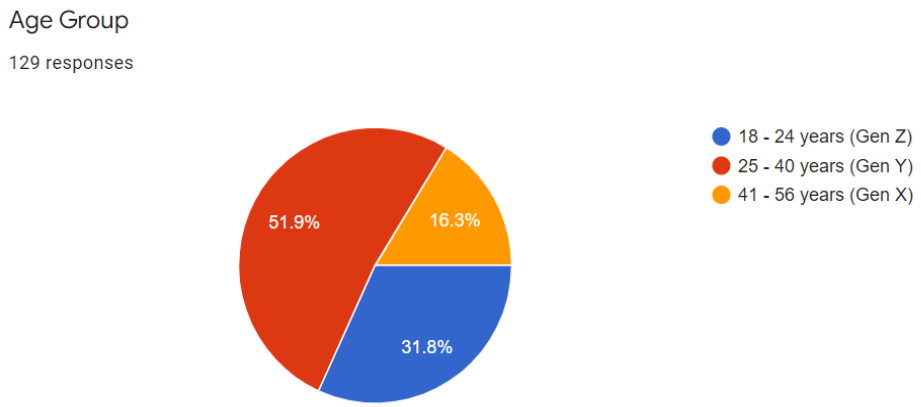
The two-step analysis approach of the measurement and structural model is conducted in the SmartPLS. Partial least squares (PLS), a variance-based SEM technique is selected for testing the conceptual model and hypotheses.

RESULTS

Demographic profile

The demographic summary of the sample unveils that most of the respondents belong to Generation Y (51.9%), male (62%), employed (46.5%) and postgraduate (51.2%) categories. In terms of respondents' generations, 31.8% were Gen Z, 51.9% constituted Gen Y and 16.3% constituted Gen X. Figure 2 depicts the pie chart concerning generations.

Figure 2: Age group pie-chart



Measurement model

The measurement model results summary in Table 1suggest that all the requirements were met. According to Hair et al., (2017), the composite reliabilities (CRs) and Cronbach alpha which measure the internal consistency reliability were all in the range of 0.60 – 0.95 for Cronbach's alpha and above 0.7 for composite reliability, indicating the internal consistency and reliability. The average variance extracted (AVE) scores were greater than 0.5 except for the GB construct. By checking the outer loadings, all the individual item loadings were greater than 0.708 or in the range of 0.4 - 0.7, except for the GB1, GB2, GB3, GB7, GB8, GB12 and GB14. The above mentioned items were deleted as their removal improved the AVE and composite CR significantly. By doing so, all the outer loadings are greater than 0.4 and the AVE is also greater than 0.5 for the GB construct, ensuring the convergent validity of all the constructs.

Hair et al., (2017) state, that the discriminant validity can be calculated following the Fornell-larcker, cross-loadings and HTMT criterion. For the Fornell-larcker criterion, as shown in Table 2 all the square roots of the AVE (on the diagonals) were greater than correlations b/w constructs (on the corresponding row and column). For the cross-loadings, all the indicators' outer loadings on the associated construct are greater than any of its cross-loadings (correlation) on other constructs. The HTMT statistic's confidence interval did not include the value 1 for any construct combinations, suggesting that discriminant validity is achieved.

Table 2: Fornell – Larcker Criterion

Fornell-Larcker Criterion	EA	GA	GB	GPB	GPI	PEK	SN
EA	0.894						
GA	0.662	0.844					
GB	0.339	0.303	0.721				
GPB	0.502	0.389	0.603	0.797			
GPI	0.537	0.460	0.405	0.776	0.901		
PEK	0.335	0.331	0.665	0.571	0.470	0.764	
SN	0.499	0.331	0.550	0.556	0.442	0.499	0.861

Structural model

The hypothesis significance is tested using the p-values (assuming the 5% significance level, the p-value must be smaller than 0.05 for concluding the relationship significant), t-statistic

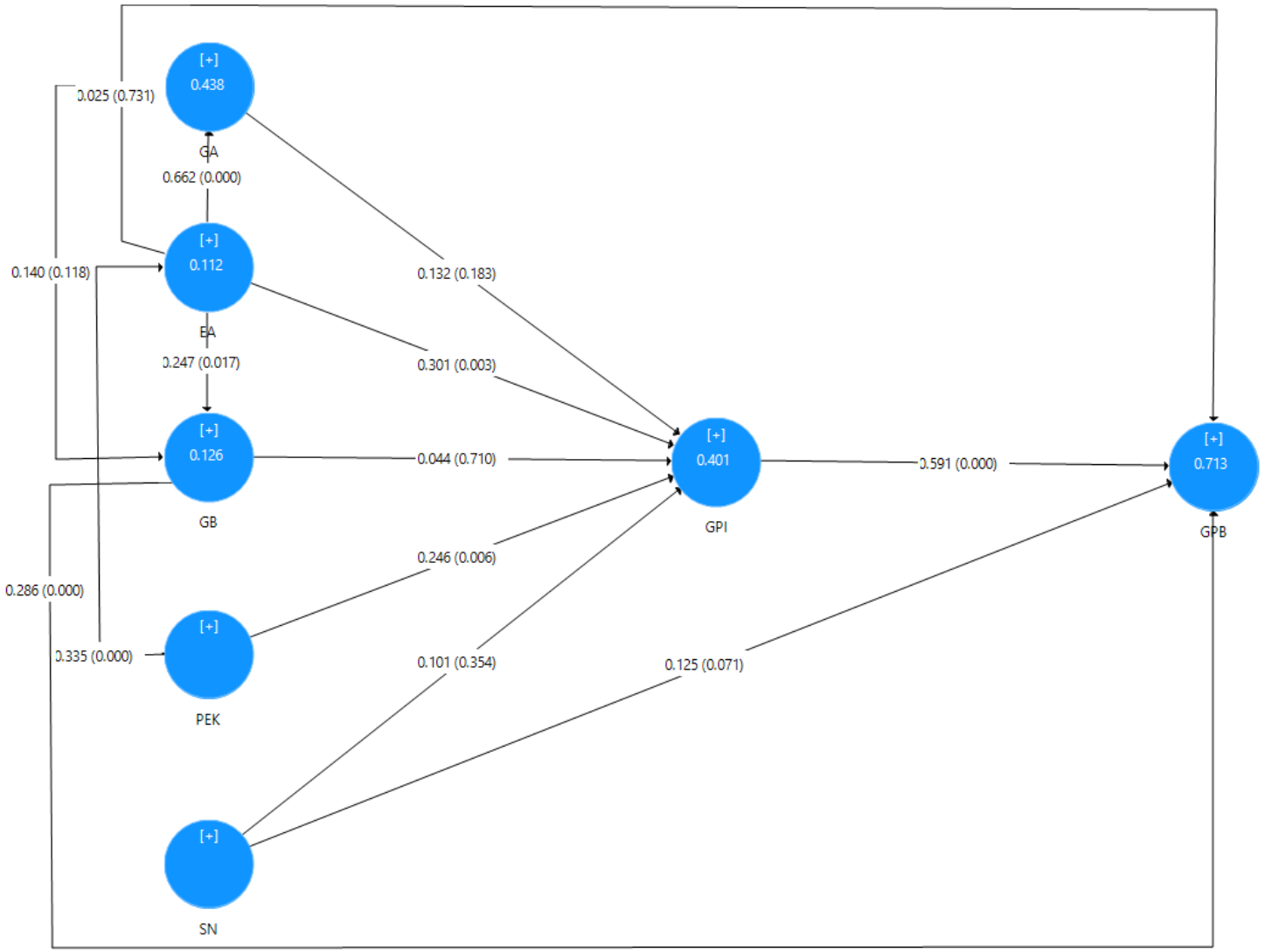
(when an empirical t value is greater than the critical value (1.96), the coefficient is statistically significant at a certain significant level i.e. 5% in this case) and the confidence intervals (if the estimated path coefficient's confidence interval does not include zero) (Hair et al., 2017). Figure 3 represents the model's path coefficients along with the significance represented by p-values and explanatory power (R2).

Table 1: Measurement model results

		Convergent validity		Internal consistency reliability		Discriminant validity		
Latent variable	Indicators	Loadings (> 0.70 & 0.4 - 0.7)	AVE (> 0.50)	Composite Reliability (0.60 – 0.95)	Cronbach's Alpha (0.60 – 0.90)	Fornell Larcker criterion	Cross loadings	HTMT confidence interval does not include 1
EA	EA1	0.909	0.800	0.923	0.875	MET	MET	YES
	EA2	0.908						
	EA3	0.866						
GA	GA1	0.704	0.712	0.908	0.862	MET	MET	YES
	GA2	0.860						
	GA3	0.912						
	GA4	0.884						
GB	GB10	0.648	0.520	0.883	0.845	MET	MET	YES
	GB11	0.810						
	GB13	0.710						
	GB4	0.709						
	GB5	0.677						
	GB6	0.782						
	GB9	0.699						
GPB	GPB1	0.782	0.635	0.924	0.903	MET	MET	YES
	GPB2	0.877						
	GPB3	0.709						
	GPB4	0.780						
	GPB5	0.871						
	GPB6	0.743						
	GPB7	0.801						
GPI	GPI1	0.880	0.813	0.929	0.885	MET	MET	YES
	GPI2	0.919						
	GPI3	0.905						
PEK	PEK1	0.761	0.583	0.873	0.825	MET	MET	YES
	PEK2	0.819						
	PEK3	0.793						
	PEK4	0.703						

	PEK5	0.737						
SN	SN1	0.842	0.742	0.896	0.827	MET	MET	YES
	SN2	0.865						
	SN3	0.877						

Figure 3: β values and R^2



Standardised path coefficients in the Figure 3 show some remarkable results. First, the high β value for EA (β = 0.662, p < 0.05) in determining the GA (H1 is supported). Second, the high β value for GPI (β = 0.591, p < 0.05) having a significant influence on GPB (H9 is supported). Third, the high β value for PEK (β = 0.335, p < 0.05) in predicting the EA (H10 is supported). In addition to these results, direct effects of EA on GB (β = 0.247, p < 0.05), GPI (β = 0.301, p < 0.05) shows statistical significance supporting the H2 and H4, whereas EA to GPB is found to be Insignificant (β = 0.025, p > 0.05), rejecting H4. Similarly, GB to GPB relationship is found to be significant (β = 0.286, p < 0.05), supporting H7, and its effect on GPI is not significant (β = 0.044, p > 0.05), rejecting H8. The effect of PEK on GPI is significant supporting H11 (β = 0.246, p < 0.05). The effect of GA on both the GB (β = 0.140, p > 0.05) and GPI (β = 0.132, p > 0.05) are not significant, thus rejecting H5 and H6. Similarly, H12 and H13 are also rejected, as the SN does not attribute to the GPB (β = 0.125, p > 0.05) and GPI (β = 0.101, p > 0.05). The significance of the path coefficients along with the VIF values, beta values, and their confidence intervals are clearly specified in Table 3.

