

## **Proceedings**

CIK- 8<sup>th</sup> International Conference in collaboration with SINGEP

Oct. 1-3, 2020, Online

*Theme: Entrepreneurship, Responsible Leadership, and Economic Development.*



**CYRUS Institute of Knowledge  
Cambridge, MA, USA**

**And**

**VIII Simpósio Internacional De Gestão De Projetos, Inovação E  
Sustentabilidade, Sao Paulo, Brazil**

### **Conference Theme:**

**ENTREPRENEURSHIP, RESPONSIBLE LEADERSHIP,  
AND SUSTAINABLE DEVELOPMENT  
October 1-3, 2020**

**Online**

**PROCEEDINGS**

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### **ENTREPRENEURS AND DIGITAL TRANSFORMATION: AWARENESS AND ADAPTATION**

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#### **Abstract**

In today's IT economy, as the technology advances at a record pace, digital transformation brings intense changes to business processes and reshapes business environments rapidly at an industry-wide scale. It is ever more important for entrepreneurs to recognize the emergence of opportunities as well as the threats that arise from their industries being transformed by digital advancements. The goal of this research is to evaluate the awareness of Iranian entrepreneurs of digital transformations reshaping their industries and to reveal the opportunities for Iranian entrepreneurs to benefit from technology in order to gain industry strength, sustained advantage, and competitiveness. A survey was distributed to over 1100 Iranian entrepreneurs in 5 industries including IT, tourism, commerce, service, and construction. Based on a total of 206 unique responses received, it is concluded that Iranian entrepreneurs have high awareness of digital transformation and see technological transformations as positive disruptors. However, they are not currently employing strategies to absorb the impact of digital transformation in their industry and fully embrace and gain advantage of digital advancements.

**Key words:** digital transformation, business strategy, entrepreneurship

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### **Introduction**

In recent decades, entrepreneurs all over the world have recognized the importance of digital transformations and have tried to take advantage of these technological advancements. Initially, digital technologies used to be acquired and utilized solely by large corporations. However, the declining cost of technology has made it accessible for small and medium size companies as well. Accessibility of digital technologies has provided great opportunities for entrepreneurs. It has also put pressure on them to digitally transform their business practices in order to remain relevant in the market in the digital era. Exploiting the benefits of digital technologies often involves transformations of key business operations that affect products and processes, as well as organizational structures and management concepts (Matt et al., 2015).

According to an MIT Sloan Management Review Research Report (2013), 78% of executives and managers in a wide range of industries believed that achieving digital transformation would be critical to their organizations (Fitzgerald et al., 2013). In a study by Harvard Business Review Analytics Services (2014), 75% of CIOs across various industries said their company's survival depended on digital transformation and their ability to exploit technology. Digital technologies have seriously affected the business world by disrupting industries and bringing opportunities and threats to companies. Digital transformations have caused many companies to struggle as new players have emerged with innovation and disruption. However, they have also presented numerous opportunities for traditional firms in every industry. Entrepreneurs need to pay attention to changes in their industries to keep up with the disruptions caused by digital technologies.

Digital transformation can be challenging for entrepreneurs since it affects all aspects of doing business. However, once new systems are in place, the benefits often outweigh the challenges of the transitional process towards employing the new technology. Digital transformation can help entrepreneurs leverage their limited capital in more efficient and effective ways. Knowing about the latest technologies and their applications, entrepreneurs can discover the opportunities available, change their business processes, and create more value. Among the emerging technologies that companies use to enhance their operations are social media, mobile technologies (Fitzgerald et al., 2013), smart devices, and communication technologies (Siemens, 2014). Table 1 shows several ways entrepreneurs can benefit from digital technologies.

The adoption and use of digital technologies can be intended or unintended (Morakanyane et al., 2017). In some cases, new technology provides higher efficiency and flexibility in the processes already in place. On the other hand, there might be some situations that companies need to adjust their business operations and

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processes to get the benefits of new technologies. Therefore, it is important to know how aware entrepreneurs are of these technologies and how consciously they plan to acquire and utilize them?

Digital transformation has also become an essential part of strategy and is on many leadership agendas (Hess et al., 2016). It is beneficial for entrepreneurs to consider digital transformation in the company's strategy by formulating it in a way that it can integrate the transformation with all other processes in the firm. A digital strategy well-assimilated with the company's overall strategy would help the company integrate better in a digital economy.

The goal of this research is to evaluate the awareness of Iranian entrepreneurs of digital transformations reshaping their industries, the degree of digital adoption by these entrepreneurs, and to reveal the opportunities for Iranian entrepreneurs to benefit from technology in order to be strong competitiveness players in the market.

### **Literature Review**

Digital transformation is defined as "the use of new digital technologies to enable major business improvements such as enhancing customer experience, streamlining operations, or creating new business models" (Fitzgerald et al., 2013). Henriette et al. (2016) propose defining the digital transformation as "a disruptive or incremental change process. It starts with the adoption and use of digital technologies, then evolving into an implicit holistic transformation of an organization or deliberate to pursue value creation". Therefore, digital transformation is a form of organizational transformation, which uses information and digital technologies to impact different aspects of doing business. It changes the way business entities operate and help them in creating value. The changes in business operations and value creation result in changes in the whole business models. Hess et al. (2016) emphasize that digital transformation includes the changes digital technologies bring about in a company's business model. These changes result in reformed products or organizational structures or in the automation of processes. The results can be seen in the rising demand for Internet-based media, which has led to changes of entire business models.

While earlier forms of digital transformation were concerned with the introduction of computer-based systems and automation of processes, nowadays, digital transformation entails adoption and use of emerging technologies (Morakanyane et al., 2017). Emerging digital technologies are the key drivers of digital transformation. The new and ever evolving digital technologies include mobile, social media, embedded

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devices (Fitzgerald et al, 2013), artificial intelligence, and the Internet of things (IoT) technologies (Warner and Wäger, 2019).

There are numerous potential benefits to digitalization including increase in sales or productivity and innovations in value creation, among others (Matt et al., 2015). Digital transformation not only affects large parts of the companies, it affects final products and services offered by the company (Von Leipzig et al., 2017), connection with other businesses and partners (Andal-Ancion et al., 2003), interaction with customers (Matt et al., 2015), even their sales channels and supply chains (Marinagi et al., 2014).

However, only acquiring and using these technologies is not enough. A successful digital transformation needs the integration of digital technologies and business operations. In the process, digital technologies create disruptions which trigger strategic responses from organizations (Vial, 2019). Therefore, Companies need to develop suitable strategies in order to manage and benefit from the digital transformations. Rogers (2016) explains that “digital transformation is fundamentally not about technology, but about strategy”. In other words, to optimize the business practices, companies must upgrade their strategic thinking based on the changes in digital technologies. In *Driving Digital Strategy*, Gupta explains that merely dabbling in digital or launching a small independent unit will not help company’s success. Instead, firms need to fundamentally change the core of their business and ensure that digital strategy touches all aspects of organization including the business model, value chain, customer relationships, and company culture (Gupta, 2018). This would result in having a digital transformation strategy which cuts across company’s other strategies.

When coming from a business-centric perspective, digital transformation strategies focus on the transformation of products, processes, and organizational aspects based on the new technologies (Matt et al., 2015). At the organizational level, firms should develop strategies that embrace the implications of digital transformation and improve the operational performance (Hess et al., 2016). Therefore, digital transformation strategies are important since they go beyond the process paradigm and include changes to the business models as a whole.

Companies that take full advantage of the limitless opportunities the digital age provides do not create a digital strategy as separate from their overall strategy. Instead, they make sure their digital strategy touches all aspects of their business practices (Gupta, 2018). Singh and Hess (2017) suggest digital transformation is a

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comprehensive set of actions that must be taken to exploit the opportunities or avoid the threats that stem from digital technologies. Companies need to compete with the new disruptive actors who are drastically changing the traditional sector. Meanwhile, these companies also have to keep up with the customers who are increasingly aware of different options in the market and challenging businesses by setting new rules for competition in every industry (Henriette et al., 2016). This transformation is of crucial strategic importance for companies since it affects company's competitiveness as well.

Research has shown that for organizations to remain competitive in a digital world, technology should be accompanied by changes to organization and strategy (Vial, 2019). Technological practices play a crucial role in gaining a sustainable competitive advantage for small and medium size firms. A competitive advantage is based on capabilities that give the company the ability to differentiate itself from its competitors. To meet the challenges and improve their competitive advantage, companies need to exploit technology including enterprise applications and e-commerce (Marinagi et al., 2014).

The level of competitiveness of companies decreases due to obsolescence of technologies and the formation of the new digital environment (Sizova et al., 2020). Digital transformation affects the competitiveness of small and medium firms that can't accomplish a large-scale digital transformation in a short time, showing that investment in technology is more effective when there are high contributions to changing both organizational and human assets simultaneously (Medennikov, 2020). Difference among the firms in terms of technology acquisition can explain a major part of the firm level differences in competitiveness. Development of competitive skills depends upon the ability to build specific technological advantages (Narayanan, 1998).

### **Methodology**

A Survey questionnaire which included 8 questions was created for the research group consisting of entrepreneurs of small and medium size companies (between 5 to 100 employees) in Iran. The questionnaire was developed based on different factors of digital transformation such as the reasons for entrepreneurs to invest in digital technologies, the type of technologies used, embeddedness of digital transformation in the company's strategy, and perceived impact of the transformation on the business environment.

The questionnaire was distributed by email to 1100 Iranian entrepreneurs. 206 unique responses were received from companies in 5 industries including information and communications technology (ICT), tourism, commerce, service, and construction. The majority of respondents hold senior management positions



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including owner, director, CEO, VP, or members of the board of directors.

The questionnaire has been adopted from the article “Empirical Research Regarding the Importance of Digital Transformation for Romanian SMEs” published in Management and Economics Review (Toanca, 2016). The questionnaire has been modified according to the purpose of this research and the business environment in which Iranian entrepreneurs work.

### **Findings**

The questions in the survey addressed the level of usage of digital technologies by Iranian entrepreneurs as well as the level that digital transformation was implemented in the companies’ overall strategies.

Regarding the importance of digital technologies, entrepreneurs were asked about the necessity and reasons to invest in digital technologies. According to the findings, 29% of the respondents said investing in digital was a part of company’s strategy. Only 10% believed they did not need to invest in digital technologies. 24% invest only when something malfunctions and 29% only invest upon the request from different departments. The results show high interest in acquiring and application of digital technologies in participating companies. However, it does not seem to be a part of most companies’ strategies (table 2).

To identify the difference between the industries, the numbers for each industry is shown in figure 1. The results show that 61% of the entrepreneurs in ICT sector have incorporated the investment in digital technologies as a part of company’s strategy. The construction companies, however, are less interested in investing in the digital technologies at 17%, saying they don’t need to invest. Tourism and commerce industries show good interest in investment in digital with only 11% stating they don’t need to invest. There might be opportunities in these two industries since these firms need to reach out to customers and keep up with their new demands. Digital technologies can help them to improve their connectivity and customer service to a great degree.

A website is a nifty tool that is essential for all businesses in the current digital world. Websites help entrepreneurs to have a strong online presence with more visibility and credibility. The results of this research show that 62% of the Iranian entrepreneurs have a website which is surprisingly high. However, the number of websites adaptable to mobile is much lower at 17%. Among the rest of the companies, 26% have either an online store or an online platform. At 4 %, a small number believe they don’t need a website (Table 3).

Figure 2 shows the breakdown of the analysis by industry. The highest numbers of companies with websites belong to the ICT industry (75%) as well as the mobile compatible websites (27%). The lowest number of websites belongs to commerce (51%) while it has the highest number of stores/platforms (35%). However,



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13% of entrepreneurs in construction indicate they don't need websites, higher than any other industry. While a great number of Iranian entrepreneurs are currently using a website for their companies, not many of them are mobile compatible. With the fast growth of mobile technology, the use of websites with mobile adaptability seems more necessary.