Table 3: Hypothesis testing and structural model results summary

Hypotheses	Relationships	VIF	Path Coefficients	t - values	P values	95% confidence intervals	Significance (p<0.05)?
H1	EA → GA	1.000	0.662	10.170	0.000	[0.518,0.770]	YES
H2	EA → GB	1.781	0.247	2.380	0.017	[0.054,0.465]	YES
H3	EA → GPB	1.595	0.025	0.343	0.731	[-0.110,0.176]	NO
H4	EA → GPI	2.111	0.301	2.977	0.003	[0.090,0.491]	YES
H5	GA → GB	1.781	0.140	1.562	0.118	[-0.039,0.314]	NO
H6	GA → GPI	1.836	0.132	1.332	0.183	[-0.071,0.318]	NO
H7	GB → GPB	1.504	0.286	5.034	0.000	[0.180,0.405]	YES
H8	GB → GPI	2.030	0.044	0.372	0.710	[-0.170,0.290]	NO
H9	GPI → GPB	1.550	0.591	9.389	0.000	[0.457,0.703]	YES
H10	PEK → EA	1.000	0.335	3.846	0.000	[0.158,0.502]	YES
H11	PEK → GPI	1.920	0.246	2.745	0.006	[0.076,0.432]	YES

H12	SN → GPB	1.730	0.125	1.804	0.071	[-0.016,0.257]	NO
H13	SN → GPI	1.763	0.101	0.926	0.354	[-0.116,0.315]	NO

From Figure 3, the model's explanatory power (R^2) is determined. The GPI, GA and GPB were explained by 40.1%, 43.8% and 71.3% of the variance respectively. In general, all the endogenous variables achieved the minimum explanatory power i.e., three large, one reasonable, and one weak. This classification is done as per the Cohen (1988) guidelines, where R^2 values of 0.26 are considered large, 0.13 as reasonable and 0.02 as weak explanatory power respectively. Coming to the predictive capability of the research model, calculated by blindfolding technique, the results from Table 4 imply that all the five endogenous variables achieved predictive relevance as their Q^2 values were greater than zero (Hair et al., 2017). Multicollinearity was evaluated by using the VIF values, being less than 5 (Hair et al., 2017). From Table 3, it is clear that there were no multicollinearity issues between the constructs as the VIF values ranged from 1.000 to 2.111. The effect size f^2 is assessed using the Cohen (1988) values of 0.02 (weak), 0.15 (reasonable/moderate) and 0.35 (large/strong) effects, correspondingly, suggesting three strong and ten weak relationship effects for this study.

Table 4: Predictive relevance

	SSO	SSE	Q^2 (=1-SSE/SSO)
EA	387.000	356.543	0.079
GA	516.000	363.697	0.295
GB	903.000	847.857	0.061
GPB	903.000	506.939	0.439
GPI	387.000	271.273	0.299
PEK	645.000	645.000	
SN	387.000	387.000	

In Table 5, the direct, indirect and total effects were specified. The relevance of each variable for their respective endogenous constructs can be assessed in Table 5.

Table 5: Effects summary

From	To	Direct	Indirect	Total
EA	GA	0.662	-	0.662
	GB	0.247	0.093	0.339
	GPB	0.025	0.336	0.361
	GPI	0.301	0.103	0.404
GA	GB	0.140	-	0.140
	GPI	0.132	0.006	0.138
	GPB	-	0.122	0.122

GB	GPB	0.286	0.026	0.312
	GPI	0.044	-	0.044
GPI	GPB	0.591	-	0.591
PEK	EA	0.335	-	0.335
	GPI	0.246	0.135	0.381
	GA	-	0.222	0.222
	GB	-	0.113	0.113
	GPB	-	0.266	0.266
SN	GPB	0.125	0.060	0.185
	GPI	0.101	-	0.101

The significant specific indirect effects are specified in Table 6. These paths show the causal relationships of the model depicted in Figure 1.

Table 6: Significant casual relationships

Relationships	Path coefficients	t values	p values	95% C.I	Significance (p<0.05)?
PEK →GPI→ GPB	0.145	2.543	0.011	[0.042,0.267]	YES
EA →GPI→ GPB	0.178	2.625	0.009	[0.049,0.316]	YES
PEK →EA→ GA	0.222	3.249	0.001	[0.095,0.364]	YES
PEK →EA→ GPI	0.101	2.333	0.020	[0.025,0.196]	YES
PEK →EA→ GPI→ GPB	0.060	2.126	0.034	[0.013,0.123]	YES
EA→ GB→ GPB	0.071	2.149	0.032	[0.015,0.147]	YES

DISCUSSION AND CONCLUSION

The findings give practical support for a holistic model of Indian consumers' sustainable or eco-friendly behaviour, built on the extended TRA model, which incorporates the PEK, GB and GA. It also points out the part of the attitude component in predicting the GPB of Indian consumers. EA does not significantly directly affect GPB, but it affects GPB indirectly through the GPI, and also by the GB. The EA acts as a direct predictor for both the GPI and GB. The role of PEK in predicting the GPB is also significant. PEK affects the GPB through the EA and GPI. PEK also predicts GA through the EA, but there is no role of GA in predicting the GPB. So, it is found that having PEK positively influences GPB, but the GA doesn't direct any green purchase. An additional finding worth noting was that PEK directly influenced EA and GPI in a significant way with a considerable beta value. There was a extensive difference in the β values of the EA - GPI (0.301) path, EA - GPB relationship (0.025), and GPI - GPB (0.591) path, suggesting that although EA translates to GPI, the translation of EA to GPB directly is low, but indirectly via GPI is more. The results from Table 6 also show that PEK positively affects GPB and is mediated by the EA, GPI (PEK →EA→ GPI→ GPB) and also only by the GPI (PEK →GPI→ GPB). This shows the relevance of former PEK and latter EA in predicting the GPI and GPB of Indian consumers. The PEK significantly affects GA through the EA as a mediator, but the GA does not translate into the green purchases, so efforts should be taken on translating the GA to the GPI and GPB. Another interesting finding is that along with PEK and EA, one more variable GB has a significant influence on the green purchase decisions of the consumers (EA→ GB→ GPB). The GB directly influences GPB, and the mediation effect of GPI on the GB → GPB relationship is insignificant. It can be stated that the green initiatives

in Telangana have a major influence on the consumers' day to day eco-friendly activities and their sustainable purchase decisions. There is no role of subjective norms in predicting the GPB (directly or indirectly) and GPI. The pressure from the approval of peer groups or family does not influence the green purchase decisions comparatively with the other determinants like PEK, EA and GB.

Hence it can be concluded that for the Indian consumers, the PEK, EA and GB act as better predictors or determinants of their GPB. The SN and GA constructs do not necessarily translate to the GPB (Table 7) and can be no further given more importance until there is an effort conducted to find the reasons behind it. The insignificant total effects are specified in bold and it is evident that the SN and GA relationship to other constructs are clearly insignificant.

Table 7: Total effects of study constructs

Paths	Total Effect	T Statistics	P Values
EA → GA	0.662	10.170	0.000
EA → GB	0.339	4.108	0.000
EA → GPB	0.361	3.640	0.000
EA →GPI	0.404	4.742	0.000
GA → GB	0.140	1.562	0.118
GA → GPB	0.122	1.775	0.076
GA → GPI	0.138	1.391	0.164
GB → GPI	0.312	3.614	0.000
GB → GPI	0.044	0.372	0.710
GPI → GPB	0.591	9.389	0.000
PEK → EA	0.335	3.846	0.000
PEK → GA	0.222	3.249	0.001
PEK → GB	0.113	2.223	0.026
PEK → GPB	0.266	3.512	0.000
PEK → GPI	0.381	3.862	0.000
SN → GPB	0.185	1.708	0.088
SN → GPI	0.101	0.926	0.354

Finally, the outcomes (Table 5 and Table 7) suggest that multiple determinants influence the GPB. From the strongest to weakest, the determinants of GPB were GPI, EA, GB, PEK, SN and GA. The multiple determinants that influence GPI from the strongest to weakest are EA, PEK, GA, SN and GB.

IMPLICATIONS

The results have several implications for managers and policymakers, indicating that Indian consumers who have more PEK, EA and GB are expected to make more favourable green purchase decisions. This indicates the importance of these attributes for making green decisions. Green marketers in their product promotions and advertisements should illustrate the benefits of various green activities like recycling, using energy-efficient devices, planting trees, avoid excessive packaging of products, on the society and environment. The marketers should also focus in their campaigns on letting the public know how purchasing their products will help them in accomplishing their day-to-day GB activities. The government should also continue to implement various green initiatives and motivate the public to participate in them

for a better future. The findings suggest that only a few types of green activities like using low phosphate detergents, recycling the garbage, purchasing recycled, biodegradable products and also the products with less packaging, actually motivate the Indian consumers in their GPB. The managers should develop their environmental image in society and become ecologically responsible. Marketers and retailers should employ strategies like targeting Gen Y male consumers and attracting them by tailoring the products to meet their needs and increase sales. The consumers' environmental knowledge will have a noteworthy role in influencing the GPB, the marketers and the policymakers should educate the consumers on the impact of their consumption on the ecology, the significance of nature protection, and the role of green products in ecological conservation. Environmental education should be a part of the children's education curriculum and various NGOs should also organise campaigns on "going green". The EA influences GPB indirectly via GB and GPI. So there is a need to improve the ecological attitude of the public to promote the GB and GPI and ultimately the GPB. The attitude can be developed by focusing on the perceived consumer effectiveness (Sun and Wang, 2019), behavioural beliefs (Yadav and Pathak, 2017) and values (Vermeir and Verbeke, 2006) of the public.

DIRECTIONS FOR FUTURE RESEARCH

The rapidly changing Indian consumers' GPB needs to be studied, so that future researchers can conduct longitudinal rather than cross-sectional studies to address the dynamic nature of green consumers. Due to the budget and time constraints, the research has been conducted in only Hyderabad and only over a less sample, so potential research can be conducted in other cities of Telangana and also can cover Andhra Pradesh with larger sample size. This research addressed the general GPB for no specific category of products; later studies can cover a wide variety of product categories. The other less explored exogenous variables must be included and their casual relationships with the GPI/GPB need to be studied. The variables studied in the other developed regions must be examined cross-culturally and the effects need to be addressed.

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NEUROMARKETING HISTORICAL REVIEW HIGHLIGHTS LACK OF TRANSPARENCY AND HOW ACCOUNTING FOR RACISM AND SOCIOECONOMIC STATUS MAY AFFECT OVERALL TEST RESULTS

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ABSTRACT

Neuromarketing, the scientific study of the nervous system applied to marketing, is evolving rapidly. Marketers recognize that brain and biometric studies lead to a deeper understanding of consumer preferences. This research provides a historically accurate timeline of significant discoveries plus a review of present-day neuromarketing tools and corporate case studies. A methodological systematic review was conducted and findings were synthesized using secondary peer reviewed research, media reports, and academic studies by marketing associations. This study shows that this area of neuroscience has challenges due to a lack of transparency, minimal standardization, and little to no corroboration amongst scientists. Additionally, neuromarketing researchers may not been addressing the effects of racism and socioeconomic status on the brain which, if not taken into account, can render the sampling results incomplete. With multinational corporations driving the demand for neuromarketing, attaining reliable data from a diverse and robust cross section of subjects should be prioritized.
Keywords: marketing, neuromarketing, neuroscience, AI, racism.

BACKGROUND

President Bush declared the 1990s to be the time in history that the brain would have its moment, but one could argue that studying the purpose of the brain or the connection of the brain to the rest of the body (what is now called neuroscience), dates back to 2500 years ago when Greek "Alcmaeon of Croton (~460 BC), a great philosopher and pioneer of anatomical

dissection, traced the nerves of the sense organs until their terminations in the brain and inferred that the brain was the seat of sensation and thought" (Fan & Markram, 2019; Goldstein).
Ancient anatomists to present-day scientists have shared their findings on the brain, a field of study rapidly growing called neuroscience which is known as a "branch of the life sciences that deals with the anatomy, physiology, biochemistry, or molecular biology of nerves and nervous tissue and especially with their relation to behavior and learning" (Merriam-Webster).
The science of studying the brain has continued to expand quickly because of easily accessible shared findings which has fostered integration into other fields of work (Bočková, Hanák, & Michal, 2021). One such area of growth is the practice of neuromarketing. "Neuromarketing loosely refers to the measurement of physiological and neural signals to gain insight into customers' motivations, preferences, and decisions, which can help inform creative advertising, product development, pricing, and other marketing areas," and "employs brain imaging, scanning, or other brain measurement technologies to capture consumers' responses to marketing stimuli and to circumvent the 'problem' of relying on consumers' self-reports" (Brenninkmeijer, Schneider, & Woolgar, 2020; Harrell, 2019). Simply put, neuromarketing studies how the brain and body react to marketing signals and does so through a variety of measurement technologies and might very well be construed as a customer relationship tool (CRM) as it can share insights on the consumer purchasing journey as well (Marcin, 2020).