Online platforms are easily accessible and popular ways for entrepreneurs to connect with their business partners as well as customers/clients. The result of this research shows that the use of online platforms is common among Iranian entrepreneurs. 63% of respondents said that they use online platforms for their business purposes. Most use platforms identified on internet at 33%. Meanwhile, 38% said they could not find the appropriate platform or are not interested (Table 4). The industry breakdown in figure 3 shows that 34% of ICT companies have created their own platforms. The lowest percentage of using platforms is in construction industry where 30% believed they don't need a platform.

Compared to the online platforms, the use of online applications is almost at a similar level among Iranian entrepreneurs. 59% of the companies indicate they use online applications while 17% say they are not interested (Table 5). Similar to online platforms, entrepreneurs in the ICT sector have the highest percentage of using applications at 62%. They also have the highest percentage of applications created by their own company at 30%. Other industries mostly use applications purchased from software suppliers. Construction and commerce sector entrepreneurs have the least percentage of application use at 4% and 7% respectively (figure 4).

Interconnecting to business partners is another development made possible through digital technologies. One option for interconnecting with business partners is the use of online terminals. The benefits of this interconnection include cost reduction and facilitating business processes such as inventory planning and supplies forecast. Majority of Iranian entrepreneurs said they are not connected to their partners through terminals at 49%, while 27% are using terminals. 25% indicated interest in using terminals for interconnection to partners (Table 6).

The industry breakdown in figure 5 shows that ICT industry is the only one which uses terminal for interconnection at a higher level at 68%. Terminals are used vastly in large enterprises to connect to their partners/suppliers. One possible reason for lack of interest can be lack of potential cost benefit for entrepreneurs in SMEs as they might be connected to partners/suppliers efficiently through other channels

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already or their operations might not be large enough to need systems such as JIT or API.

Automation and smart objects (robots) are among the major elements of digital transformation. Our survey results show that while many Iranian entrepreneurs are interested in acquiring and using these technologies, a large percentage (33%) are not using them currently (Table 6). A possible reason can be the high cost of acquiring automation devices and robots, as well as high unemployment rate which increases the availability of labor and decreases labor cost. The industry breakdown shows the ICT industry is using automation and smart objects the most at 60%, followed by the commerce industry at 31% (figure5).

Having employees who are familiar with technological advancements would help companies with digital transformation and prevent difficulties resulting from the technological transitions. At 20%, a small number of Iranian entrepreneurs consider this as a part of their company strategy (table 7). Since tech savvy employees are important players in digital transformation of the companies, they must be given strategic importance. The lack of interest in training employees in IT can be an indication that most Iranian entrepreneurs do not consider digital transformation as a part of their company strategy. Figure 6 shows that analysis based on the industries. According to the results shown, 48% of entrepreneurs in ICT sector consider employee training as a part of their strategy while 48% of construction entrepreneurs believe training is not necessary.

Finally, in order to learn about the perceived impact of digital transformation on the business environment, entrepreneurs were asked if they see a significant effect from digital technologies on different elements of business and, if they do, are the effects positive or negative? The overwhelming majority of respondents perceive the impact of the digital era as significant (figure 7). They also believe the digital transformations bring positive changes to their business environments. According to the participants, the digital era has the most significant positive impact on customers and clients at 79% followed by competition and technological environment at 77%.

### **Conclusion**

The goal of this research was to identify the degree of digital adoption by Iranian entrepreneurs and the areas of opportunity in different industries. The result of our research showed high interest in acquiring and utilizing digital technology. According to the findings, 29% of the respondents considered investing in digital as a part of company's strategy while only 10% believed they did not need to invest in digital technologies. At 62%, majority of the surveyed Iranian entrepreneurs have a website which is surprisingly high, while only 4%

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believe they don't need a website. However, the number of websites adaptable to mobile is much lower at 17%. Considering the fast growth of mobile technology, there might be a good opportunity in increasing the use of mobile compatible websites in Iran.

The majority of surveyed entrepreneurs also use online platforms and online applications for their business purposes. However, 49% of entrepreneurs said they are not connected to their business partners through terminals. 25% indicated interest in using terminals for interconnection to partners. Yet, it seems that there is not enough cost benefit for entrepreneurs in small and medium size companies to use terminals. Our survey results also show low usage of automation and robots, possibly due to the high cost of acquiring these devices and the relatively low labor cost. Although the surveyed entrepreneurs said they would train their employees in IT field when a necessity arose, 80% indicated that training employees in IT field was not a part of their company's overall strategy.

Throughout the survey, the entrepreneurs from ICT industry indicated that digital transformation was a part of their company's strategy more than any other industry. Yet, entrepreneurs from construction industry, and to some extent the commerce industry, indicated that they have adopted digital less than other industries. This might be due to the traditional structure of these industries in Iran. Finally, an overwhelming majority of respondents perceive the impact of the digital era on their business environment as significant and positive.

In sum, our research showed that Iranian entrepreneurs are highly aware of the digital trends in their industries and they are eager to acquire and utilize new technologies in most cases. They also see digital transformations as positive disruptors and have a positive view towards the impact of digital era on their business environment. Despite this positive perception, they are not applying digital transformation into their business strategies. They are not currently employing strategies to absorb the impact of digital transformation in their industry and fully embrace and gain advantage of digital advancements. Iranian entrepreneurs might have the opportunity to have a better digital transformation by utilizing the mobile technologies and training a more tech savvy labor force.

The COVID-19 pandemic would possibly affect the importance of digital in entrepreneurship as more people are working remote and more suppliers/customers/clients are doing business online. A suggestion for future research is to measure how the new normal in the post pandemic world would change the attitude of entrepreneurs towards investing in the digital and integrating it in their business strategy.

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### **Appendix**

#### **Appendix A- Tables**

Productivity	Project and task management, increased efficiency, automation
Marketing	Reaching to potential customers
Connectivity with both customers and other businesses	Collaboration, sharing, and learning Customer service
Flexible work environment	Employee training Distant working
Financials	Managing finances Secure payments
Transferring store to online	Lowering the costs, reaching new customers

Table 1 – Ways entrepreneurs can benefit from digital technologies

Q1- Does your company invest in digital technologies?				
Yes, it is part of the company's strategy	Yes, according to the IT department recommendation	Yes, upon the request of each department	Yes, but only when something malfunctions	No, we don't need to invest in digital
29%	9%	29%	23%	10%

Table 2- Reasons to invest in digital, percentage of surveyed Iranian entrepreneurs

Q2- Does your company have a website?				
The company has a website adapted to mobile technology	The company has a website not adapted to mobile technology	The company has an online store/online platform	No, but we need one	No, we don't need one
17%	44%	26%	8%	4%

Table 3- Type of website, percentage of surveyed Iranian entrepreneurs

Q3- Does your company use online business platforms?
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Yes, our organization created one or more online business platform	Yes, we are using the online platform created by our suppliers/ clients	Yes, we are using one or more platforms identified on the internet	No, we didn't find an appropriate platform	No, we are not interested
14%	16%	33%	18%	20%

Table 4- Use of online platforms, percentage of surveyed Iranian entrepreneurs

Q4- Does your company use online applications for the business purposes?				
Yes, our organization created one or more online applications	Yes, we are using the online applications created by our supplier/clients	Yes, we are using one or more applications purchased from software suppliers	No, we didn't find an appropriate application	No, we are not interested
13%	13%	33%	25%	17%

Table 5- Use of online applications, percentage of surveyed Iranian entrepreneurs

Q5- Is your company interconnected (or planning to connect) with business partners through their terminals?				
Yes, we are connected to the terminals of our clients/customers and we have a database of the information	Yes, but we do not use this information	Yes, we plan to find ways to interconnect	Yes, but the costs prevent us from being interconnected	No, we are not interested
16%	11%	15%	10%	49%

Table 6- Interconnection through terminals, percentage of surveyed Iranian entrepreneurs

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Q6- Does your company use automation systems and intelligent objects (robots)?				
Yes, we are using both	Yes, we only use automation	Yes, we only use intelligent objects	No, but we plan to purchase automation or smart devices	No, we are not interested
18%	12%	14%	23%	33%

Table 7- Use of automation and intelligent objects, percentage of surveyed Iranian entrepreneurs

Q7- Does your company train employees in the IT field?				
Yes, it is a part of company's strategy	Yes, when we acquire a new digital solution	Yes, based on the suggestion of IT suppliers	Yes, according to the request of each department	No, it is not necessary
20%	20%	7%	26%	27%

Table 8- Training employees in IT field, percentage of surveyed Iranian entrepreneurs



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### **Appendix B- Figures**

Q8- In your opinion, what is the impact of digital era on each of the following elements in business environment?								
	Competition	Customers and clients	Suppliers	Labor force	Economic environment	International Business environment	Socio-cultural environment	Technological environment
The digital era brings significant positive changes	77%	79%	68%	54%	64%	67%	46%	77%
The digital era brings significant negate-ve changes	2%	4%	3%	6%	0%	0%	8%	0%
The digital era brings insignificant changes	12%	10%	21%	25%	19%	19%	23%	12%
The digital era brings no changes	3%	3%	4%	9%	7%	5%	7%	3%
I don't know/I would rather not answer	5%	3%	3%	6%	10%	8%	16%	7%

Table 9- Perceived impact of digital transformation on the business environment, percentage of surveyed Iranian entrepreneurs

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### REASONS TO INVEST IN DIGITAL TECHNOLOGIES

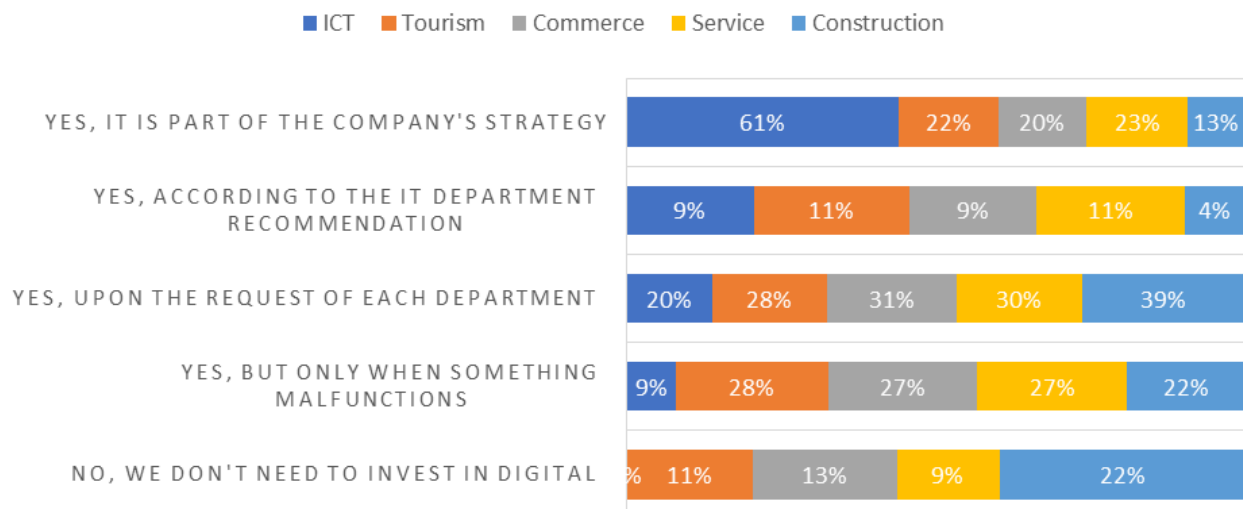


Figure 1- Reasons to invest in digital, percentage of surveyed Iranian entrepreneurs by industry

### TYPE OF WEBSITE

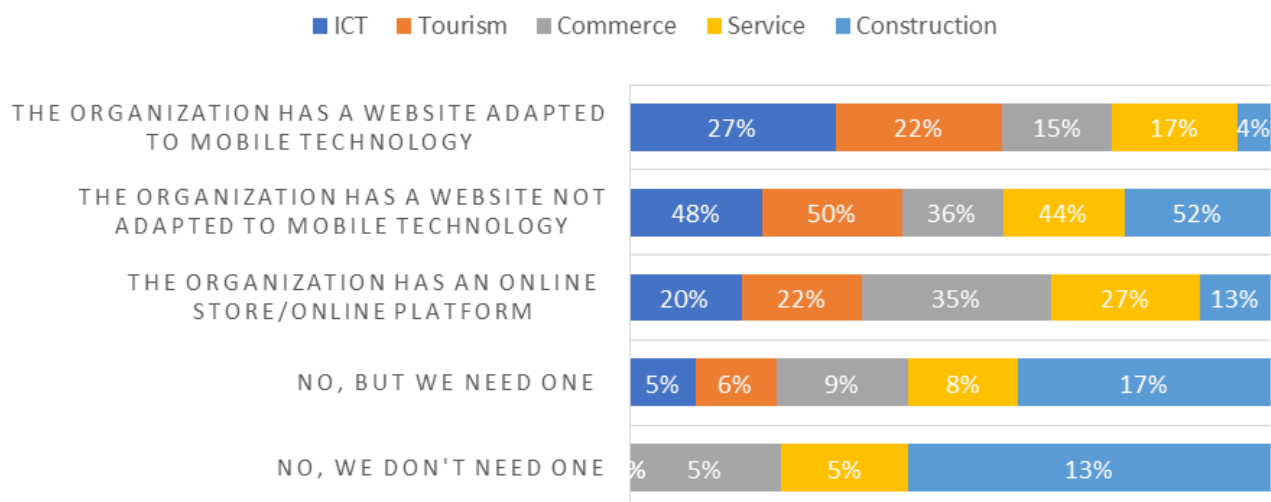


Figure 2- Type of website, percentage of surveyed Iranian entrepreneurs by industry

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### **USE OF ONLINE PLATFORMS**

■ ICT ■ Tourism ■ Commerce ■ Service ■ Construction

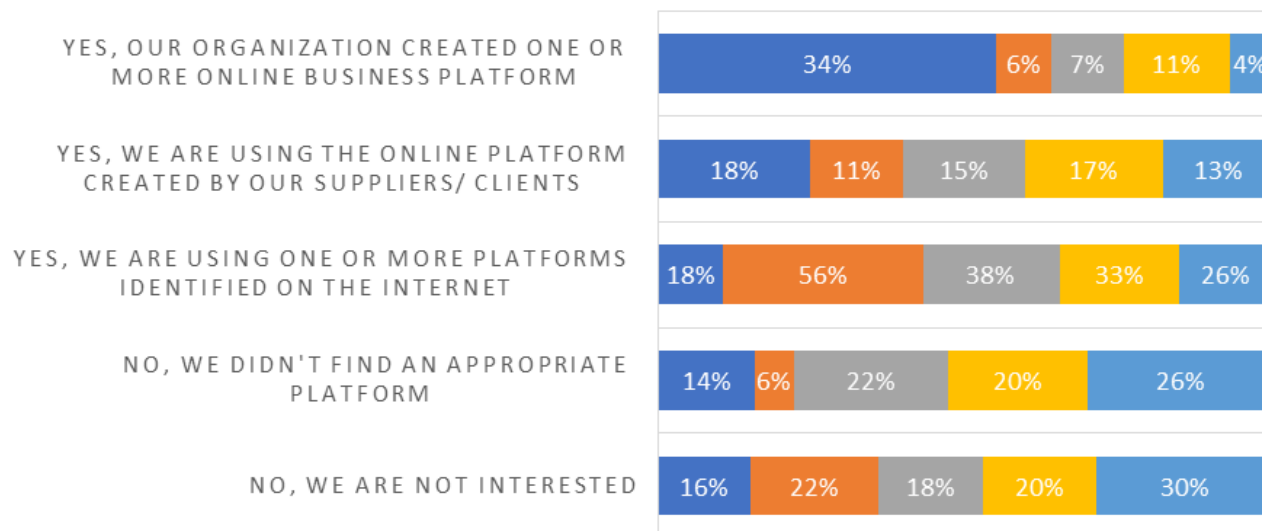


Figure 3- Use of online platforms, percentage of surveyed Iranian entrepreneurs by industry

### **USE OF ONLINE APPLICATIONS**

■ ICT ■ Tourism ■ Commerce ■ Service ■ Construction

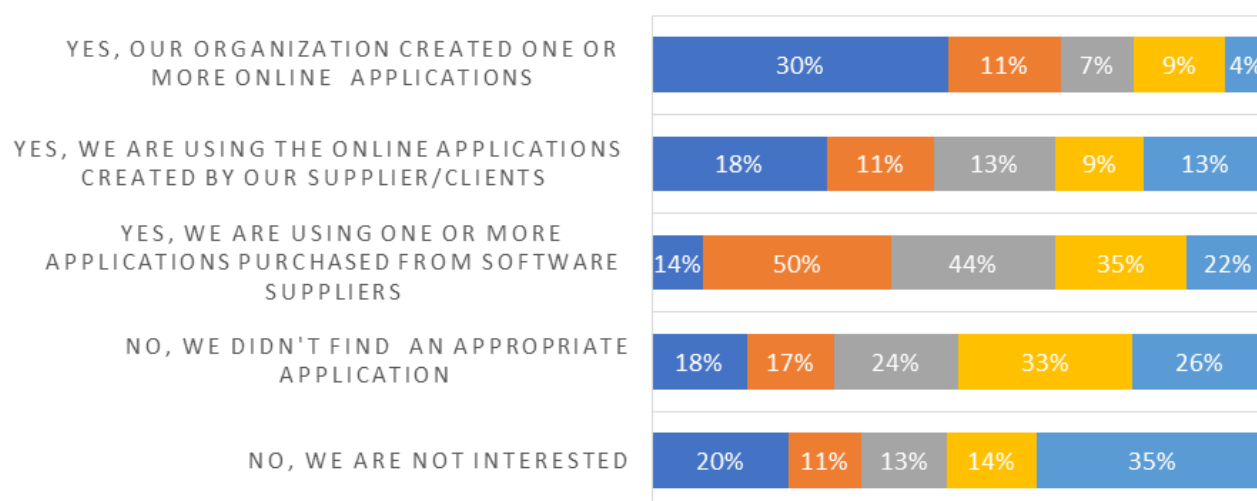


Figure 4- Use of online applications, percentage of surveyed Iranian entrepreneurs by industry

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### INTERCONNECTION THROUGH TERMINALS

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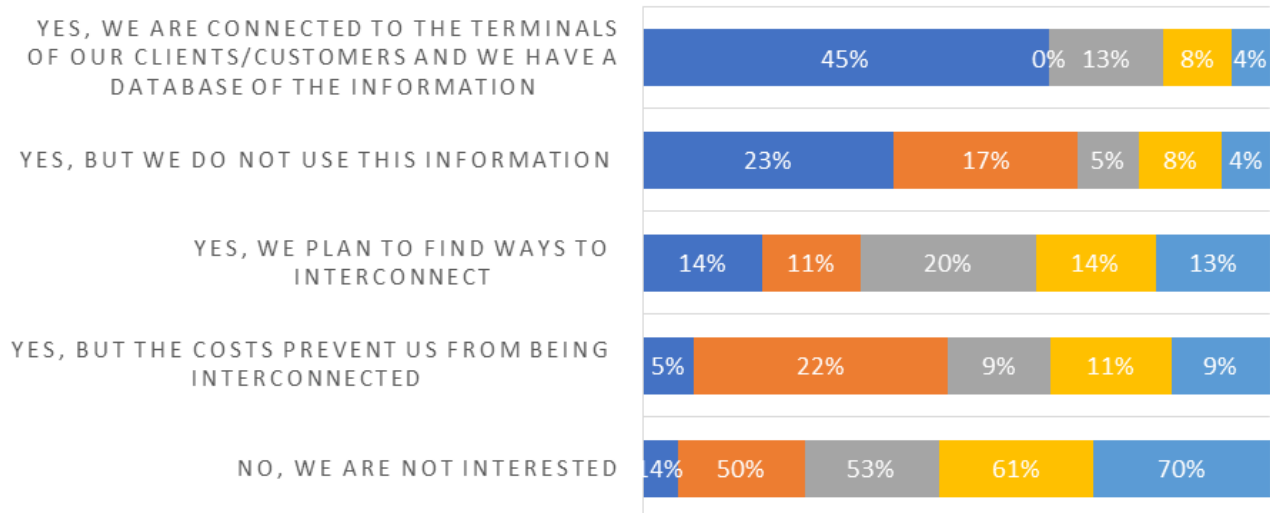
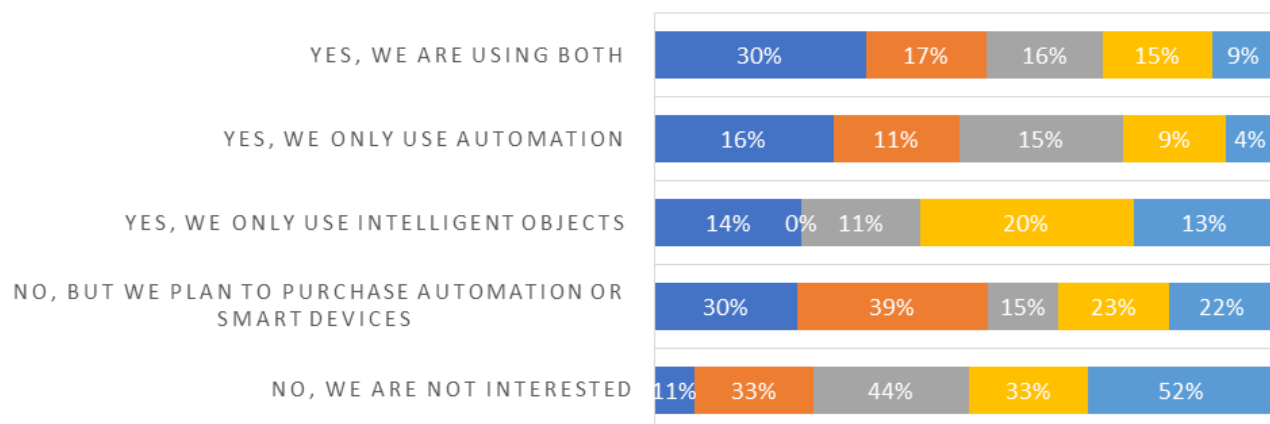


Figure 5- Interconnection through terminals, percentage of surveyed Iranian entrepreneurs

### USE OF AUTOMEATION AND INTELLIGENT OBJECTS

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### TRAINING EMPLOYEES IN IT FIELD

■ ICT ■ Tourism ■ Commerce ■ Service ■ Construction

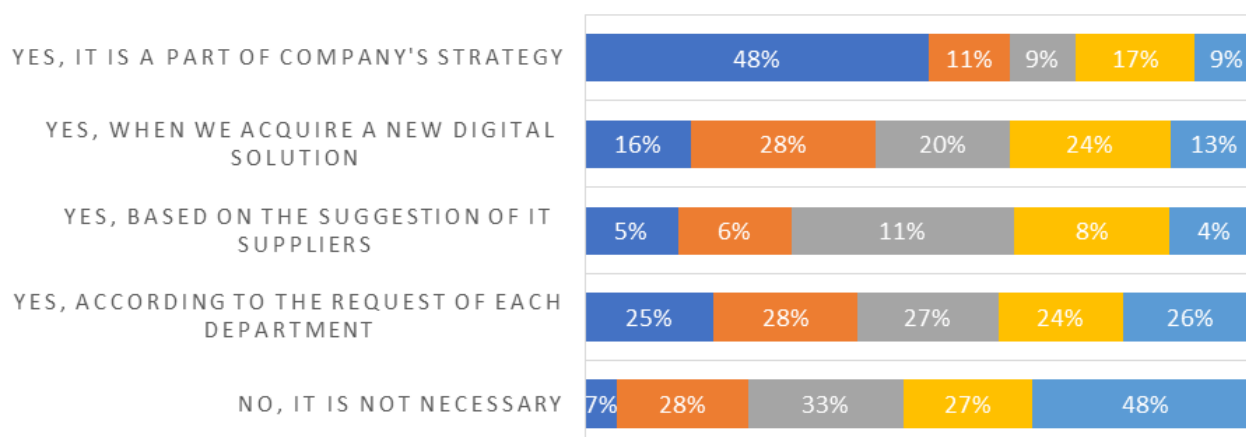


Figure 6- Use of automation and intelligent objects, percentage of surveyed Iranian entrepreneurs by industry