TIMELINE: NEUROSCIENCE DISCOVERIES FOSTER NEUROMARKETING TOOLS

From ancient times to the present, the brain's processes continue to inspire and ignite scientific research. While anatomical dissections took place in ancient Greece, neuroscience started to gain traction in 1849 and continues present day as noted in the below timeline:
1849

German Emil du Bois-Reymond studied human skin and found it electrically active (Widacki, 2015)

1878
Electrical signals were discovered in animals' brains by Richard Canton (Marcin, 2020)

1879
French ophthalmologist Louis Émile Javal found that eyes do not constantly move continuously through a straight line of copy when reading. This discovery is considered the start of eye tracking where "saccades" (rapid eye movements between two fixations) were discovered by L E Javal (Kumar, 2016). M. Lamare who worked in L E Javal's lab, was the first to discover and apply a mechanical device to record the eye jerks and stops (Płużyczka, 2018).

1890
French physician Charles Féré and Russian physiologist Ivan Tarchanof jointly discover the galvanic skin response test which is still considered one of the "best discriminator[s] between people providing deceptive answers to test questions and non-deceptive subjects" (Widacki, 2015).

1898
The first eye tracker, some say, was created by E. Huey (Płużyczka, 2018).

1901
Americans R. Dodge and T.S. Cline developed the first non-invasive and accurate eye tracker (Płużyczka, 2018).

1924
Hans Berger, inspired by Richard Canton in the year 1875, invented the electroencephalogram (EEG), as one of the first tools used in neuromarketing research, it has withstood the test of time where today it's still widely used and considered very reliable (Marcin, 2020).

1931
The Ophthalmograph and Metronoscope, which record the movement of eyes, was created by Earl, James, and Taylor and was first used for education but then later adapted for neuromarketing research (Leggett, 2010).

1938
The concept of photoplethysmography (PPG), a noninvasive optical technique used to track changes in blood vessels, was first introduced by Hertzman (Elgendi, Fletcher, & Liang, 2019).

1956
At a Dartmouth College conference in New Hampshire, the term "Artificial intelligence," or AI, was created (Lewis, 2014).

1958
James Vicary created the concept of "subliminal advertising" which later was proven not to exist despite Congress' bill to ban subliminal ads on TV (Thomas, Pop, Iorga, & Ducu, 2017). This was the start of "stealth marketing" where products or services are marketed in subtle or hidden ways.

1964
Herbert Krugman, a pioneer of neuromarketing, started experimenting with "pupilometers – devices that measure spontaneous pupil dilation as an indicator of peoples' interest while they were looking at packages or print advertisements" (Sutherland, 2007).

1968
Magnetoencephalography (MEG), a tool used for mapping brain activity, was discovered by David Cohen (Marcin, 2020).

1969
The behavior of monkeys was studied at Washington University by E.E. Fetz and his associates by using technology that led to the creation of BCI (brain-computer interface). Later, Professor Stephen Hawking used the technology in order to share his lectures (Marcin 2020).

1971
"Herbert Krugman was among the first marketing scholars to utilize electroencephalography (EEG) to examine advertising" (Daugherty, Kennedy, & Kathleen & Nolan, 2018).

1975
Michael Ter-Pogossian, a nuclear physicist, and assistant professors in Ter-Pogossian's lab, Michael Phelps and Edward Hoffman, revolutionized the ability to study brain activity with the Positron Emission Topography (PET) (Pornow, Vaillancourt, & Okun, 2013).

1976
Ekman and Friesen established the Facial Action Coding System (FACS), a reliable process that measures facial expressions used in facial electromyography (fEMG) (Kulke, Feyerabend, & Schacht, 2020).

Late 1970s – Mid 1980s
Entrepreneurial businesses started offering neuroscience tests to corporations that supposedly "measured true, subconscious emotional and cognitive responses" (Ramsøy, 2019). While the MRI was invented in 1969 by American physician, Raymond Vahan Damadian, the diffusion MRI (dMRI) was developed by [LeBihan and Breton 1985; Merboldt et al., 1985; Taylor and Bushell 1985] which is a "non-invasive method that does not require any type of external contrast agent and has become a pillar of modern neuroimaging" (Who Invented the MRI?, n.d.; Descoteaux & Poupon; Le Bihan & Iima, 2015; Mueller, Lim, Hemmy, & Camchong, 2015; Ramsøy, 2019).

1985
Antony Barker's UK team created transcranial magnetic stimulation (TMS) (Marcin, 2020). TMS has been used in research "to learn what can be done to make people more susceptible to messages encouraging them to engage" (Harrell, 2019).

1990s
In 1990 and after the discovery of structural magnetic resonance imaging (MRI), Ogawa and team took the technology a step further by creating functional magnetic resonance imaging (fMRI) (Marcin, 2020). In 1990, Richard Silberstein developed Steady State Topography (SST), a tool "used in cognitive neuroscience and neuromarketing research for observing rapid changes and measuring human brain activity" and "offers new insights based on neural processing speed as opposed to the more common EEG amplitude indicators of brain activity" (Bercea).

"President Bush formally designated the period 1990–2000 the decade of the brain." The number of articles on the topic of neuroscience increased due to the stepped-up use of EEG and other brain imaging techniques (Brenninkmeijer, Schneider, & Woolgar, 2020; Marcin, 2020).

Martin Lindstrøm of Denmark is thought to be the driving force of neuromarketing (Marcin, 2020). Lindstrom partnered with researchers from Oxford University and launched the single largest neuromarketing study ever conducted—twenty-five times larger than any such study up until that time. In a three-year effort, costing more than seven million dollars and using two of the most advanced, cutting-edge neuro-imaging technologies available at that time—the fMRI and SST—scientists scanned the brains of over 2,000 people from all over the world as they were exposed to various marketing and advertising signals "including clever product placements, sneaky subliminal messages, iconic brand logos, shocking health and safety warnings, and provocative product packages" (Lindstrom).

In 1993, functional near-infrared spectroscopy (fNIRS) was first used (Marcin, 2020).

In 1999, Gerry Zaltman of Harvard, was the first to use fMRI to test marketing concepts. From there he developed ZMET (Zaltman Metaphor Elicitation Technique) which "helps understand how unconscious and conscious processes interact" (Hanlon, 2007). ZMET, having been used in 20+ countries, explores B2B and B2C issues and has helped pave the way for neuromarketing overall (Harvard University).

Retailers start to use VR (virtual reality) and AR (augmented reality-real world setting) as consumer research tools.

2002
The term *neuromarketing* was introduced by Ale Smidts (Šola, 2013).

2004
Multiple neuroscience articles were inspired by the Triennial Invitational Choice Symposium and then published "following workshops focused on one topic related to human choice behavior and individual decision-making" which gave neuroscience attention in the media (Blanchard & Thompson, 2020; Marcin, 2020). The well-known case study of Coco-Cola vs Pepsi took place at Baylor College of Medicine using fMRI (Harrell, 2019).

2005
"Neuromarketing" was added to The Collins Dictionary by Harper Collins (Marcin, 2020).
2008-2010

In 2008, Martin Lindstrøm publishes what is now a best-selling book, *Buyology*: *Truth and Lies About Why We Buy* which has been considered to be an early defining publication for neuromarketing (Ramsøy, 2019). He devised the idea that every brain has a "buy button" which we know today as untrue (Thomas, Pop, Iorga, & Ducu, 2017).

In 2009, a "new direction in experimental paradigm design was proposed by Makeig et al. to enable, for the first time, measurement and analysis of human brain dynamics under naturalistic conditions including subject eye and motor behavior in 3-D environments." (Ojeda, Bigdely-Shamlo, & Makeig, 2014). The practice of neuromarketing finds more success both commercially and academically (Ramsøy, 2019).

2012
Neuromarketing Science and Business Association (NMSBA) was established. The core objective is to support marketers and consumer insights professionals (Brenninkmeijer, Schneider, & Woolgar, 2020).

2015
Numerous automatic software solutions for Facial Action Coding System (FACS) were developed (Kulke, Feyerabend, & Schacht, 2020).

2017
Advertising Research Foundation publishes extensive research examining neuromarketing tools versus more traditional methods of research (Harrell, 2019).

2018- Present
Corporate clients and agencies have become savvier on how to utilize various neuro tools and the resulting insights. Combinations of tools are used to gather more accurate data results in addition to utilizing smartphones and apps that have or will have the capability to feed real time data back to the lab which produces more realistic results (Mouammine & Azdimousa, 2019).

NEUROMARKETING TOOLS

Past and present marketing research methods have included focus groups, surveys, social media listening, interviews, experiments, field trials, and observation to name a few (BrandWatch, 2019). Through the use of neuroscience lab techniques, scientists, academics and now marketers have found "it is very probable that the answers given by the participant are biased or skewed, consciously or unconsciously, due to the influence of stereotypes, cognitive biases, emotions, social and moral norms or simply because he/she is incapable of expressing his/her feelings, thoughts, and what motivates the purchase decision" (Bitbrain). The director of the Wharton Neuroscience Initiative, Michael Platt claims, "What comes out of our mouths is not always a perfect rendition of what's going on in our brains" (Harrell, 2019). In other words, the risk of error of understanding consumer preferences is very high using just traditional marketing research methods (Gurgu & Gurgu, 2020).
Neuromarketing measurement tools that can be broken down to multiple categories with the two most prevalent areas being brain activity and physiological activity as seen below (Bitbrain):

Tools Registering Brain Activity

Electroencephalogram (EEG)
Analyzes brain electrical activity
Noninvasive (electrodes are placed on subject's head)
Relatively cheap
Provides good time resolution of brain processes (Bočková, Hanák, & Michal, 2021)
Widely used
Portable

Functional Magnetic Resonance (fMRI)
Tracks blood flow across the brain
Noninvasive (person lies inside machine)
Can peer deep into the brain (Harrell, 2019)
Answers three questions (Gurgu & Gurgu, 2020):
Did activity trigger emotional response
What remains in memory of activity
Did the activity capture attention
Expensive
Widely used
Portable

Magnetoencephalography (MEG)
"Analyzes and registers magnetic activity in the brain with a helmet that contains 100-300 sensors. This is a method that detects changes in magnetic fields that have been induced by the electrical activity of the brain" (Bitbrain).
Lab setting required is unnatural which may skew results
Resolution superior to EEG (Weng, 2018)
Noninvasive
Expensive
Not portable

Positron-emission tomography (PET)
Measures changes in metabolic processes like blood flow (Mayo Clinic)
Provides accurate results (Bočková, Hanák, & Michal, 2021)
Invasive (subjects receive injection of radioactive substance)
Expensive
Not used often for neuromarketing

Steady State Topography (SST)
Records brain electrical activity
Can "continuously track rapid changes over extended periods of time" (Weng, 2018)
Noninvasive (uses band or helmet)

Transcranial magnetic stimulation (TMS)
Doesn't study but alters brain activity through skull (induces or suppresses brain activity) (Bočková, Hanák, & Michal, 2021)
Highly accurate (Benussi, et al., 2021)
Portable
Noninvasive

fNIRIS
Functional near-infrared spectroscopy has ability to investigate deeper brain structure (Rawnaque, et al., 2020)
Noninvasive
Expensive
Poor resolution
Portable
Wearable
Tools Registering Physiological Activity (outside the brain)

Electrocardiogram (ECG or EKG)
Measures heart rate with the understanding that slower heart rate is calm and elevated heart rate is excited
Real time results measure emotion
Low cost
Noninvasive

Galvanic skin response (GSR or EDA)

Most effective tool to distinguish between deceptive and non-deceptive answers (Widacki, 2015)
Used for polygraph examinations
Cannot offer conclusive evidence on the why of emotional activity (Weng, 2018)

Eye-tracking (ET)
Measures where a person is looking
Reliable indicator of emotional arousal (Marcin, 2020)
Particularly useful for analyzing ads, websites and at point of sale (Bočková, Hanák, & Michal, 2021)
Widely used
Affordable
User-friendly
Facial Expression Analysis

Facial Action Coding System (FACS)
"Fully standardized classification system of facial expressions based on anatomic features. It's used by expert human coders who carefully examine face videos and describe all facial expressions as combinations" (McKay, 2018)
Nonintrusive
Labor intensive
Doesn't produce real time results
Expensive

Facial electromyography (fEMG)
Sensors placed on face coupled with automated observations via camera and software
Measures very subtle facial muscle movements
User-friendly
Noninvasive
Widely used
Inexpensive

Photoplethysmography (PPG) (Allen, 2007)
Makes measurements at the skin surface that provides valuable information about the cardiovascular system (blood pressure and heart rate to name a few)
Noninvasive
Simple to use
Portable
Inexpensive

Using neuromarketing tools, there are "three categories of impacts of perception on consumers. The first is the valence of the emotional response. The second represents the degree of involvement (arousal), or the intensity of the feelings experienced. The third describes the degree of involvement of cognitive processes, including focusing attention on information, or how they pass into memory" (Bočková, Hanák, & Michal, 2021).