Figure 6- Training employees in IT field, percentage of surveyed Iranian entrepreneurs by industry

### PERCEIVED IMPACT OF DIGITAL ERA ON ELEMENTS OF BUSINESS ENVIRONMENT

■ The digital era brings significant positive changes ■ The digital era brings significant negative changes  
 ■ The digital era brings insignificant changes ■ The digital era brings no changes  
 ■ I don't know/I would rather not answer

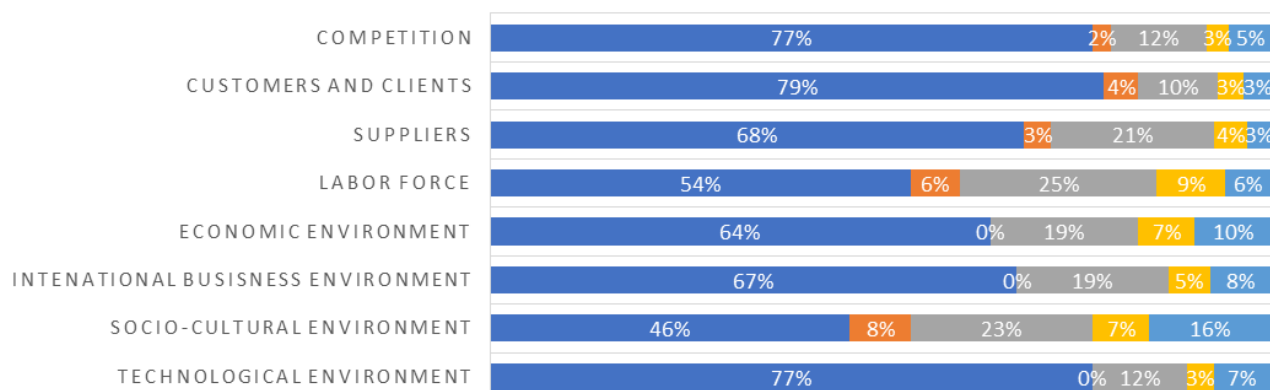


Figure 7- Perceived impact of digital transformation on the business environment, percentage of surveyed Iranian entrepreneurs

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### **EGYPT-MERCOSUR FTA: A COMPLEMENTARITY ANALYSIS**

**Hebatallah Ghoneim<sup>1</sup>, Rana Abdel-Rahman<sup>2</sup> and Noha Ghazy<sup>3</sup>**

#### **Abstract**

In 2010, Egypt has signed a preferential Free Trade Agreement (FTA) with the Common Market of the South (Mercosur). The agreement has been ratified in January 2013, aiming at the reduction of trade barriers and the expansion of the reciprocal trade as well as investment relations between the two parties. The realization of the intended benefits of this trade agreement highly depends on the degree of complementarity between the two regions. Correspondingly, this paper aims at evaluating the success of this FTA by measuring the degree of complementarity between the two economies in alignment with the same methodology used in Andreosso-O'Callaghan and Nicolas (2007), De Castro (2012), Pitigala (2005) and Vaillant & Ons (2002). The results of this paper provide an estimated empirical evidence for the success of this agreement as well as estimation to the degree of competition that domestic producers will face under such free trade area.

#### **JEL classification**

F14, F53, O54, O55

#### **Keywords**

Complementarity Index; Egypt; Mercosur; Preferential Free Trade Agreement, Tariffs, Trade

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### **Introduction**

Globalization trends pushes developing countries to open its market for free trade. However, under the fear of domestic production break down, developing countries would divert to a second best choice which is regional integration. Regional and bilateral agreements are becoming a major feature of the current global trading system. According to World Trade Organization (WTO, 2016), statistics shows that 625 notifications of regional trade agreements (RTA) were received by 1<sup>st</sup> of February 2016. Countries which are eager to expand its trade and afraid from multi-dimension competition prefer depending on RTA. In addition, it is a method of gaining a larger political as well as economic power.

In 1991, Mercosur regional trade agreement was signed; in an attempt to enhance international trade and economic efficiencies. It included four countries located in the east of South America: Argentina, Brazil, Paraguay and Uruguay (Anaam Hashmi, 2000; Vantine & Marra, 1997); while, Venezuela has joined the bloc in 2007. Mercosur has further extended its scope by allowing associate members to join the union; who can benefit from trade agreements but do not participate in the bloc decision making process, such as Chile, Bolivia, Colombia, Ecuador, and Peru (Connolly and Gunther, 1991).

In general, Mercosur accord ultimate goal is a custom union for all Latin American countries (Neves, Stocco, & Da Silva, 2007), since the size of the union impact market power and trade development. In addition, the bloc success would induce Mercosur – the same as any RTA- signing a number of preferential trade agreement with nonmember countries such as India and European Union (EU). Such agreements are an attempt for expanding competition, accessing larger markets and receiving imports at lower cost. In August 2010, Mercosur has signed a preferential free trade agreement for the first time with an Arabian country as well as first agreement with an African country, which is Egypt. The agreement provides privileges to some Egyptian exports to be sold in Mercosur area without tariffs and at the same time Egypt's imports; such as sugar, meat and soy oil, from Latin America would be sold in Egyptian markets without tariffs (State Information Service, 2017).

The economic success of an Egypt-Mercosur FTA depends on the level of production and trade complementarities between the two regions since both are developing countries regions. The degree of complementarity reflects the degree of match in the structure of exports and imports between the two regions. Michaely (1996) and Piazzolo (1997) explained that the higher the share of imports as well as exports with the potential partner, the more free trade would eliminate trade diversion and enhance trade creation (especially



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for small countries). Complementary rather than similarity pattern of trade would encourage small countries to develop free trade areas, especially since the fear of domestic producers from international competition is reduced. Therefore, the success of the FTA between Egypt and Mercosur depends on the degree of complementarity between the two regions, which allows for exchanging comparative advantage. Complementarities would highlight the area of promising production at the same time avoid massive competition that would cause unemployment.

Respectively, the aim of this paper is to assess the degree of complementarity existing between Mercosur and Egypt, following the same methodology used in Andreosso-O'Callaghan and Nicolas (2007), De Castro (2012), Pitigala (2005) and Vaillant & Ons (2002). This paper will mainly depend on the index provided in Andreosso-O'Callaghan and Nicolas (2007) as reference for estimation. This will paper is an attempt to add to current literature examining the economic structural complementarity as well as expected benefits of bilateral agreements. This paper will first present trade patterns between the two countries, followed by intra-industry trade examination as well as trade complementarity index consecutively to assess the regional integration.

### **Egypt - Mercosur Trade Pattern (2009- 2015)**

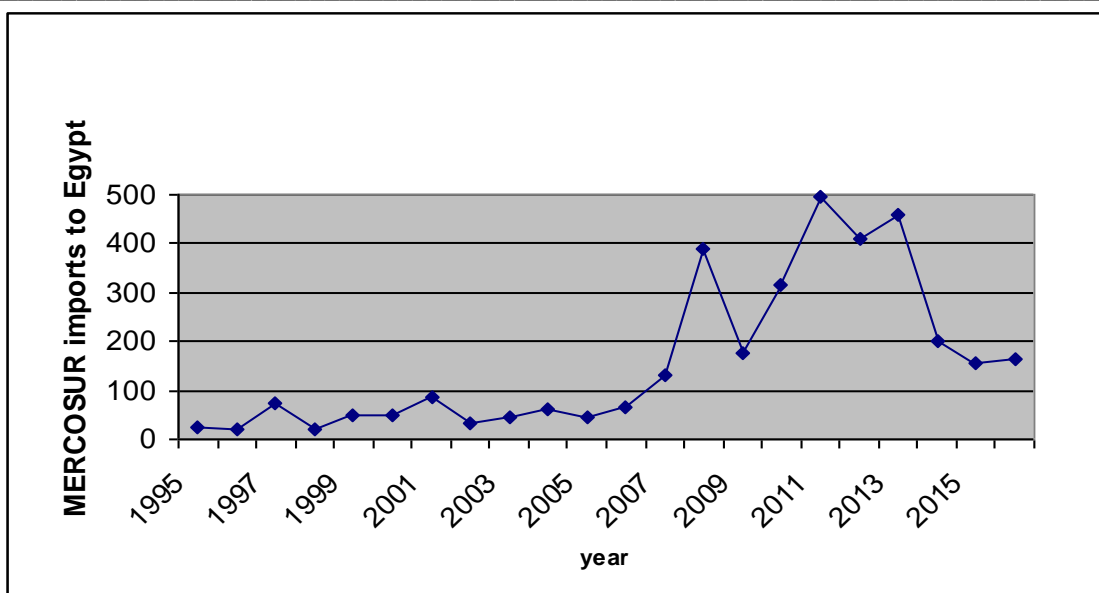
To have a holistic view over the trade relationships between Egypt and Mercosur, the merchandise exports, imports and merchandise trade balance during the period from 1995 till 2016 were examined. As per UNCTAD stat data (2017), the Egyptian exports to the ten Mercosur countries recorded an average \$157.94 million, with massive increase as \$490.26 million 2011. However, level of exports kept decreasing after 2011 ending up with \$ 163.21 in 2011 (figure 1). Meanwhile, the Egyptian merchandise imports from the Mercosur (Mercosur ten countries exports to Egypt) had an average \$1955.6 million within the period 1995-2016. The peak was in 2011 with an amount \$4450.98million, which is just after signing the agreement. However, last years witnessed a continuous decrease in Egyptian trade with Mercosur whether exports or imports. In general, due to Egyptian unstable political as well as economic conditions the level of imports from the whole word has decreased by nearly 1% while exports decreased by 3.5%. These patterns of trade with the balance of trade are depicted in figure 2.

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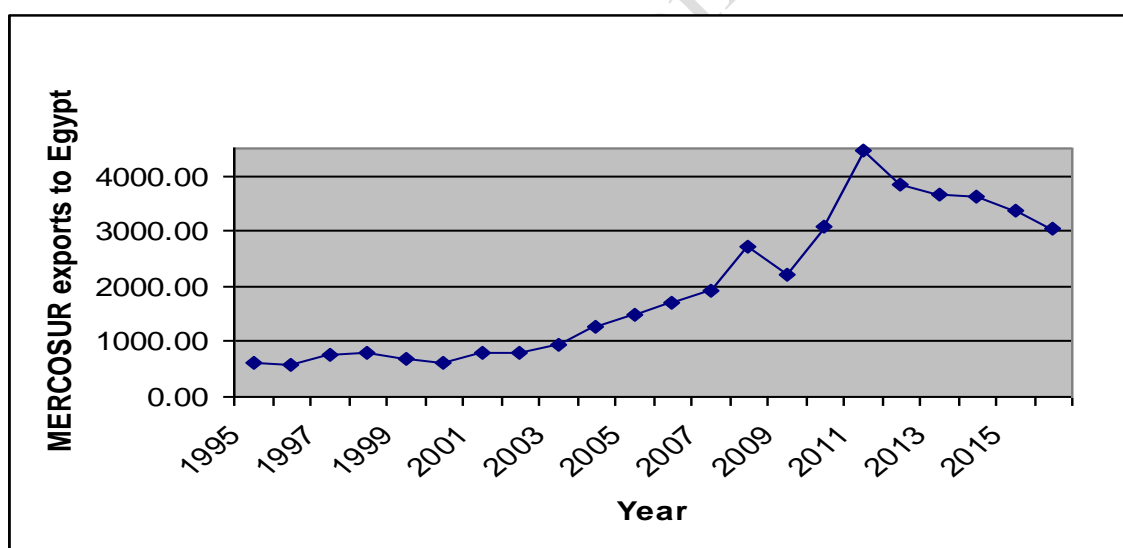
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**Figure 1: Mercosur ten countries imports from Egypt**

Source: UNCTAD stat data (2017)



**Figure 2: Mercosur ten countries exports to Egypt**

Source: UNCTAD stat data (2017)

Concerning Intra-industry trade<sup>4</sup> between Egypt and Mercosur area, this paper adopts a very simplified version of the method introduced by Grubel and Lloyd (1975) known as GLI for measuring intra-industry

<sup>4</sup> Intra industry trade occurs when a country and its partner trade in differentiated products within the same industry.