In 2017, academic research from the Advertising Research Foundation was published. "Scientists at Temple University and NYU tested traditional marketing studies against a variety of "neuro" methods, including eye tracking, heart rate, skin conductance, EEG, and fMRI. Subsequent analysis showed that fMRI provided the most significant improvement in

predictive power over traditional methods but that other methods were useful for improving ad creativity and effectiveness" (Harrell, 2019).

In addition to brain and biometric testing, the neuromarketing field is finding ways to bring together one or more technologies to build a more expansive profile of the consumer. Artificial Intelligence is considered one such tool that aids in expanding insights while sifting through reams of data that helps to make neuromarketing testing more efficient when it comes to budget, time and accurate results (Mouammine & Azdimousa, 2019).

NEUROMARKETING CASE STUDIES

It might be assumed that there would be a plethora of shared research and case studies that would help to establish best practices for marketers, scientists and academics alike, but the opposite is happening. With the influx of large corporations bringing neuromarketing labs in house in the past couple of years and with outside agencies signing confidentiality agreements, neuromarketing results for the most part cannot be scientifically validated and remain a secret which is a barrier to gaining insights on procedures, tools used, and outcomes (Brenninkmeijer, Schneider, & Woolgar, 2020).
Companies like Coca Cola, Frito-Lay, GlaxoClineSmith, IKEA and more have all been noted as organizations that are actively engaging in neuromarketing research, but it is only possible to point to a few public case studies that inform the general public (Gurgu & Gurgu, 2020). One example is the infamous Coca Cola vs Pepsi case study plus the wine pricing test, Frito-Lay, GlaxoKlineSmith, and IKEA as noted below:

Coca Cola vs Pepsi (2004)
Research Tool: Functional magnetic resonance imaging (fMRI).
Outcome: unidentified drinks showed no brain activity, branded drinks showed increased activity.
Takeaway: brand knowledge alters how beverage is perceived (Harrell, 2019).

Wine Pricing Test (2008)
Research Tool: Functional magnetic resonance imaging (fMRI).
Outcome: when consumers see a price, it may alter their perception of value.
Takeaway: two separate mental calculations took place from those tested: when pricing came first, the internal question asked by the test subject was "is the product worth the price" but when product came first, the internal question asked was "do I like this product" (Harrell, 2019).

Frito-Lay (2009)
Research Tool: Electroencephalogram (EEG)
Outcome: Brain activity showed that women loved a Cheetos ad showing a prank pulled in a laundromat which was panned by a traditional focus group. "Frito-Lay Chief Marketing Officer Ann Mukherjee says brain-imaging tests can be more accurate than focus groups" (Bhatia, 2014).
Takeaway: Frito-Lay aired the ad with much success

GlaxoSmithKline
Research Tool: Galvanic Skin Response (GSR), eye tracking, fEMG (facial coding) along with self-reports (iMotions).

Outcome: previous product or brand engagement did not directly impact recall (Future Proof Insights, 2021).
Takeaway: #1 for recall to happen, marketing strategies should focus on driving an emotional response; #2 repeat business has to be earned repeatedly (Future Proof Insights, 2021).

IKEA
Research Tool: high-res EEG headsets and eye trackers.
Outcome: researchers learned about consumer reactions to green business strategies which allowed IKEA to venture into other areas of their business which include home solar offerings, renewable plastics and healthy food in their restaurants.
Takeaway: neuromarketing has the potential to reveal more insights than traditional market research methods including feedback not originally asked for (Belascu, 2020).

"Large CPG Company"
Research Tool: SST and *Implicit Association Testing (IAT), a computer-based measure.
Outcome: agency that oversaw testing was able to guide the "large CPG company" towards determining the best brand imagery that made a neural impact; they found additional trends in types of imagery (group shots vs. single product images).
Takeaway: "Large CPG company" felt more confident that their goals had been met in understanding the neural impact of varied product and brand imagery (Neuro-Insight).

*Note: Evidence from a 1998, Greenwald, McGhee, and Schwartz proposal that said the Implicit Association Test (IAT) measures individual differences in implicit social cognition was reviewed in 2019 and shows that there is insufficient evidence for this claim (Schimmack, The Implicit Association Test: A Method in Search of a Construct, 2019). A more recent study in 2021, showed there is no evidence that IATs measure implicit constructs (e.g., implicit self-esteem, implicit racial bias). "IAT proponents consistently ignore or misrepresent facts that challenge the validity of IATs as measures of individual differences in implicit cognitions. IATs are widely used without psychometric evidence of construct or predictive validity" (Schimmack, Invalid Claims About the Validity of Implicit Association Tests by Prisoners of the Implicit Social-Cognition Paradigm, 2021).

CHALLENGES FACING NEUROMARKETING

Challenges that exist today include a lack of transparency (Weng, 2018). Additionally, understanding and accounting for the impact of socioeconomic status and racism on brain and biometric activity is a challenge (Farah, 2017; Rollins, 2021).

Lack of Transparency

It is through the fast expansion of neuromarketing services that some agencies, starting around 2010, began to find a widening, fast-paced path towards attaining corporate clients (Ramsøy, 2019). The following issues have erupted since then:
With no oversight, agencies and companies have built in-house labs and hired scientists to oversee brain testing in order to better predict brand, product or service successes. It's hard to say, due to the lack of transparency, if the staff and scientists have the proper experience to run the tests and analyze the data (Brenninkmeijer, Schneider, & Woolgar, 2020). Also going unchecked is assurance that the test subjects are in line with the research objectives which includes utilizing diverse sampling groups (gender, age, race…) in order to provide legitimate results that could also lead to new learnings (Farah, 2017).

Issues with relaying neuromarketing results can occur as data moves from the lab, to the marketer and then to management or the client. "Translating" the lab data results into easy-to-digest, sharable content that leadership teams understand is not an easy task. Questions to ask: Does the new language fully represent the original data? Has a story been attached to the data that makes false promises (Ramsøy, 2019)?
Neuromarketing testing is most likely paid for by a corporate entity, and it's common for the company to demand that their results be confidential in order to remain competitive. Neuromarketing processes, outcomes and discoveries remain concealed from the public due to this sponsorship relationship of the lab testing versus other science research where those paying (grants, universities, government…) don't have a vested interest in the outcome nor do they keep their research processes and results private. The lack of transparency in the neuromarketing arena is counter to the scientific research community that finds its truest discoveries through corroboration as the earlier timeline in this paper has showcased. This is a considerable challenge (Thomas, Pop, Iorga, & Ducu, 2017).

Reliability of Results: Socioeconomic Status and Race

No human brain exists out of context; a man or woman's lived experiences affect how the brain and body react. Because of this, neuromarketing researchers should be taking into account how socioeconomic status (SES) and racism affect brain and biometric activity. fMRI has proven that SES has an impact and "found differences in the way brain systems are deployed for executive function that have not been observed in behavioral studies" (Farah, 2017). The below chart (Figure 1) showcases three scenarios on how SES can affect brain structure:

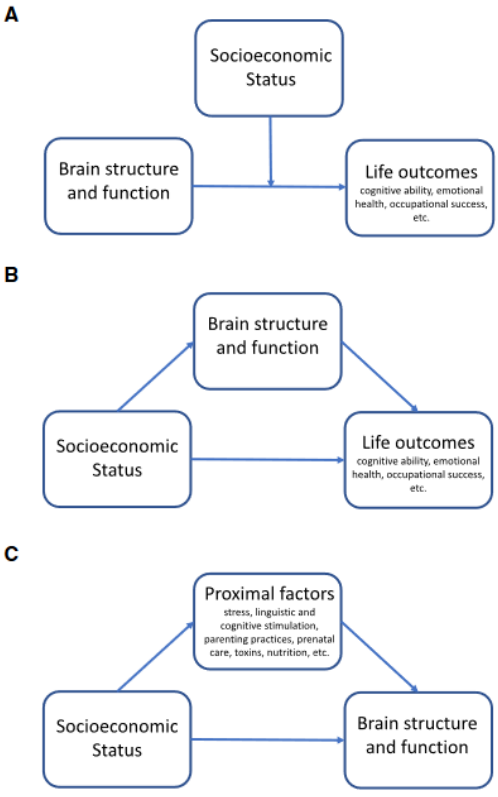

Figure 1. Possible Relations among the Causes and Consequences of SES and Its Neural Correlates
(A) Moderation of brain-behavior relations by SES.
(B) Mediation of behavioral consequences of SES by the brain.
(C) Mediation of SES-brain relations by proximal factors associated with SES.

Figure 1. Possible connections between SES and the brain connection (Farah, 2017)

Using dMRI, a recent study showed "the effects of SES indicators on cerebellum cortex microstructure and integrity are weaker in Black than in White families. This finding is in line with the Marginalization-related Diminished Returns (MDRs), defined as weaker effects of SES indicators for Blacks and other racial and minority groups than for Whites." (Assari & Boyce, 2020). Another study found "in response to being socially excluded by Whites, Black participants appeared to be more distressed showing greater social pain-related neural activity and reduced emotion regulatory neural activity" (Masten, Telzer, & Eisenberger, 2011).

Knowing that brain activity can be unique based on phenomenology, neuroscientists and neuromarketing researchers should be required to focus on a more diverse human test sampling in order to achieve legitimate results, a topic rarely mentioned or investigated through neuromarketing research but exists as a challenge nonetheless. "Researchers risk reproducing scientific racism through the omission of racial experiences that do not fit or are too tricky to understand, in neurobiological calculations" (Rollins, 2021). This coupled with the fact that the average neuromarketing research participant comes from a white middle class background, insights compiled for global organizations appealing to multicultural communities may have incomplete results due to a lack of diversity with the sampling "because they [subjects] come from societies that are western, educated, industrialized, rich, and democratic. Behaviors of such subjects cannot be generalized to the large segments of humanity living under different circumstances" (Farah, 2017).

In addition to the lack of representation in lab sampling, biometric analysis and secondary tools should also be reviewed for their efficacy in testing diverse subjects. One such tool is Artificial Intelligence (AI), which "can be defined as the creation of computer systems called intelligent, as they are composed of analytical processes whose goal is to propose solutions and algorithms that enhance our daily lives, and also learn the human behavior via data collection" (Mouammine & Azdimousa, 2019). AI is often used as a secondary neuromarketing tool. Researchers are using AI to gather and interpret data from other neuro tool sources as it allows for more in-depth and reliable understandings of consumer behavior (Mouammine & Azdimousa, 2019). The challenge using AI, as shared by Dr. Timnit Gebru PhD, a former Google employee and founder of Black in A.I., is "I'm worried about groupthink, insularity and arrogance in the A.I. community" (Metz, 2021). In short, AI tools haven't "learned how to recognize the differences between black faces because the images used to train it had mostly been of white faces." As a widely known constraint when using AI, the conflict is that neuromarketing researchers may not be accounting for this disparity (UN News Global perspective Human stories, 2020).