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trade between Egypt and the Mercosur as depicted by the equation below<sup>5</sup>:

$$T = 1 - \frac{|X - M|}{X + M}$$

The GLI gives a value between 0 and 1. The closer the value is to zero, this means that there is little intra-industry trade between the countries under observation. Meanwhile, a value closer to one would mean that there is a high degree of intra-industry trade; with a value of one meaning that the exports and imports of the examined industry between the two observed countries are equal (Salvatore, 2007). First, the paper examines intra-industry trade within broad product categories, namely: food items, agricultural raw materials, ores & metals, fuels, chemical products, and iron & steel.

**Table 1: Values for GLI:**

	1998- 2003	2004- 2009	2010	2011	2012	2013	2014	2015
GLI Index for food (SITC 0 + 1 + 22 + 4)	0.00187 6	0.00288 6	0.0037 31	0.0028 65	0.0034 97	0.0042 61	0.0044 74	0.0018 57
GLI Index for Agricultures (SITC 2 less 22, 27 and 28)	0.60304 2	0.72630 5	0.7765 67	0.6307 2	0.3343 28	0.4890 78	0.3600 15	0.1373 24
GLI Index for ores and metals (SITC 27 + 28 + 68)	0.00127 9	0.03547 2	0.0075 92	0.0241 08	0.0453 15	0.0181 18	0.0128 02	0.0168 47
GLI Index for fuels (SITC 3)	NA	NA	2.42E- 06	1.26E- 05	NA	0.0206 94	0.9244 7	0.1233 38
GLI Index for chemicals (SITC 5)	0.66604 9	0.69787 7	0.3773 78	0.2613	0.3747 61	0.3876 31	0.5352 97	0.7765 24
GLI Index for iron and steel (SITC 67)	NA	NA	0.0189 64	0.0912 02	0.1269 23	0.1637 33	0.0296 85	0.0180 26

Source: Authors' calculations based on UNCTAD stat data

As suggested in table 1, there is a high level of intra-industry trade between Egypt and the Mercosur mainly in agriculture and chemicals industries. The intra-industry trade is low between the two countries in the food sector, even though, it witnessed slight increase subsequent to the trade agreement, with the GLI index reaching a maximum of 0.004474 in 2014. Likewise, the GLI index for metals is really low, however, it spiked in 2012 to reach 0.045315. Afterwards, the GLI Index started to decrease to become lower than the 2004-2009 average GLI index of 0.035472. Based on that it seems that trade is based on complementary relation rather than substitutes and removing trade barriers would increase exports of both countries rather than creating competition.

<sup>5</sup> T: Intra-industry trade, X: Exports, M: Imports.

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There is a generally low level of intra-industry trade between Egypt and the Mercosur, which means that trade between these two regions is more of inter-industry nature. The pattern of inter-industry trade is based upon the idea of comparative advantage and is more evident between regions which are characterized with large differences in their factor endowments (Salvatore, 2007). This is easy to understand in the case of Egypt and the Mercosur countries as they are located in different geographical locations characterized with diverse natures. This also suggests that, apart from the agriculture and chemicals sectors, there is not enough product differentiation between the two regions to stimulate intra-industry trade.

### **Potential Trade Complementarity between Egypt and Mercosur:**

Trade complementarity is defined as a situation when two countries have comparative advantage in producing different goods; hence, they produce and export different commodities. The variation of the goods that each country has comparative advantage in stimulates more trade possibilities between these countries (Zeng, 2002:6). The more the countries have divergent resource endowments and production structures, the more intensively these countries have possibilities to trade with each other. That is to what degree the export pattern of one country is comparable to the import pattern of the other country (Drysdale 1969:323). The higher the adequacy of one country's export supply to the other country's import demand, the more the mutual benefit of trade between the two countries.

The importance of complementarity of goods in determining the bilateral trade level was first elaborated by Linnemann (1966) in extending Tinbergen's (1962) gravity model. Complementarity variable was measured by "the scalar product of the two vectors representing the commodity composition of the exporting country's total exports and the commodity composition of the importing country's total imports. However, this complementary index fails to take account of relative closeness" (Drysdale and Garnaut 1982:65). The complementary index is an attempt by Drysdale (1969) to initiate an index intensity of trade separating the effects of commodity composition of countries' foreign trade from other factors (Drysdale and Garnaut 1982:68). Trade complementarity index (TCI) is used to estimate empirically the degree to which export and import specialization of trade partners complement each other.

Following (Andreosso-O'Callaghan & Nicolas, 2007: 218), Trade complementarity index between country A and country B in industry  $s$  is calculated as follows:

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$$TCI_{Aj}^s = \frac{x_A^s}{t_{wA}^s} \cdot \frac{m_B^s}{t_{wA}^s}$$

Where,  $x_A^s$  is the share of industry  $s$  in country  $A$ 's exports,  $m_B^s$  is the share of imports of industry  $s$  in country  $B$ 's imports and  $t_{wA}^s$  is the share of industry  $s$  in world imports from country  $A$ 's point of view. This complementarity index is based on the revealed comparative advantage index as it is the product of export specialization index of country  $A$  and the import specialization index of country  $B$ . Usually the index taking a value greater than one indicates a strong complementarity between the two countries (Valliant and Ons 2002:1446). Table two represents the TCI estimated for each Mercosur countries and Egypt for the major sectors in year 2014. The value if TCI is done based on exports of Egypt and Imports of Mercosur country.

**Table 2: Trade Complementary Index Egypt with Mercosur countries (2014):**

Product	Argentina	Brazil	Paraguay	Uruguay	Venezuela
Food and live animals	0.827623776	1.60572	1.815779	3.559558	8.351728
Beverages and tobacco	0.069331102	0.087097	1.029459	0.288413	0.00202
Crude materials, inedible, except fuels	0.680078729	0.47719	0.271729	0.507928	0.11961
Mineral fuels, lubricants and related materials	1.784301243	2.07988	1.630248	1.719135	3.357137
Animal and vegetable oils, fats and waxes	0.245765844	0.955199	0.306189	2.175195	0.030074
Chemicals and related products, n.e.s.	2.064619453	2.280186	1.911623	1.924146	8.148549
Manufactured goods	1.26075986	1.236471	1.541077	1.243523	6.149356
Machinery and transport equipment	0.298795694	0.260356	0.257419	0.241917	5.474859
Miscellaneous manufactured articles	0.446324619	0.487405	0.691442	0.684484	1.463409

Source: Authors' calculations based on UNCTAD stat data

These results show that trade complementarity between Mercosur countries and Egypt exist in food and live animals (except for Argentina), Mineral fuels, chemicals and related products, and manufactured products. Table 3 breaks down this major products into sub products to give better view of the complementary relation.

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**Table 3: Products with Higher Complementary Index Egypt with Mercosur countries (2014):**

	Argentina	Brazil	Paraguay	Uruguay
<b>Food and live animals</b>	<ul style="list-style-type: none"> <li>• Vegetables and fruits</li> <li>• Coffee, tea, cocoa, spices, and manufactures thereof</li> <li>• Miscellaneous edible products and preparations</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy products and birds' eggs</li> <li>• Cereals and cereal preparations</li> <li>• Vegetables and fruits</li> <li>• Miscellaneous edible products and preparations</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy products and birds' eggs</li> <li>• Vegetables and fruits</li> <li>• Sugar, sugar preparations and honey</li> <li>• Feedstuff for animals (excluding unmilled cereals)</li> <li>• Miscellaneous edible products and preparations</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy products and birds' eggs</li> <li>• Cereals and cereal preparations</li> <li>• Vegetables and fruits</li> <li>• Sugar, sugar preparations and honey</li> <li>• Coffee, tea, cocoa, spices, and manufactures thereof</li> <li>• Feedstuff for animals (excluding unmilled cereals)</li> <li>• Miscellaneous edible products and preparations</li> </ul>
<b>Beverages and tobacco</b>			Tobacco and tobacco manufactures	
<b>Crude materials, inedible, except fuels</b>	<ul style="list-style-type: none"> <li>• Textiles fibres and their wastes</li> <li>• Crude animal and vegetable materials, n.e.s.</li> </ul>	<ul style="list-style-type: none"> <li>• Textiles fibres and their wastes</li> <li>• Crude fertilizers other than division 56, and crude minerals</li> <li>• Crude animal and vegetable materials, n.e.s.</li> </ul>	<ul style="list-style-type: none"> <li>• Pulp and waste paper</li> <li>• Textiles fibres and their wastes</li> <li>• Crude fertilizers other than division 56, and crude minerals</li> <li>• Crude animal and vegetable materials, n.e.s.</li> </ul>	<ul style="list-style-type: none"> <li>• Textiles fibres and their wastes</li> <li>• Crude fertilizers other than division 56, and crude minerals</li> <li>• Crude animal and vegetable materials, n.e.s.</li> </ul>
<b>Mineral fuels, lubricants and related materials</b>	<ul style="list-style-type: none"> <li>• Petroleum, petroleum products and related materials</li> <li>• Gas, natural and manufactured</li> <li>• Electric current</li> </ul>	<ul style="list-style-type: none"> <li>• Petroleum, petroleum products and related materials</li> <li>• Gas, natural and manufactured</li> </ul>	<ul style="list-style-type: none"> <li>• Gas, natural and manufactured</li> </ul>	<ul style="list-style-type: none"> <li>• Petroleum, petroleum products and related materials</li> </ul>
<b>Animal and vegetable oils, fats and waxes</b>		<ul style="list-style-type: none"> <li>• Fixed vegetable oils and fats, crude, refined or fractionated</li> </ul>		<ul style="list-style-type: none"> <li>• Fixed vegetable oils and fats, crude, refined or fractionated</li> <li>• Processed Animal and vegetable oils and fats</li> </ul>

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<b>Chemicals and related products, n.e.s.</b>	<ul style="list-style-type: none"> <li>• Inorganic chemicals</li> <li>• Dyeing, tanning and colouring materials</li> <li>• Essential oils for perfume materials and cleaning preparations</li> <li>• Fertilizers other than group 272</li> <li>• Plastics in primary forms</li> <li>• Plastics in non-primary forms</li> <li>• Chemical materials and products, n.e.s.</li> </ul>	<ul style="list-style-type: none"> <li>• Inorganic chemicals</li> <li>• Dyeing, tanning and colouring materials</li> <li>• Essential oils for perfume materials and cleaning preparations</li> <li>• Fertilizers other than group 272</li> <li>• Plastics in primary forms</li> <li>• Plastics in non-primary forms</li> <li>• Chemical materials and products, n.e.s.</li> </ul>	<ul style="list-style-type: none"> <li>• Dyeing, tanning and colouring materials</li> <li>• Essential oils for perfume materials and cleaning preparations</li> <li>• Fertilizers other than group 272</li> <li>• Plastics in primary forms</li> <li>• Plastics in non-primary forms</li> <li>• Chemical materials and products, n.e.s.</li> </ul>	<ul style="list-style-type: none"> <li>• Inorganic chemicals</li> <li>• Dyeing, tanning and colouring materials</li> <li>• Essential oils for perfume materials and cleaning preparations</li> <li>• Fertilizers other than group 272</li> <li>• Plastics in primary forms</li> <li>• Plastics in non-primary forms</li> <li>• Chemical materials and products, n.e.s.</li> </ul>
<b>Manufactured goods</b>	<ul style="list-style-type: none"> <li>• Leather, leather manufactures and dressed furskins</li> <li>• Paper and paper manufactures</li> <li>• Textile yarn and related products</li> </ul>	<ul style="list-style-type: none"> <li>• Paper and paper manufactures</li> <li>• Textile yarn and related products</li> <li>• Non-ferrous metals</li> </ul>	<ul style="list-style-type: none"> <li>• Leather, leather manufactures and dressed furskins</li> <li>• Rubber manufactures,</li> <li>• Paper and paper manufactures</li> <li>• Textile yarn and related products</li> <li>• Non-metallic mineral manufactures, n.e.s.</li> <li>• Iron and steel</li> </ul>	<ul style="list-style-type: none"> <li>• Leather, leather manufactures and dressed furskins</li> <li>• Paper and paper manufactures</li> <li>• Textile yarn and related products</li> <li>• Non-metallic mineral manufactures, n.e.s.</li> </ul>
<b>Machinery and transport equipment</b>			<ul style="list-style-type: none"> <li>• Telecommunication and sound recording apparatus</li> </ul>	
<b>Miscellaneous manufactured articles</b>		<ul style="list-style-type: none"> <li>• Articles of apparel &amp; clothing accessories</li> </ul>		<ul style="list-style-type: none"> <li>• Prefabricated buildings, sanitary, heating and lighting fixtures, n.e.s.</li> <li>• Articles of apparel &amp; clothing accessories</li> </ul>
<b>Number of goods</b>	18	21	24	26
<b>% of total goods</b>	28.125	32.8125	37.5	40.625

It is remarkable that TCI with Venezuela is low for sub- categories in comparison to industry indications. Nevertheless trade potential is high with the other four countries. It is notable that there 28% of traded goods are complementary between Egypt and Argentina, 32% for Brazil, 37.5% for Paraguay and 40.6% for Uruguay. In conclusion, complementarity exists between Mercosur and Egypt in more than 25% of the products, except for Venezuela. This implies that there is plenty of scope for gains would rise from economic free trade areas between the two regions.



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### **Conclusions**

This paper assessed the statistical data of merchandise trade between Egypt and Mercosur countries. It started with portraying trade between Egypt and Mercosur, then calculating GLI index and TCI. Implications from the trade indices computed for understanding the trade structure revealed that there are complementary sectors and products available for enhancing trade cooperation between the mentioned trading partners. This supports the perspective of south- south trade and ensures that there is potential trade benefits from a bilateral agreements between developing countries. These results are in line with similar literature investigating the impact bilateral agreements in developing countries; such as Reda Abu Hatab, Abdelhamed Shoumann, & Xuexi (2012); Jayawickrama & Thangavelu (2010) and Lu & Li (2010). Never the less research is needed to give more insight on comparative advantage, trade intensity and determinants of exports for both partners.

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CIK- 8<sup>th</sup> International Conference in collaboration with SINGEP

Oct. 1-3, 2020, Online

*Theme: Entrepreneurship, Responsible Leadership, and Economic Development.*

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### **THE ROLE OF GOVERNANCE IN THE MANAGEMENT OF PRE-COMPETITIVE RESEARCH CONSORTIA WITH MULTIPLE STAKEHOLDERS**

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#### **Abstract**

The biggest challenge for collaboration between university and industry lies in the co-creation of knowledge, in which the dominant type of knowledge is tacit, complex, and context-specific. In pre-competitive research projects, the exploration of the new requires sharing knowledge and externalization of tacit to explicit knowledge. There are different forms of interaction between agents of an innovation system aiming at the transfer and co-creation of knowledge. Among them are research consortia, which consists of a cooperative or association formed by institutions in the same segment or not. In this paper, a framework will be presented, based on good practices, for collaboration between university and industry, in the context of the pre-competitive research consortium, from a governance perspective. In this paper, we will present a governance framework for pre-competitive research consortia with multiple stakeholders. The proposed framework was built from a systematic review of the literature in journals indexed in Scopus, Web of Science, and EBSCO, and through a case study, involving participant observations, documental analysis, and in-depth interviews. And later verification with experts on the subject, who analyzed the consistency of the proposed practices. In the proposed framework, the management of the consortium maintained by multilevel governance, articulated by a permanent team. Governance should be divided into strategic, tactical, and operational levels, managed by executive management dedicated to the consortium. Each of these levels needs to have well-defined roles. The strategy to be adopted by the consortium needs to be defined by the executive board and executed by a permanent team (operational level). The tactical level is responsible for the scientific monitoring and advice of the projects. The operational team is responsible for executing the strategy; it subsidizes tactical and strategic levels with information about the consortium. For this, it monitors the status of the projects and manages the physical and financial resources.

**Keywords** : Governance ; collaborative research ; pre-competitive innovation ; consortia research ; alliances.

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### **Introduction**

For companies, innovation is recognized as a competitive factor. However, investment in research and development involves taking risks. And more and more companies are forced to make safe investments, however, with a low rate of return, leaving investment in radical innovations in the background. This scenario makes it opportune to bring universities and companies closer together for research and development activities. Because, on the one hand, there are highly qualified professionals and physical infrastructure, and on the other, companies, which are the biggest demanders for technology, with vision and market experience. There are different ways of interaction between university and industry aiming at innovation. These forms of interaction can be centered on linear models, defined in two opposites - market and technology, or non-linearly, through the overlapping of institutional spheres.

However, the approximation between actors operating in different organizational systems will not be successful just because legal frameworks are instituted (BAGATTOLLI, DAGNINO, 2014). The management of pre-competitive research activities is an onerous activity, as the environment is surrounded by uncertainties (COOPER ; EDGETT, 2008 ; ARAUJO JUNIOR, 2012). And, when the activity cooperates between different agents, the challenge becomes even greater, since the management of research activities needs to go beyond the organization's borders. Aspects related to the management activities of collaborative research projects need to be highlighted, to assist in the promotion of public policies for innovation that take into account not only the characteristics of the elements that make up the system but also the way of interaction (CORSARO; CANTÙ; TUNISINI, 2012).

There are different forms of interaction between the agents of an innovation system aiming at the transfer and co-creation of knowledge. Among them are research consortia, which consist of a cooperative or association formed by institutions in the same segment or not, whose purpose is to maintain leadership or acquire it in certain segments (KUMAR; SUNDER, 1995).

Research consortia differ from collaborations at the project level in the multiplicity of their objectives, the number of partners involved, and the nature of their management. They form a partnership at various levels - researchers, research teams, and institutions - and carry out a joint program to strengthen research capacity (PRATT; HYDER, 2017). Search alliances or consortia can be highly efficient search engines, as they allow you to address research issues larger than the individual part would have dared to pursue. This type of collaboration has become an important part of the competitive strategy of companies (KUMAR; SUNDER, 1995; EHRISMANN; PATEL, 2015; FASTERCURES, 2015).

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In this paper, we will present a governance framework for pre-competitive research consortia with multiple stakeholders. The proposed framework was built from a systematic review of the literature in journals indexed in Scopus, Web of Science, and EBSCO, and through a case study, involving participant observations, documental analysis, and in-depth interviews. And later verification with experts on the subject, who analyzed the consistency of the proposed practices.

## **2. METHODOLOGICAL PROCEDURES**

Based on the general and specific objectives proposed in this paper, a descriptive research with a positivist epistemological position was chosen, were adopted mixed methods, such as: systematic review of the literature, case study (with documentary analysis, participant observation, and in-depth interview), and Delphi method.

The systematic review of the literature aimed to identify the models and practices adopted in the consortia that promote the interaction between university and company aiming at precompetitive activities.

Based on the compilation of the best practices identified in the systematic review of the literature, and in the case study of a real context, a theoretical framework was created for collaboration between university and company to carry out pre- competitive. This theoretical framework will be presented to a group of specialists to verify consistency and validation. The case study was carried out to identify the practices adopted by a consortium that help collaborative research and development projects between universities and companies, as well as ancillary practices in the maintenance of the consortium.

The case analyzed was the Sourthen Ontario Smart Computing Innovation Platform (SOSCIP). This is a consortium established in April 2012 that brings together researchers from 17 universities in the province of Ontario - Canada with companies to use advanced computational tools to support research and development projects. The consortium aims to:

- Solve business problems ;
- Develop products and services ;
- Improve business processes and create jobs ;
- Train the next generation of qualified personnel ;
- Bring Canadian products and services to market faster and more efficiently.

Researchers from partner universities, SME and IBM Canada Ltda work together on research projects to solve industrial problems, contribute to the training of highly qualified personnel, and bring products to the market more quickly and efficiently with the brand "Made in Canada ".

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One of SOSICIP's biggest strengths is its focus on people and partnerships. The collaborative model for research and development brings together university professors and graduate students to work on advanced computing platforms with researchers from IBM and Small and Medium-Sized Enterprises. Together, they address research questions in the areas of agile computing; Cheers; Water; energy; cities; mining; advanced manufacturing; digital media; and cybersecurity.

In this case study was utilized three sources of data: (i) participant observation; (ii) documental analysis; and (iii) interviews. Which these sources the researcher will collect data by experiencing, by enquiring, and by examining. According (HARRY F. WOLCOTT, 1994) these are the major modes through qualitative researchers gather their data.

The study of case started in September 2016 and finished in December 2017. From September 2016 to July 2017, the researcher had monthly meeting with the Executive Director from SOSICIP. These meeting happened on Skype, and the main objective was to contextualize the consortium and introduce the researcher in the field. This was considered an arrangement stage, that prepared the enter of the researcher on the fieldwork. During this stage the researcher formulate the questions of research and the premiss of the study.

The fieldwork started on July 25, 2017, and finished on December 15, 2017. The researcher moved to Toronto (CA), the city where is the headquarter of SOSICIP. This case study just was possible with a CAPES scholarship (Process number 88881.131679 / 2016-01), that gave financial support to the researcher.

To the validation of the theoretical framework, was utilized the Delphi technique. This technique is a valid method to achieving convergence of opinion in a group of experts about specific topics. It brings members with different looks under the same theme. Different questionnaires and multiple iterations with the specialists' group are used to collect data and to build the consensus (SANDFORD, 2007).

The data was collected online, one-by-one, using a structured questionnaire. The fact that there is no physical meeting reduces the influence of psychological factors, such as the effect of persuasion, reluctance to abandon assumed positions, dominance of majority groups in relation to minority opinions. In addition, written answers lead to more thoughtful and careful responses.

About the number of specialists on the Delphi group, (SANDFORD, 2007) said that do not exist a consensus in the literature. On this case study will be invited to participate in the validation stage 20 specialists.

The group of specialists was formed by Executive Director, or equivalent, from academic consortium will be invited to participate in the stage of the study.



### **3. BEST PRACTICES FOR MANAGING PRE-COMPETITIVE RESEARCH CONSORTIA WITH MULTIPLE STAKEHOLDERS**

This chapter presents the results obtained in the systematic review carried out in three databases: Scopus, Web of Science and EBSCO. From the pre-defined criteria in this study, ten articles were published. The purpose of the analysis carried out was to identify which practices are adopted in pre-competitive research consortia with various stakeholders, including universities, companies and the government.

This review aimed to identify :

- practices outside the consortium that encourage the creation and maintenance of pre-competitive research consortia with multiple stakeholders ;
- practices adopted in the consortium for the management of relations ; and
- practices adopted within the scope of the projects, which favor their effective completion.

None of the ten articles that resulted from the systematic review presents, in a structured way, practices related to these three contexts.

Lee and Richardson (1990) present the model used by the Colorado Institute for Artificial Intelligence (CIAI), a research and development consortium created in partnership with industries, universities and the state government. The model adopted in the consortium is effective in transferring technology from universities to industries. CIAI promotes economic development in the state where it operates, through the generation of technologies in artificial intelligence applied to businesses and industries, and through the development of human resources in universities.