CONCLUSION

As marketers come to understand the value of brain and biometric research, neuromarketing will continue to grow globally at a fast pace where the goal of attaining deeper consumer understanding drives the industry. While on the precipice of considerable innovation that could forever positively change how companies compete and grow, there are challenges that range from a lack of transparency, minimal standardization, and little to no collaboration amongst researchers. Additionally, with brain activity being synchronous with one's lived experiences, socioeconomic status and racism need to be taken into account and measured with technologies that accurately account for the same which includes the neuromarketing secondary tool AI (Artificial Intelligence). Knowing that an almost entirely white American male workforce is building various AI structures with data that stems from their personal experiences and

knowledge, one can assume, and many accounts prove, that AI is far from infallible which is a fact not accounted for when compiling and presenting neuromarketing data and insights.
It is the conclusion of this research, that if neuromarketing challenges can be effectively addressed, then the biggest users of neuromarketing today, multinational corporations, will have a reliable tool that will be able to help attain dependable, competitive data that will support finding pathways that foster growth and drive innovation globally.

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SHOULD AMAZON OPEN MORE AMAZON STYLE STORES WITHIN THE UNITED STATES?

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ABSTRACT
Amazon's newest brick & mortar idea is materializing as its new clothing store called Amazon Style. The MDP is whether more Amazon Style stores should be opened within the United States. Research is required to determine the consumer preferences and purchase intentions in Amazon Style (MRP). The team has selected the Theory of Planned Behavior as the structure to conduct an online survey through Google Forms (10 questions, n=67). Most of the factors turned out to have a moderate effect on "shopping at Amazon Style". The Attitude had a relatively significant positive influence on the Intention and Behavior. Correlation analysis showed that people tend to shop at Amazon Style stores if they (a) know Amazon's impact on e-commerce, (b) have people around them (friends) who want to go to Amazon Style, or (c) know that Amazon offers appropriate discounts for shopping at Amazon Style.
Keywords: Theory of Planned Behavior, Amazon Style, Amazon, brick & mortar stores

Introduction

By defining the MDP and MRP, a marketing research project on the opening of Amazon Style was planned to determine the future development of Amazon's offline clothing stores. This report provides the status of the company, background of the study, MDP, MRP and expected methodology.

Status of the company

Amazon is preparing to open its first clothing, shoe and accessories store, Amazon Style, in a luxury shopping center in Los Angeles later this year.

Background of the study

Amazon is a multinational e-commerce company headquartered in Seattle, USA, and is currently one of the largest Internet online retailers in the world. While Amazon is at the head of e-commerce, customers still prefer to shop for clothes both online and in physical stores. In-store retail still accounts for more than 85% of U.S. retail sales. So even Amazon, which has grown to become the largest apparel retailer in the U.S. since 2002, wants to open brick-and-mortar stores that sell clothes offline. And the upcoming Amazon Style has a significant advantage over traditional clothing stores by adding a shopping process like that of online shopping. So, will consumers who know that Amazon is opening its first offline store in Los Angeles be willing to accept more Amazon Style? Is it necessary for Amazon to open Amazon Style in more locations?

Management Decision Problem (MDP)

The Management should decide whether to open more Amazon Style shops within the United States.

Market research problem (MRP)

The market research problem is to determine the consumer preferences and purchase intentions in an Amazon Style store.

Problem solving approach

We will study the problem mainly through quantitative research methods and will need both, primary and secondary data to complete the research. Further details will be provided in the research design section.

Research design

Our research design is illustrated in figure 1 in the appendix and explained in more detail below.

Secondary quantitative research

With the help of secondary quantitative research, we would be able to use available data to make sure we are using the primary quantitative research correctly and to our benefit. The first kind of secondary research we are using the data was used in order to open the Amazon Style store in Glendale California. Amazon did extensive research in order to assure that they were staying true to their technology-based shopping. One of their biggest findings was that the consumers of the Fashion Store would be consumers of ages 25-45. In order to adapt to this they have technology play a big role in the brick and mortar store.

The second kind of secondary research that will be looked into before completing our primary research is looking at the research behind online shoppers in all the U.S states. If Amazon would like to expand their concept of technology-based brick and mortar store, it is important to make sure it is in a location where people are actually interested in it.

Primary quantitative research

After the secondary research, we need to collect more consumer opinions to make the final decision. We chose the online questionnaire (10 questions, 50 or more data points) to collect feedback, probably google form. The survey will be distributed among contacts and the network of all group members. We will approach friends and family, as well as social media and professional contacts. We chose the Theory of Planned Behavior as the theoretical basis. The theory of planned behavior (TPB) is a psychological theory that links beliefs to behavior. (Wikipedia, n.d.) A study back in 2009 used the Theory of Planned Behavior to study the relationship between purchase intention and purchase behavior. (Marie, Patrick & Maggie, 2009) By investigating the relationship between people's intention to shop and purchase behavior for Amazon Style, it was possible to conclude whether more stores should be opened. In addition, we designed the following hypothesis model based on the five dimensions of the Theory of Planned Behavior (Attitude, Subjective Norm, Perceived Behavioral Control, Intention and Behavior) as shown in figure 2 in the appendix.

Demographics Questions

The survey will also contain demographics questions to ensure we can slice and dice our data to analyze at deeper levels whether there are trends with demographic variables. Included in the questions will be whether they are a current Amazon customer, their household income levels, their age, and their city and state. Four questions will be the maximum for demographics. Since we will have this information in the data, we will be able to see if consumers in certain age groups will make up a bulk of their potential customers. With this data, Amazon could dive deeper into their expected target market to create marketing campaigns and tailor their Style shops towards that age group. By knowing income levels and analyzing that data, Amazon might have a better idea for a price range that they should stay within on clothing sold at their Style shops. Knowing about any trends among current customers compared to current non-customers might also bring to light more information about their potential target market. To assign this demographic data to the shopping behavior is of high importance, as it can be matched with Amazon's target customers later (QuestionPro, 2022).

Data evaluation

The analysis of the data will take place after the data collection and we will use different tools to first statistically analyze and afterwards visualize the data. For both the analysis and the visualization, we will use the programs Minitab (www.minitab.com) and Microsoft Excel. These programs both work very well for our example, as the data gathered from our primary research will be quantitative. Furthermore, in addition to analyzing the influence of demographics factors and survey questions as mentioned in Demographics Questions, we will still analyze the relevance of the five dimensions according to the Theory of Planned Behavior hypothesis.

Process of data preparation

In order to be able to collect the data necessary to find a correlation in our MDP and MRP, the team decided to come up with an easy-to-use Google Form questionnaire as can be seen in figure 3 in the appendix. The team came together to form 17 questions that would be sent out. The first ten questions were formed to target each of the dimensions of planned behavior (Q1 & Q2 = Attitude dimension; Q3 & Q4 = Subjective dimension; Q5 & Q6 = Perceived behavioral control; Q7 & Q8 = Intention dimension; Q9 & Q10 = Behavior dimension), the next six were based on demographics that would help Amazon find the perfect target audience. The final question was an open-ended question that would allow people to fill in with any personal thoughts they deemed valuable for research. Once the form was created it was sent out using a link that people were allowed to click on to be able to fill out the questionnaire. One main goal was to make the questionnaire simple to use so people of ages 18 and up would be able to respond to it quickly and adequately. The questionnaire was sent to around 100 people and we got 67 responses, making our response rate over 50%. We used a modified model of planned behavior as a hypothesis in the questionnaire design and analysis.

According to theory, if an individual evaluates a suggested behavior as positive (attitude), and if he or she believes significant others want the person to perform the behavior (subjective

norm), the intention (motivation) to perform the behavior will be greater and the individual will be more likely to perform the behavior. Attitudes and subjective norms are highly correlated with behavioral intention; behavioral intention is correlated with actual behavior. (Wikipedia, n.d.) We will also focus on these correlations in the analysis section.

Statistical analysis techniques

The tool used to complete the bulk of the analysis was Minitab. The data was imported from Google Forms into Minitab and re-coding of the likert scale options took place to run correlation analysis properly. The r values allowed for insights regarding strong or weak and positive or negative correlations between all main and demographic questions, as well as variance and p values to understand the data through regression modeling. Graphs were also created for visual aid, specifically scatter plots with regression lines and histograms. For the reliability and validity analysis of the questionnaire, the SPSS software was used. In this paper, Cronbach's coefficient was used to analyze the reliability of the questionnaire and to test the degree of internal consistency among the questionnaire items, and a larger α coefficient indicates a higher reliability of the questionnaire. From the table shown in the appendix as figure 4 , we can see that the α coefficient of the questionnaire is 0.730, which is above 0.7, proving that the questionnaire has good reliability and high consistency.

The KMO test, as shown in figure 5 in the appendix, values for the data investigated for the scale = 0.786 > 0.70 and the data indicate that the scale is suitable for factor analysis. The data of Bartlett's sphericity test showed an approximate chi-square value = 191.815, a relatively large value, sig. = 0.000, where $P < 0.01$, so the null hypothesis of Bartlett's sphericity test was rejected, pointing out that the scale is suitable for factor analysis and the validity structure of the scale is relatively good.

Description of results

We received a total of 67 responses, including 49 women and 18 men as can be seen in figure 6 in the appendix. Among them, there are 5 people aged 18-20, 52 people aged 21-30, 6 people aged 31-40, 1 person aged 41-50, two people over 50 and one person who does not want to reveal his age. We have a total of 10 questions, two for each dimension. In the Attitude dimension, we arrived at the mean of 3.03 and 3.09 respectively, and the standard deviation of 1.218 and 1.164, so the response of this dimension has a high degree of dispersion. The second dimension is Subjective Norm. In this dimension, the mean value is 3.388 and 3.925, and the standard deviation is 0.834 and 1.005. In this dimension, people tend to concentrate on their answers. The third dimension is Perceived Behavioral Control. Here, we obtain mean values of 3.358 and 3.806, 0.933 and 0.7228 standard deviations respectively. This dimension has a concentrated degree of dispersion of responses. The fourth dimension is Intention. Here, we get an average of 3.134, 3.791 and a standard deviation of 1.113, 0.897. The degree of dispersion is relatively concentrated. The last dimension is Behavior, which has an average of 3.418 and 3.463 and a standard deviation of 0.940 and 0.943. The degree of dispersion is relatively concentrated.

Correlation between demographics and dimensions

Demographic correlations with the survey questions would allow us to know what Amazon's target market may look like. It also helps us understand any nuances to keep in mind like income levels most willing to spend money on Amazon services, and any planned behaviors to purchase from specific groups.

After looking at correlation among demographics questions with main questions from the Theory of Planned Behavior, there were only a few correlations and mostly moderately. As hypothesized, there was a moderately positive correlation (r=0.38) with household income and having enough money to purchase items from Amazon Style. The higher the household income, the higher the sentiment was on whether they felt like they had enough money, which tells us that household income would be a slight factor for purchase as the planned behavior mirrors some possible concern with prices not being all that low for just anyone to purchase. Nearly a quarter of the respondents indicated their income was over $100k, and half of the sample were below $100k in household income, but a majority (71%) stated that they felt they had enough money to purchase.

There is also a slight negative correlation with age and willingness to shop at Amazon Style and recommend it to others at -0.27. As age increases, their willingness to shop and recommend drops slightly. This means that the older the person, the less likely they might be to imagine themselves shopping at Amazon Style and recommending it to others. Amazon might benefit from additional secondary research around these age group market sizes and focusing on the younger audiences.

Correlation between dimensions

We correlated the quantitative studies and derived the data shown in figure 7 in the appendix. The Subjective Norm dimension has a relatively significant positive influence on the Intention dimension. The Subjective Norm dimension also has a relatively significant positive influence on the Intention dimension, (the correlation coefficient of Subjective Norm to Q7 is between 0.3 and 0.5) that is, the larger the Subjective Norm, the stronger the consumer's shopping intention; the Intention dimension has a relatively positive influence on the Behavior dimension, (the correlation coefficient of Q7 to Behavior dimension is close to 0.5) that is the larger the Intention, the larger the Behavior. Among these coefficients, since Q8 is an inverse question, the coefficients associated with it are all negative. According to our open-ended question, the reason for the negative impact of Q6 on Q9 could be that many people are not willing to buy Amazon clothing because the quality of the clothes is very bad.

After running the test on Minitab, one of the main points to focus on was trying to find the r correlation that had either the strongest positive correlation or the strongest negative correlation. In order to do so, we found the decimal points that were closest to the negative one and the positive one. This would help Amazon have a better understanding as to which factors would positively or negatively affect the opening of a new Amazon Fashion store.

The two questions that had the highest correlation were Question 9 (X) and Question 10 (Y), as illustrated in figure 8 in the appendix. Although only having a correlation of 0.62 it is clear to see people feel that so long as there is an Amazon Fashion store nearby or within the mall, they are willing and likely to shop there.

On the contrary, the strongest negative correlation that can be seen below was found between Question 8 (X) and Question 7 (Y) as shown in figure 9 in the appendix. With a correlation of -0.37 being a weak negative correlation it is nonetheless a negative effect. Amazon should keep in mind that if they have a bad first experience they are not willing to either continue shopping there or recommend it to others. It is imperative to also note that since the p-value is too low this might not be as important or significant but nonetheless it is helpful information for Amazon to have.

Conclusion and Recommendations

The general mood participants have when thinking about Amazon opening offline Amazon Style stores is moderate. This can be seen when looking at the results of the first question which is about whether people are interested in visiting an Amazon Styles store. On the Likert scale, the answer with the most votes was "Neutral". The rest of the answers were more distributed towards "Unlikely" than "Likely". Regardless of this we found some very interesting correlations between the dimensions and thus we were able to answer our MRP which is about consumer preferences and purchase intentions for Amazon Style stores.

The correlation analysis between the first ten questions, and thus the questions covering the five dimensions of the theory of planned behavior, showed which dimensions are more correlated than others. It can be seen that the attitude dimension (Q1 & Q2) and the subjective dimension (Q3 & Q4) have a significant effect on the purchase intention dimension (Q7 & Q8). This means that people tend to shop at Amazon Style stores if they (a) know Amazons impact on e-commerce and are aware of the giant platform, or (b) have people around them (friends) who want to go to an Amazon Style store, or (c) know that Amazon offers appropriate discounts for shopping at an Amazon Style store. Thus a recommendation for Amazon is to use its size and market power to offer discounts for existing Amazon prime customers, as well as a different discount for new Amazon users. A "community feeling" could be achieved by inviting friends to check out the store and combine this with further discounts.

Another strong correlation was found between the intention dimension (Q7 & Q8) and the actual purchase behavior dimension (Q9 + Q10). The result of this is that people tend not to come back to an Amazon Style store, if the first shopping experience was bad. A recommendation to prevent this is that Amazon should work on a similar shopping experience like users already know from online shopping. This also relates to the previously mentioned correlation that people tend to shop at Amazon Style stores if they already know Amazon's giant impact in the e-commerce industry. A concrete example to offer a familiar shopping experience is to provide as much digital help as possible. This could include (a) paying in-store with your Amazon account or also (b) getting recommendations for products based on your Amazon account activity.

These conclusions and recommendations are solely based on what we found in our market research experiment. Despite what we explained in our section about the statistical significance, we do encourage other researchers or Amazon itself to dig deeper and perform a more extensive research.

Tables and figures

Figure 1: Research design

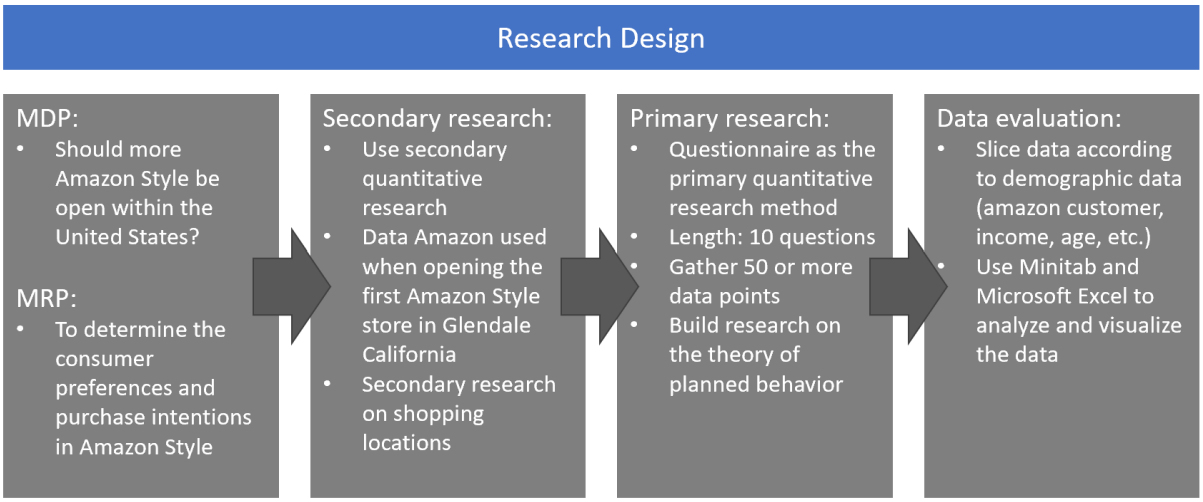


Figure 2: Theory of planned behavior

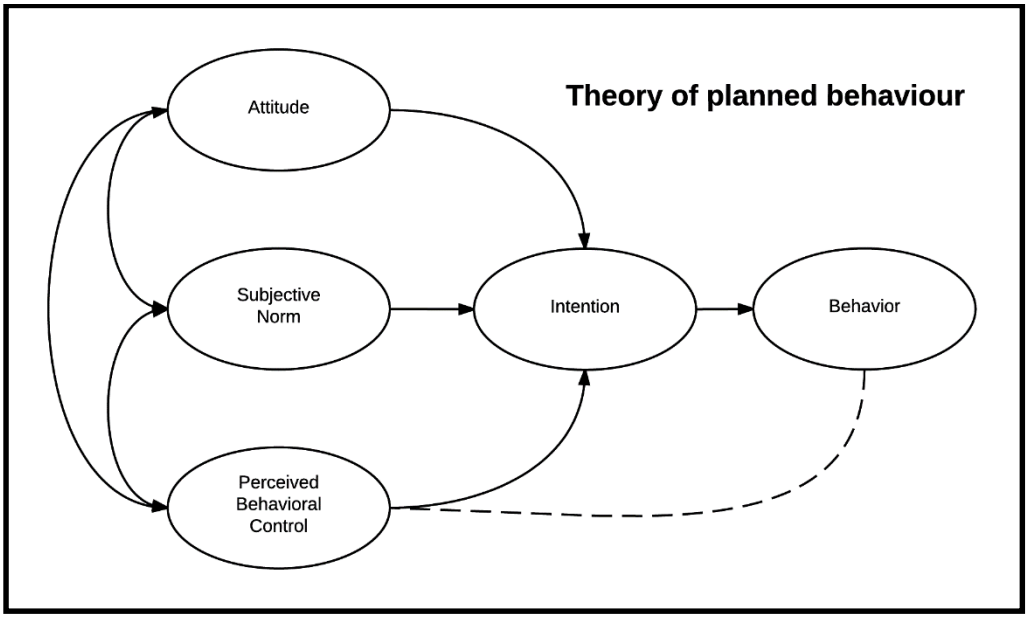
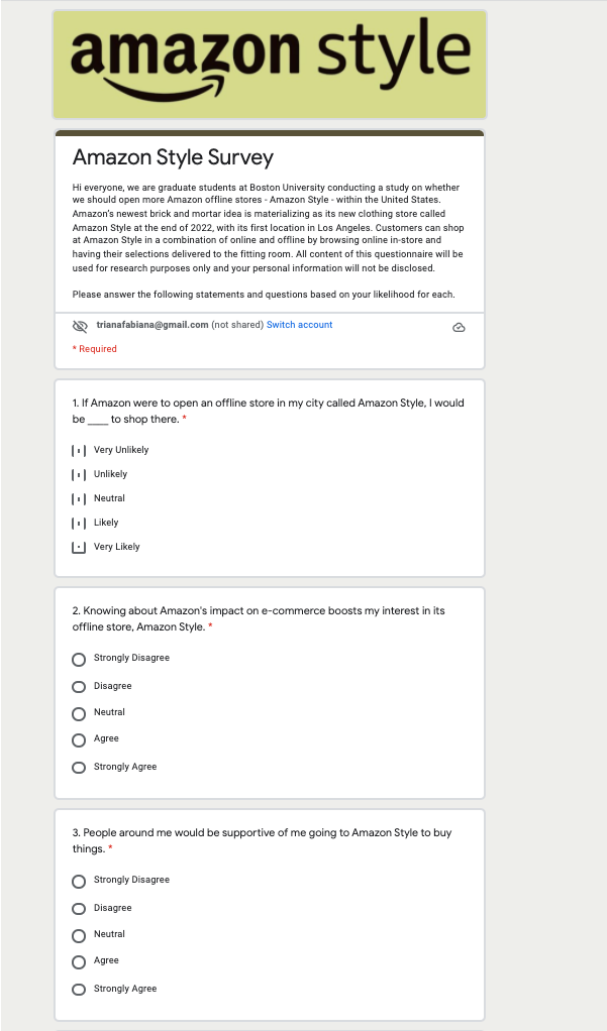


Figure 3: Amazon Style Survey



amazon style

Amazon Style Survey

Hi everyone, we are graduate students at Boston University conducting a study on whether we should open more Amazon offline stores - Amazon Style - within the United States. Amazon's newest brick and mortar idea is materializing as its new clothing store called Amazon Style at the end of 2022, with its first location in Los Angeles. Customers can shop at Amazon Style in a combination of online and offline by browsing online in-store and having their selections delivered to the fitting room. All content of this questionnaire will be used for research purposes only and your personal information will not be disclosed.

Please answer the following statements and questions based on your likelihood for each.

trianafabiana@gmail.com (not shared) Switch account

* Required

1. If Amazon were to open an offline store in my city called Amazon Style, I would be ___ to shop there. *

- [ ] Very Unlikely
- [ ] Unlikely
- [ ] Neutral
- [ ] Likely
- [x] Very Likely

2. Knowing about Amazon's impact on e-commerce boosts my interest in its offline store, Amazon Style. *

- ○ Strongly Disagree
- ○ Disagree
- ○ Neutral
- ○ Agree
- ○ Strongly Agree

3. People around me would be supportive of me going to Amazon Style to buy things. *

- ○ Strongly Disagree
- ○ Disagree
- ○ Neutral
- ○ Agree
- ○ Strongly Agree

4. If Amazon Style has discounts, it will have a positive effect on my shopping experience. *

- ○ Strongly Disgree
- ○ Disagree
- ○ Neutral
- ○ Agree
- ◉ Strongly Agree

5. I have enough time to allow me to purchase Amazon Style items. *

- ○ Strongly Disagree
- ○ Disagree
- ◉ Neutral
- ○ Agree
- ○ Strongly Agree

6. I have enough money to allow me to purchase Amazon Style items. *

- ○ Strongly Disagree
- ○ Disagree
- ○ Neutral
- ◉ Agree
- ○ Strongly Agree

7. I am not only willing to shop at Amazon Style myself, but also to recommend it to others around me. *

- ○ Strongly Disagree
- ○ Disagree
- ○ Neutral
- ○ Agree
- ◉ Strongly Agree

8. I would choose not to come back to Amazon Style to shop if I had a bad first shopping experience there. *

- ○ Strongly Disagree
- ○ Disagree
- ◉ Neutral
- ○ Agree
- ○ Strongly Agree

9. If I went to a mall with Amazon Style, I would choose to shop at Amazon Style. *

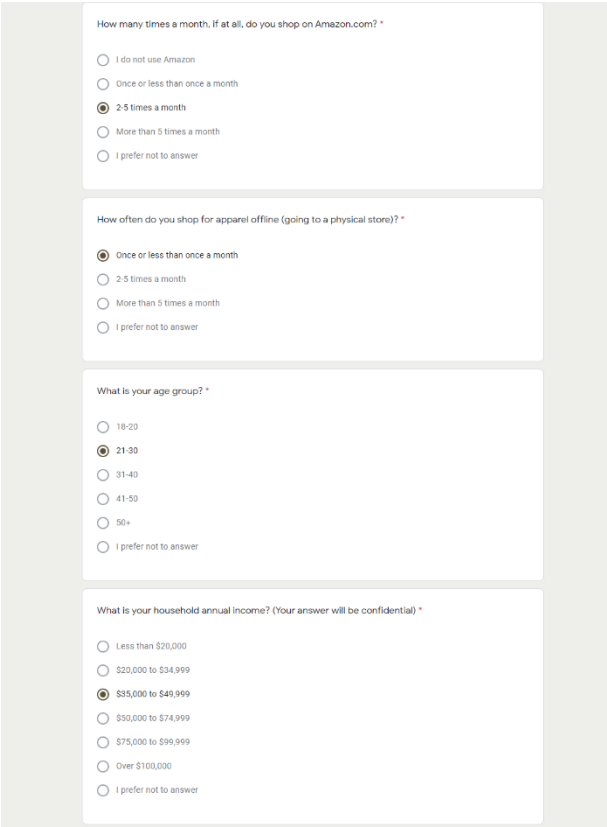
- ○ Strongly Disagree
- ○ Disagree
- ○ Neutral
- ◉ Agree
- ○ Strongly Agree