Carayannis, Alexander and Ioannidis (2000) propose a framework of considerations and strategic management skills that companies must develop to participate in pre-competitive research consortia (involving government, university and industry), to ensure that knowledge sharing occurs through organizational boundaries.

For the construction of the framework, the authors carried out a cross-sectional analysis of representative cases of alliances involving government, industry and university in the USA (Microelectronics Advanced Research Corporation - MARCO), Germany (Fraunhofer Gesellschaft) and France (MEDEA).

Most government-university-industry strategic partnerships (GUISPs) are to operate during a finite period of support, or with explicit or implicit stages of evolution, which alter the focus and operations of the partnership over time. This makes the concept of “life cycle management” relevant to the study of these partnerships.

Life cycle management addresses how management processes co-evolve as an organization matures, which



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means that different approaches are needed at different stages of development.

The "success" of a GUISP can be linked to its ability to generate learning and cultural change in participating organizations, and can be limited by barriers to that change. GUISP's measures of success must be linked to the partnership's ability to create new sciences and encourage the spread of this innovation beyond its partners. Daniel, Hempel and Srinivasan (2002) developed a framework based on the study of 58 collaborative research and development centers between universities, companies and the government. The framework proposes tasks, processes and central structures for evaluating the performance of such centers.

Successful consortia leverage four core process relationships :

- a) the creation of research capacity, which produces advances in the knowledge of the process and the product;
- b) technology transfer behaviors within the participants' organizations ;
- c) participants' satisfaction with the results ; and
- d) the continuity of support from the industry sponsor, that is, the commitment to collaboration.

Rod and Paliwoda (2003), based on a detailed case analysis of a collaborative venture, proposes insights into the establishment and ongoing management of such alliances. The proposed framework is the result of a case study conducted in a collaborative consortium established by 13 organizations, representing the academic, industrial and government sectors.

The framework proposed by the authors describes the critical factors that directly influence the results of strategic alliances. It also establishes the basis for what conditions must exist between collaborating partners, and what issues must be addressed at the beginning and in the management of relationships.

Österle and Otto (2010) propose a method that aims to facilitate the multilateral collaboration of researchers and professionals during the research process within a research consortium. The method is based on the active participation of experts from the community of practitioners, granting researchers access to their knowledge base, a multi-interactive artifact design process, and research funding by industry partners. The proposed framework aims to facilitate the collaboration of academic and professional researchers during the design of artifacts. Therefore, the method explicitly defines the roles of research partner companies, as well as the roles of academic researchers. The method was proposed based on a self-assessment design process that was carried out over a period of 20 years.

Roelofsen et al. (2011) present an approach to facilitate learning between members of a research consortium and their multiple stakeholders. The authors identified that the stakeholders have difficulty in translating the

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learning obtained into action.

The Ecogenomic Consortium was established in 2003 and co-financed by the Dutch government, with the important precondition that the actors of public research and industry are brought together. As a result, it was organized as a large-scale public-private R&D consortium, in which universities, national research institutes and companies with a focus on R&D participate. Its objective is to seek genomic science and technologies for the sustainable use of soil ecosystems for agriculture and other anthropogenic purposes, and comprises research in the disciplines of ecology, microbiology, soil science, environmental science, biotechnology and bioinformatics.

In the consortium, the practice of R&D involved only non-scientific parties in later stages of technological development. This involvement was restricted to questions about the use of new technologies and the risks involved. The model proposed by the authors proposes the involvement of stakeholders in the initial stages, from the exploration of the problem. In the framework proposed by the authors, stakeholders are involved in all stages of project execution - at the same table are academia, company and government.

The main assumption underlying these projects is that interdisciplinary collaboration and the involvement of relevant stakeholders increase the scientific and social value of research, result in the development of products that effectively address complex social problems and offer opportunities to initiate follow-up research projects. Differences in stakeholders' perspectives, interests and backgrounds are considered valuable contributions to the innovation process.

Another point addressed in the authors' framework is the conduct of meetings for deliberative purposes. Deliberation is characterized by a process of dialogue and argumentation that facilitates interested parties to exchange views and gain a deep understanding of their own positions and the underlying assumptions.

Morrison et al. (2015) propose the implementation of an internal governance structure, for the sharing of materials and data in research consortia. According to the authors, a governance structure can facilitate a transparent and accountable system, while creating trust between partner institutions.

The authors conducted a case study at StemBANCC, a European multiparty research consortium, which aims to build a resource of 1,500 well-characterized induced pluripotent stem cell lines for in vitro disease modeling and toxicology studies.

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The project's governance structure was developed in two stages. A small working group identified the main components of a structure and translated the project's legal agreements into a preliminary policy document. The second phase allowed all consortium partners to enter to shape the interactive development of a final policy document, which could be agreed upon by all parties. Careful time management strategies were needed to manage the duration of this component. This part of the process also served as an exploratory space, where different options could be proposed, possible gaps in planning identified and project coordination activities specified.

Governance covers a wide range of formal and informal methods of coordinating and organizing activities. A governance framework should clearly define what should be done, how it should be done, the order in which procedures are to be performed and where responsibility for specific tasks lies.

The development of a specific governance structure needs to be directed towards the specific task of sharing materials and data and must be proportionate, to ensure that the governance load, in terms of time and workload, does not outweigh the advantages of having a structure governance.

Pratt and Ryder (2017) proposed a framework that describes how the governance of consortia, composed of institutions from high-income countries and low and middle-income countries, should be structured to promote equity in health. The authors used as a reference a case study carried out with the Future Health Systems consortium, which is funded by the UK Department for International Development and conducts research to improve the provision of health services to the poor in Bangladesh, China, India and Uganda.

Pratt and Ryder (2016) use a conceptual approach to explore how the governance of transnational global health research consortia should be structured to promote equity in health. For this, an account called shared health governance is applied to derive procedural and substantive guidance. A checklist based on this guidance is proposed to help research consortia determine where their governance practices strongly promote equity and where they may fall short of expectations.

Omidvar, Edler and Malik (2017), considering R&D consortia as units of analysis and based on insights from three collaborative R&D case studies, proposed a framework for the development of Absorptive Capacity over time and across interorganizational boundaries, intra-organizational and practical in different stages, in which the degree of learning depends on a series of preconditions. The authors structured their framework based on the case study of three research and development consortia: HOUSE, ASTHMA and FLIGHT.

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### **4. THE ROLE OF GOVERNANCE IN THE MANAGEMENT OF PRE-COMPETITIVE RESEARCH CONSORTIA WITH MULTIPLE STAKEHOLDERS**

#### **4.1 Multilevel governance performed by permanent staff**

Governance divided into strategic, tactical and operational levels managed by executive management dedicated to the consortium. Each of these levels has well-defined roles. The strategy to be adopted by the consortium is defined by the executive council and executed by the permanent staff (operational level). The tactical level is responsible for the scientific accompaniment and advice of the projects. The operational team is responsible for executing the strategy; it is the one that subsidizes tactical and strategic levels with information about the consortium. To do this, it monitors the status of the projects and manages the physical and financial resources (LEE; RICHARDSON, 1990; OMIDVAR et al., 2017; MORRISON, 2015; DANIEL et al., 2002).

##### **4.1.1 Executive Council (Board)**

The Executive Council formed by the Vice Presidents of Research of the Institutions that make up the consortium. These professionals are not involved in the execution, they define and follow the strategy of the consortium. When the same person is involved in defining the consortium strategy and in defining the member institution's research strategy, the alignment between expectation and execution is greater. That is, the Vice Presidents of Research act directly in the definition and the monitoring of the execution of the research strategy of the partner institution of the consortium. Once the same person acts in the definition of the consortium strategy, the real objectives and expectations of the institution to participate in the consortium are more evident, which helps expose the future of the consortium at the table. This scenario highlights the importance of having an environment of discussion that allows the participation of all involved, where the voices of those involved have the same tone.

The renewal of the members of the Executive Board is also a point worthy of note. The consortium does not have the policy to replace its board members. However, the position of Vice President of Research is periodically renewed in the member institutions, which consequently is reflected in the replacement of the board member. This update is essential for some reasons: (i) alignment of expectations (as detailed in the previous paragraph); and (ii) renewal on the board (LEE; RICHARDSON, 1990; ROD, 2003; PRATT; HYDER, 2017; MORRISON, 2015; DANIEL et al., 2002; CARAYANNIS et al., 2000).

Meetings are held quarterly or semi-annually, are pre-scheduled, and only occur when there is an established

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discussion agenda. The schedule of meetings is defined jointly by the executive management and the Executive Board. Although moderated by the Executive Board Director, all members have the same voice.

### **4.1.2 Scientific Advisory Committee**

The Scientific Advisory Committee is formed by specialists in the areas of activity of the consortium linked to member institutions. The role of the Committee is primarily to evaluate project proposals, monitor and advise on project implementation, and recommend actions for more efficient management of physical resources. Each member institution has at least one participant in the Scientific Committee, all have the same voice, and always use the position of the consortium for decision making. The members of the Committee may also propose projects since the process of evaluation and follow-up of the projects must follow the same procedures as the other projects.

The primary objective of the council is to ensure that projects reach their primary goals and schedule. Government institutions, which make up the consortium, also participate in the Committee, since success in executing projects often depends on factors external to the consortium, such as research grants, matchmaking between companies and researchers (or vice versa). It is during Committee meetings that the challenges related to projects will be highlighted (PRATT; HYDER, 2017; MORRISON, 2015; DANIEL et al., 2002; ROELOFSEN et al., 2011).

### **4.1.3 Permanent Staff**

A multidisciplinary team dedicated to operationalizing the strategy of the consortium. The team is managed by executive management, whose primary function is to provide the Executive Board with strategic information about the consortium, such as physical and financial monitoring of the resources, the number of projects carried out, the number of people trained, and the number of jobs generated.

The staff must be geographically distributed according to the consortium's scope of action. If the goal is to have projects statewide, it is vital that there are people working in these regions. Telecommunication tools are a staunch ally in the communication process. However, for the relationship building, matchmaking between universities and industry, it is vital that the interlocutor is physically present (LEE; RICHARDSON, 1990; ROD, 2003; MORRISON, 2015; CARAYANNIS et al., 2000).

The geographical distribution of the members of the consortium is a challenge, which reinforces the importance of having a team dedicated and distributed according to the scope of the consortium. The continuous monitoring of the projects allows the identification of the challenges involved in the execution of

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the projects and directing them to the Scientific Advisory Committee. However, having consortium teams distributed in off-site offices requires greater management. External teams need to replicate the values proposed by the consortium.

Consortium staff dedicated on five fronts of work:

### **4.1.3.1 Conducting of Consortium Management**

Consortium Management refers to the management of work routines. These actions involve the construction and management of indicators; meetings with technical staff and projects; monitoring of contracts; management of physical and financial resources; communication and marketing actions to promote the consortium; accountability to stakeholders; consolidation of data and information for the proper referrals to the Scientific Committee and Executive Council (LEE; RICHARDSON, 1990; ROD, 2003; MORRISON, 2015).

### **4.1.3.2 Communication and marketing actions as a promoter's "reputation"**

Communication and marketing actions are fundamental for disseminating the results obtained within the scope of the consortium among the stakeholders. These actions aim to provide further visibility to the consortium, either to be accountable or to promote other actions and position the consortium in the innovation ecosystem. The communication needs to be multi-channeled and to a variety of audiences such as professors, junior researchers, Ph.D. Candidates, industries, development institutions. The outputs of this feature consist on the diffusion of the consortium (LEE; RICHARDSON, 1990; PRATT; HYDER, 2017; ÖSTERLE; OTTO, 2009).

### **4.1.3.3 Manage the drafting of the contracts, ensuring that the intellectual property interests of the interested parties are safeguarded**

Each member institution of the consortium has its intellectual property policy. The policy adopted by the consortium considers what is established by each institution. The important thing is that these terms are flexible so that all involved feel inserted in and benefit from the process. The permanent staff of the consortium follows the negotiations between the researchers (university) and the industry to solve any doubts (MORRISON, 2015).