10. If there was a nearby location, I would choose to shop at Amazon Style the next time I went shopping. *

- ○ Strongly Disagree
- ○ Disagree
- ○ Neutral
- ◉ Agree
- ○ Strongly Agree

I am a user of Amazons services *

- ◉ yes
- ○ no
- ○ I prefer not to answer


How many times a month, if at all, do you shop on Amazon.com? *
I do not use Amazon
Once or less than once a month
2-5 times a month
More than 5 times a month
I prefer not to answer
How often do you shop for apparel offline (going to a physical store)? *
Once or less than once a month
2-5 times a month
More than 5 times a month
I prefer not to answer
What is your age group? *
18-20
21-30
31-40
41-50
50+
I prefer not to answer
What is your household annual income? (Your answer will be confidential) *
Less than $20,000
$20,000 to $34,999
$35,000 to $49,999
$50,000 to $74,999
$75,000 to $99,999
Over $100,000
I prefer not to answer

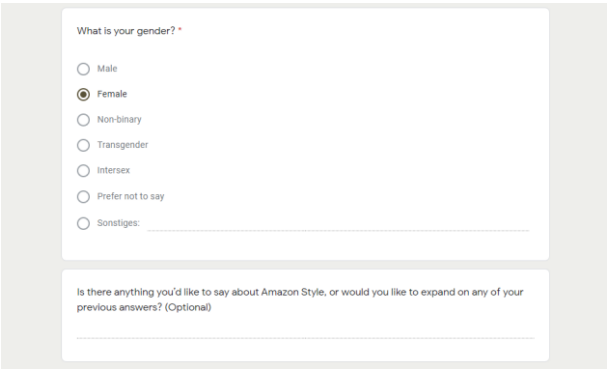

What is your gender? *
Male
Female
Non-binary
Transgender
Intersex
Prefer not to say
Sonstiges:
Is there anything you'd like to say about Amazon Style, or would you like to expand on any of your previous answers? (Optional)

Figure 4: Case Processing Summary

Case Processing Summary

		N	%
Cases	Valid	67	100.0
	Excluded[a]	0	.0
	Total	67	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.730	10

Figure 5: KMO Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.786
Bartlett's Test of Sphericity	Approx. Chi-Square	191.815
	df	45
	Sig.	.000

Figure 6: Descriptive analysis for all questions

FORM RESPONSES 1

Descriptive Analytics, Histograms, and Box Plots of all questions

Statistics

Variable	Percent	Mean	StDev
Recoded 1. If Amazon were to op	100	3.030	1.218
Recoded 2. Knowing about Amazon	100	3.090	1.164
Recoded 3. People around me wou	100	3.388	0.834
Recoded 4. If Amazon Style has	100	3.925	1.005
Recoded 5. I have enough time t	100	3.358	0.933
Recoded 6. I have enough money	100	3.8060	0.7228
Recoded 7. I am not only willin	100	3.134	1.113
Recoded 8. I would choose not t	100	3.791	0.897
Recoded 9. If I went to a mall	100	3.418	0.940
Recoded 10. If there was a near	100	3.463	0.943

Figure 7: Correlations

Correlations

	Recoded 1. If Amazon were to op	Recoded 2. Knowing about Amazon	Recoded 3. People around me wou	Recoded 4. If Amazon Style has	Recoded 5. I have enough time t	Recoded 6. I have enough money	Recoded 7. I am not only willin	Recoded 8. I would choose not t	Recoded 9. If I went to a mall	Recoded 10. If there was a near
Recoded 2. Knowing about Amazon	0.575									
Recoded 3. People around me wou	0.510	0.354								
Recoded 4. If Amazon Style has	0.398	0.446	0.487							
Recoded 5. I have enough time t	0.190	0.110	0.189	0.061						
Recoded 6. I have enough money	-0.028	0.057	0.077	-0.104	0.352					
Recoded 7. I am not only willin	0.444	0.435	0.384	0.415	0.099	0.052				
Recoded 8. I would choose not t	-0.327	-0.316	-0.133	-0.102	0.000	-0.017	-0.366			
Recoded 9. If I went to a mall	0.492	0.450	0.486	0.435	0.120	-0.013	0.481	-0.147		
Recoded 10. If there was a near	0.384	0.293	0.288	0.261	0.205	0.089	0.489	-0.296	0.616	

Figure 8: Highest Positive Correlation

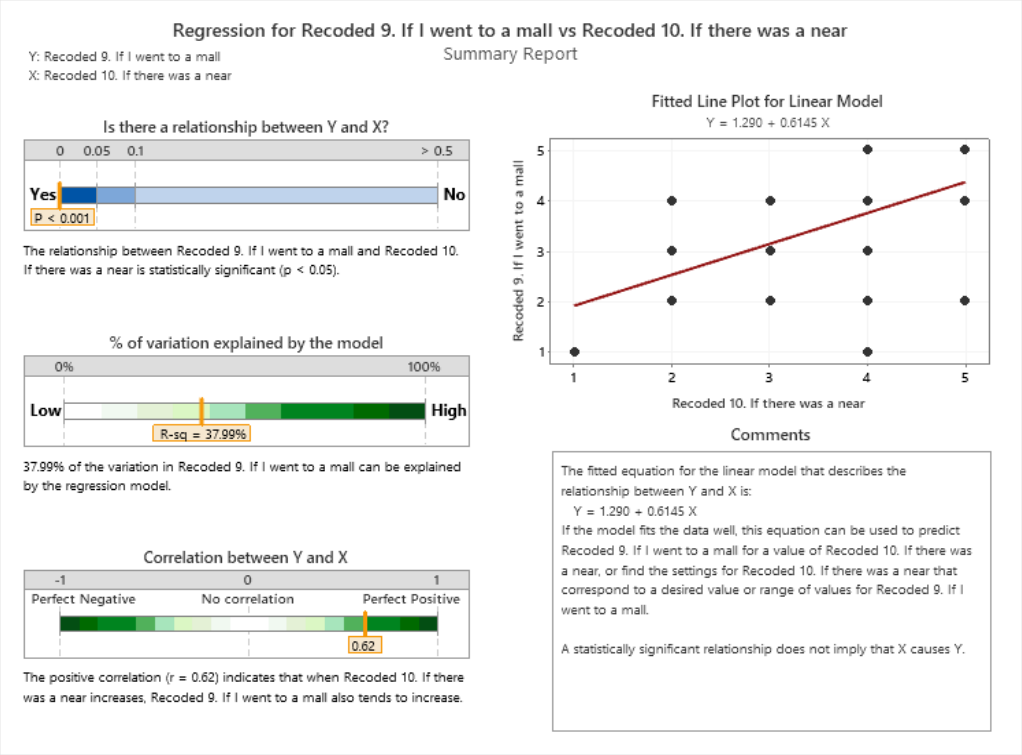
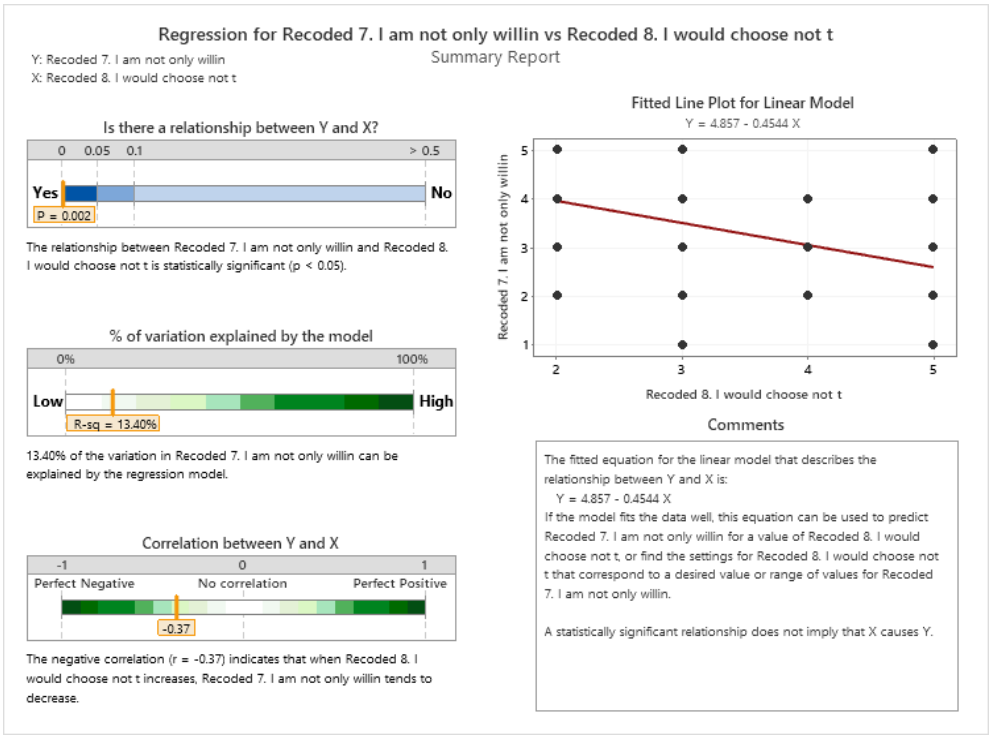


Figure 9: Highest Negative Correlation



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INSTRUCTIONAL LEADERSHIP IN THE TIME OF COVID-19: A MALAYSIAN STUDY

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ABSTRACT
This research discusses the instructional leadership factors contributing to student achievement in public examinations (Sijil Pelajaran Malaysia) in government-funded secondary schools within the state of Sarawak, Malaysia during the pandemic. The study involved 303 teachers from 76 secondary schools. Binary logistic regression was applied to predict the instructional leadership's influence on student academic achievement. The findings revealed that communicating the school's goals was the major dimension of instructional leadership that emerged as the most influential predictor of student achievement. The result indicated that schools were more than 18 times more likely to achieve good to excellent results when the principals communicated the schools' goals. Communicating the schools' goals had a positive influence on students' performance, hence making this a possible course of action for school heads. More comprehensive studies are needed to ascertain its consistency as well as investigating other predictors for student achievement.

EXPLORING CSF'S ONLINE EDUCATION

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ABSTRACT

E-learning has generated enormous excitement in education all over the world. It offers the potential to provide learning to new audiences and chance to fundamentally transform learning delivery and the competitive landscape (Poehlein, 1996). The rapid and massive expansion of the Internet as a potential course delivery platform, combined with the increasing interest in lifelong learning and budget restrictions, has created a substantial incentive for universities to develop e-learning courses. As the technology is now available and comparatively user-friendly, those universities which do not embrace it will be left alone in the race for globalization and technological development. If we want universities to make the extreme use of the Internet, it is essential to identify and understand the critical success factors affecting the online delivery of education. Indeed, if we continue to carry out conventional models borrowed from classroom-based or distance education focused on passive transmission, we can expect

only marginal improvements and may well simply escalate costs (Volery and Lord, 2000, Kokoç et al. 2021).

The term critical success factor first came out in the literature in the 1980s when there was interest in why some organizations appeared to be more successful than others, and research was carried out to investigate the success components (Ingram, Biermann, Cannon, Neil, & Wad¬dle, 2000). Critical success factors are "those things that must be done if a firm is to be successful" (Freund, 1988). Critical success factors should be few in number, measurable and controllable. Although there is a number of research articles on e-learning, few of them address the most important issue of e-learn¬ing critical success factors. Papp (2000) examined distance learning from a macro perspective and suggested some critical success factors that can assist faculty and universities in e-leaning environ¬ment development.

Papp's e-learning critical success factors included intellectual property, suitability of the course for e-learning environment, e-learning course content, building the e-learning course, e-learning course maintenance, e-learning platform, and measuring the success of an e-learning course. Papp (2000) suggested studying each one of these critical success factors in isolation and also as a composite to deter¬mine which factor(s) influence and impact e-learning success. Benigno and Trentin (2000) identified a framework for the evaluation of e-leaning based courses, focusing on two aspects: the first is evaluating the learning, and the second is evaluating the students' performance. They considered factors such as student characteristics, student-student interaction, learning materials, learning environment, effective support, and information technology.

Experiences of transition from a teacher to middle leadership in seven South African primary schools

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ABSTRACT

This paper draws on the findings of a qualitative case study which investigated experiences of transition from teacher to Departmental head (DH) in seven selected primary schools in the Tshwane District of Gauteng Province in South Africa. The study was underpinned by Bridges' transition theory. The data were collected during semi-structured interviews with fifteen HoDs from seven public primary schools. The findings revealed that during transition HoDs experience changes in responsibilities as well as in relationships. Feelings of uncertainty, self-doubt and a lack of competency in performing the additional responsibilities reduce newly appointed DHs' ability to exercise power and authority over the teachers they are expected to lead and manage.

Leadership & Language Learning

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Abstract

How to apply and flourish leadership styles practice based on social, psychological, and language knowledge. It is well-established that leadership is the new key pedagogical aspect to language learning. Leadership should be determined by dimensions like language learning purposes, but the question is Can leadership be built language learning for no specific reasons build leadership? It cannot be built. Even with complementary education it cannot be. Leadership is not common among cultures and have different aspects among learners of different age groups. Language status is important. Learners cannot be leaders unless they use their IL. For teachers and faculty administrators, they should group students according to their needs. Also, cultureless English is more objective thus more accepted. Teacher should be sociable, serious, friendly, well-trained to cooperate with the students. In fact, leadership in education aims at guiding talents and energies of partners: teachers, students, and parents towards achieving common educational aims. Leadership should be divided into the following types: servant, transactional, and transformational. Also there are 6 leadership traits: communicate, be positive, encourage feedback and collaboration, trust, empower, believe in others. Solve problems and make decisions. That can lead to improved student learning outcomes. For me, leadership can lead to pedagogical problems and no Learning or acquisition.

The Degree of Availability of Information and Communication Technology (ICT) Competencies among Teachers in General Education Schools in the State of Kuwait in Light of Some Variables

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Abstract

This study aimed to demonstrate/identify the extent/degree to which teachers in general education schools in the State of Kuwait possess information and communication technology (ICT) competencies from their point of view, in addition to revealing the impact of some independent variables (i.e., gender, specialization, and years of professional experience) on the acquisition level. The study adopted the analytical, exploratory, descriptive, quantitative research methodology, and used the questionnaire as a tool to collect data. A stratified random sample of 1,299 teachers participated electronically in this research study during the first semester of 2020/2021 academic year. The results indicated that the degree of availability of information and communication technology competencies among the teachers in general education schools in the State of Kuwait was generally "medium/average" (M = 2.45, SD = 0.84, RII = 0.49). Where the estimates of the teachers indicated that the extent to which they possess ICT competencies is "medium/average" in all of the study's dimensions/constituents/topics. The findings of the study also revealed that there are statistically significant differences at the significance level of 0.01 among the averages of teachers' responses regarding the degree to which they possess ICT competencies due to the variables of gender (in favor of the female category), specialization (in favor of the category of scientific specializations), and years of professional experience (in favor of the category with the lowest years of experience; less than 10 years), in all of the study's dimensions/constituents/topics separately, and in the tool as a whole. The study concluded with some recommendations.

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Safar, A. H., & Agha, N. H. (2021). The degree of availability of information and communication technology (ICT) competencies among teachers in

general education schools in the State of Kuwait in light of some variables.

Arab Research in the Fields of Specific Education, (24), 81-142.

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Understanding Startup Valuation and its Impact on Startup Ecosystem

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Abstract

Startups play a substantial role in the economic growth of a nation, by introducing new technologies, ground-breaking innovation, creating jobs, etc. A couple of decades back, it was extremely difficult to start a business, but today new businesses pop up every day, all around the world. Recognizing the importance of a startup, governments across the globe are doing their best to provide an atmosphere where startups can bloom. Despite its importance and all the support, the startup failure rate is at 90%; about 10% of startups fail in the first year and 70% fail in two to five years. The startup boom saw the emergence of alternative sources of funding like Venture Capitalist and Angel Investors. While it can be debated that Venture Capitalist and Angel Investors are responsible for startup boom by providing easing access to funds which is a critical and scarce resource for any founder. Traditionally business success is linked with sustainable profitability but in the startup world most used method to define success is valuation. As of January 2022, there are more than 900 unicorns (startup with a valuation of over $1 billion) around the world and of these unicorns a mere 7% are profitable. It's difficult to explain how Startups' which are neither profitable nor foresee profitability in near future are valued higher than traditional business with stable profitability. Current valuation methods have impacted the startup ecosystem. Today, founders start their business with exit in mind, the focus of founders is on growth/ scale rather than profitability. There is a school of thought that believes that such valuations will soon result in the bursting of the startup bubble just like the dotcom bubble seen in late 1990s. The focus of this paper is to investigate the techniques used by Venture Capitalist for startup valuation and how these techniques are impacting the startups and its founders. The paper looks at all stages of the investment cycle, from seed to IPO or takeover and understands the process of valuation at each stage and how it impacts all stakeholders in the ecosystem.

Keywords: Startup, Valuation, Venture Capitalist, Unicorn, Startup Ecosystem, Profitability,

Arts, Ethics and Role Models

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Abstract

The latest discussion around education in the arts distanced itself from the technical skills and theoretical aspects of the subject, to refocus on practice, experience and reflection. However, the core of teaching and learning remains in fact closely related to ethics, because it is fundamentally connecting people and ideas. This perspective is essential in creative disciplines: critical thinking, autonomy and originality emerge as a result of sound reasoning based on observation and discussion. Because in humanities and art projects, a significant aspect of the work is dedicated to self-expression, the message to be conveyed requires an objective and fair-minded mentality. Based on previous research in the field of psychology and behavioral science, it has become clear that, to achieve honesty and integrity, simple reminders suffice. But the notion is more often than not assigned an administrative dimension with ethics forms, or unaddressed because it is associated with common sense. There are, nonetheless, ways to address this gap. It is predictable that a relatively large part of the content taught in class will be forgotten within a fairly short period of time. What can survive—and prevail—is the practice of thinking responsibly. The implications of identification, awareness and empathy materialize in deep layers of creativity, reaching spheres of meaning, value, as well as efficiency, deeply influencing the quality of the work itself. In substance, education remains an interpersonal relationship activity. So in a practical approach, the emphasis of art and humanities education—and possibility beyond these disciplines—can be repositioned to include moral principles that only require elementary reiteration. One efficient and influential approach is the references to role models.

Find your true north: An empirical study of authentic leadership, public service motivation, wellbeing, and citizenship behavior among Malaysian middle managers

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Introduction- Initially, finding true north for leaders is connected to building your authenticity in your leadership style. However, although authentic leadership has been linked to performance, not many studies offer perspectives on how authentic leadership promotes positive behaviors in the organization.

Purpose – This study investigates the importance of authentic leadership among middle managers in the public sector by examining the relationship between perceived sustainable authentic leadership (AL) and organizational citizenship behavior (OCB). Furthermore, the research also assesses the mediating effect of public service motivation (PSM) and subjective wellbeing (SWB) on OCB by combining self-determination theory and prosocial behavior in a motivation-based model.

Design/Methodology/Approach – Data were collected via an online survey of middle managers in Malaysian public administration. In total, 398 responses were utilized for the analysis. The study used partial least squares structural equation modelling and employed Smart PLS 3.0 for hypotheses testing and model validation.

Findings – The results indicate that organizational citizenship behavior is significantly influenced by perceived sustainable, authentic leadership and subjective wellbeing. Subjective wellbeing affects organizational citizenship behavior. The influence of perceived sustainable, authentic leadership on organizational citizenship behavior is partially mediated by subjective wellbeing.

Practical Implications – The development of future leaders among middle managers can be encouraged when their wellbeing and motivation are adequately managed. Employers can create a work culture based on local values and cultivate a sense of appreciation to develop their leadership style. By promoting authentic leadership, organizational citizenship behavior and subjective wellbeing, employees are creating pathways to discovering their true north and building leadership capabilities from middle-level positions.

Originality/ Value –The study contributes to developing sustainable authentic leadership from self-determination theory and prosocial behavior perspectives. It also addresses through authentic leadership; we can better understand how motivation and well-being are essential aspects for professional growth in the workplace. The study successfully demonstrates well-being matters more than motivation by assessing these factors in a model. Contrary to previous studies, public service motivation does not affect organizational citizenship behavior. The study finds perceived sustainable authentic leadership on organizational citizenship behavior is partially mediated by subjective wellbeing.

Keywords – Authentic leadership, structural equation modelling, middle managers, self-determination theory, pro-social behavior

Teaching Meta-discourse as a Way of Fostering EFL Students' Presentation Skills

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Abstract

The ability to successfully communicate in English has become paramount for the professional and academic development of a large number of non-native English speakers. In order to fully participate in the international academic community, the students and academics who speak English as a foreign or second language need to develop highly advanced language competencies. This includes not only mastering specific language structures, grammar and vocabulary, but also organizing and presenting their arguments and findings in a way which is accepted in their disciplinary communities. This means that successful academic communication relies on the appropriate use of metadiscourse – the use of various linguistic forms which facilitate communication and assist in building a relationship with an audience.

Starting from Hyland's taxonomy which divides metadiscourse into interactive and interactional categories, this study will explore how the use of these features can aid EFL students in making successful presentations. In addition, practical suggestions on how teaching metadiscourse can be incorporated in language classes will be presented and ways in which the conscious use of metadiscourse elements can be fostered during an EFL course will be outlined.

Bloom's Taxonomy—Does it have a place at Hogwarts?

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Abstract

Harry Potter has undoubtedly created waves around the globe and captured the hearts of not only children but also the adults. J. K Rowling has let her imagination run wild when she created Hogwarts School that resembled the traditional boarding school. This school is located in the scenic woods beyond London. Hogwarts School of Witchcraft and Wizardry has successfully forged a connection with the young and old alike. We are able to relate to Harry Potter, his friends, classmates, as well as the teachers of Hogwarts. Though it is a school of witchcraft and wizardry, a fixed curriculum is followed which ensures that students master the art of magic. The Harry Potter series take its readers on an awe inspiring, shocking and mind blowing adventure of Harry Potter at school. The focus of analysis is the association of the teaching methods and approaches of the teachers at Hogwarts with Bloom's Taxonomy. This study signifies that the students at Hogwarts acquire a holistic education only when teachers

embrace the concept of active learning in a congenial environment that is synonymous with collaborative learning, continuous support, analytical thinking and risk taking.

Key words: Harry Potter series, Bloom's Taxonomy, traditional, curriculum

Islamic Laws, Corporate Governance and Firm Innovation

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Abstract

This study examines the relationship among Islamic laws, corporate governance and firm innovation. Using a sample of listed firms in Indonesia from 2011 to 2021, we find that Shariah-compliant firms are less likely to finance innovation. However, the negatively correlated relationship is moderating by taking corporate governance practice into consideration. Our results are robust for endogeneity.

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