### **4.1.3.4 Management of the University-Industry partnership**

Each project team is responsible for the management and execution of the collaborative project. However, since universities and companies have different discussion plans, it is necessary to manage the relationship to

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ensure that both are speaking the same language.

### **4.1.3.5 Prior experience in collaborative projects**

Research grants that encourage university-business collaboration allow researchers to have shared experiences. Also, previous experience among those involved helps build relationships for future projects.

## **4.2 ENGAGEMENT STAGE**

The engagement stage consists of the useful discussion of a collaborative work proposal involving a university researcher and industry. At this moment, those involved are already in contact with the team of the consortium, and they begin to discuss the project proposal form.

### **4.2.1 Project team with a well-defined research question**

In the engagement stage, the team involved in the project needs to have a well-defined research question, from which to define the real needs involved in the execution of the project, as well as define the counterparts of the parties involved. As it is a collaborative project, it is natural that the expectations of the parties are different, but it is essential that these expectations are transparent for those involved, and that all are contributing to the success of the project.

### **4.2.2 Make sure it is a collaborative project and that all involved are on the same page**

The consortium team, responsible for managing the partnership, will work together with the project proponents to clarify doubts related to the proposal form and will certify that it is a collaborative project. At this stage of the process, it is possible to verify the way of working of those involved. Another important aspect is to make sure they are all on the same page, aligning the expectations of those involved. In this case, the partnership manager plays a crucial role in this process.

### **4.2.3 Proposal form**

The submission form, which will be used by the Scientific Advisory Committee, needs to be structured with issues that demonstrate the project's contributions to the scientific and business community. The form also consists of questions that demonstrate the degree of knowledge of those involved with the technological resources that are offered by the consortium and the real need for their uses. The form, as an important artifact for the work of the Scientific Committee, has been improved over the years to allow a better understanding of the project and the results it seeks.



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### **4.2.4 Proposal submission such as continuous process and evaluation of the proposal**

Submission of proposals occurs continuously, which reinforces the image of the consortium and strengthens the innovation process, as it maintains the continuity of activities. The proposal can be submitted to the extent to which a business opportunity is identified. The evaluation process also occurs quickly, from submission, to evaluation, to feedback within a maximum of 30 days. The evaluation of the proposals take place interactively, the project team must present the project in a standard template to the Scientific Committee, thus allowing the clarification of doubts. In case of rejection of the proposal, the proposers will be able to adapt and re-submit the proposal for evaluation.

### **4.3 PROJECT EXECUTION**

Soon after project approval, project execution begins. From this moment, the consortium team dedicates efforts to the management of the relationship between the partners of the project and in the constant feedback between the project team and the governance of the consortium.

#### **4.3.1 Consortium staff committed to project success**

The main success factor of the consortium is the valid conclusion of the projects that are being executed. In this way, the staff is continuously in contact with the project team to identify possible problems. As problems are identified, those involved in the consortium are looking for a solution to the case (KUMAR; SUNDER, 1995; DANIEL et al., 2002).

#### **4.3.2 Monitoring by the Scientific Committee**

The Scientific Committee periodically monitors the evolution of the projects. Follow-up is done through oral presentations and standardized report delivery. The monitoring report is presented every six months, considering a two-year project. The report does not only serve the purpose of accounting for the resources used in the project; the goal goes beyond that. These presentations aim to follow the evolution of the project, as well as to advise on possible challenges involved in the execution (LEE; RICHARDSON, 1990; ÖSTERLE; OTTO, 2009; DANIEL et al., 2002; CARAYANNIS et al., 2000). Even projects where the principal investigator is one of the board members are required to have the status of the project performed.

The reports are evaluated by all the members of the Scientific Committee, in this way, the meetings are carried out by a multidisciplinary team, allowing for the enrichment of the work. It is necessary to have a minimum quorum of participants in each of the meetings to ensure that all members of the consortium are aware of the



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discussions. Although only one party (university or industry) needs to present the status report to the Committee, the template has critical issues that require the involvement of both to be filled out.

### **4.3.3 Independent project team governed by consortium governance**

Project teams formed by researchers linked to the institutions that form the consortium and by companies inserted into the ecosystem, governed by the governance system of the consortium. These teams are independent of the consortium; they act in the execution of the project developed within the scope of the consortium.

As the results of the project condition the success of the consortium, the governance system acts centrally in this process, but without interfering with the work routine of the researchers. Those involved in the project (professors, students and industry) have their own system to execute the project. The consortium gives the freedom for projects to be executed in the manner agreed upon by those involved. However, there are "rituals" that need to be adopted, which direct the project to its milestones. The consortium staff accompanies this workflow but does not get involved in the execution of the project (PRATT; HYDER, 2017; MORRISON, 2015; CARAYANNIS et al., 2000).

## **5. CONCLUSIONS**

In the proposed framework, the management of the consortium maintained by multilevel governance, articulated by a permanent team. Governance should be divided into strategic, tactical, and operational levels, managed by executive management dedicated to the consortium. Each of these levels needs to have well-defined roles. The strategy to be adopted by the consortium needs to be defined by the executive board and executed by the permanent team (operational level). The tactical level is responsible for the scientific monitoring and advice of the projects. The operational team is responsible for executing the strategy; it subsidizes tactical and strategic levels with information about the consortium. For this, it monitors the status of the projects and manages the physical and financial resources.

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*Theme: Entrepreneurship, Responsible Leadership, and Economic Development.*

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### **EDUPREN AMERICAN AND CANADIAN RESTAURANT CHAIN MARKETING STRATEGIES: A CROSS-BORDER ANALYSIS**

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#### **Abstract**

The aim of this study is to compare restaurant chain marketing strategies from the US and Canada to identify similarities and differences between the two markets. Twelve restaurants from different large restaurant chains were visited in each country (n=24) and 49 variables were observed relating to their product, price, promotion and placement strategies. Many differences were found between the two markets in the product, place/location, price and promotion variables. Most chains were found to be more similar in service and place/atmosphere variables. The primary contribution of this paper lies in the insights gained by analyzing both market similarities and differences to identify potential marketing strategy adaptations that would increase the chance of success when expanding a restaurant chain across the border.

**Keywords:** Restaurants, Chains, Marketing Strategies, Cross-border Analysis, US, Canada.

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### **1. Introduction**

Restaurant chains are very popular in the US and Canada. In the US, it is a \$521.9 billion industry, with more than half of the sales coming from Top 500 chains, and 94% of those dollars from Top 250 chains (Technomic, 2017). In Canada, with US\$16 billion in sales, the Top 10 Canadian chains control a third of the market of nearly US\$50 billion (Aaronallen, 2017). According to this source, Americans spend 50% of their food budget on Food Away From Home (FAFH). By this benchmark, the Canadian restaurant industry could still claim an additional 14 percentage points of total food spend. Which would equate to an additional US\$21 billion a year. Limited-Service Restaurants (fast food and casual dining) are reshaping the food industry in both countries as consumers are spending more money on food they can grab on the go. This trend is fostered by more household members allocating more time to their jobs, their increasing disposable income, and less time budgeting for cooking and other housework (Morgan, 1993).

Restaurant chains are using different marketing strategies to earn their share of the market. While fast food chains focus on price-based promotions, fast-casual restaurants are gaining ground by emphasizing what makes them different. Chains are also embracing new technologies to connect with their customers by offering new ways to order, from apps and text, self-service kiosks, and eventually, drone and autonomous vehicle deliveries. Food trucks have also become a popular strategy for 15% of the largest restaurant chains. Food trucks offer both convenience and diversity of food options to consumers, and a relatively inexpensive way for restaurants to increase revenues. Many chains are also visible in food halls, small spaces for different restaurant concepts in one large hall. According to Aaronallen (2017), food trucks and food halls would hit the two fastest growing segments in the Canadian food service industry: street food and fast food.

### **Literature Review**

#### **Restaurant Chain Marketing Research**

Consumers' value of benefits provided by chain restaurants such as family, steakhouse and casual dining restaurants are threefold : food service quality (food taste and staff friendliness), family price-value (menu prices value for price paid and accommodating children), and time convenience (promptness in seating and service but not quietness) (Morgan, 1993). According to this research, for all types of restaurants, food service quality has the strongest overall effect on chain ratings. More recently, Hyun et al. (2010) identified five dimensions that influence restaurant patrons' behavior: food quality, service quality, price, location and environment. These five attributes influence loyalty formation, with impact mediated by relationship quality. They also influence customer satisfaction which influence loyalty formation directly and indirectly via trust.

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According to these authors, service quality's effect on trust is stronger than any other attribute. The customer relationship built through service quality increases customer retention and becomes an intangible asset and competitive advantage of chain restaurants.

Restaurant chain brand equity is an important determinant of shareholder value and an indicator of long-term financial performance. There are three key determinants of customer equity: value equity, brand equity and relationship equity (Hyun, 2009). Brand equity has the strongest impact on the development of customer equity in this industry, which influences brand trust (Han et al., 2015). As consumers trust a restaurant chain brand, they are more likely to visit chain restaurants as tourists because they know they can experience the same quality of food and environment anywhere without hesitation. Trust towards the chain brands comes from the ability to deliver the promise of quality. Advertising plays an important role in brand development. Hyun et al. (2011) identified four dimensions of advertising (relevant news, stimulation, empathy, and familiarity) that have a significant impact on inducing emotional responses of patrons toward a chain restaurant brand. Advertising-induced emotional responses positively influence patrons' perceived value. Brand attitude and hedonic value also bear a positive impact on patrons' well-being perception which is the most powerful determinant of patrons' positive behavioral intention to go to a chain restaurant (Kim et al., 2012). In addition, brand attitude is found to positively influence innovativeness (Hyun and Han, 2012). They find that advertising effectiveness significantly reduced patrons' perceived risk in a new menu trial and thus positively influences innovativeness, which may help a restaurant chain remain competitive. If a restaurant chain's advertising strategy includes an endorser, research shows that congruence between the image and values of the celebrity endorser must be a good fit with those of the restaurant brand (Magnini et al., 2010). These authors also found that celebrity power was the second most important factor in selecting a celebrity endorser, followed by an individual's perceived ability to relate to the endorser. They found that parents were more likely to consider the match of an endorser's image and values, women and younger persons relied on physical attractiveness, and older respondents and less frequent diners focused more on trustworthiness. Brand equity can be an important factor for restaurants facing food crises (Seo and Jang, 2013).

### **Canada-US Food Culture**

Ferley (1999) explored similarities and differences in the culture of Canadians and Americans as far as how these differences were reflected in the consumption of foodservice related products. There were similar patterns in the consumption of fresh vegetables, ketchup, and vinegar. However, Americans consumed greater quantities of bottled water, iced tea, sparkling water, root beer, sport drinks, table syrup, toaster products, and

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hot sauces. Canadians, on the other hand, consumed greater quantities of wine, and dined out less often than Americans.

Menu calorie labeling is now required nationwide for chains in the United States. A recent study found that calorie labeling is effective in decreasing the number of calories ordered by health-value-oriented consumers, but for quantity-value and taste-value consumers, menu calorie labeling may result in an increase in calories ordered (Berry et al., 2019). Since Canadians generally enjoy a healthier diet (Garbinski, 2015), menu calorie labeling may have a greater impact due to the larger health-value segment of Canadian consumers than their American counterparts.

In both the US and Canada health trends are becoming an increasingly important aspect of menu planning, even in quick service segment (DiPietro, 2004). It is of great importance that restaurateurs include nutritional information, appealing food pictures, and health symbols to provide customers with the information they require (Musiker, 2014). Roberto (2014) states that accurate and easy-to-understand nutrition labeling should be printed on restaurant menus as an important strategy for restaurants to educate consumers about food's nutritional content, portion size awareness, and to motivate them to make healthier choices.

The Business Development Bank of Canada (2013) identified rising health awareness as a consumer trend in Canada. Their study indicated that the aging Canadian population is becoming more aware of healthy choices in food and other products, and are willing to pay a premium for healthy products. Garbinski (2015) suggests that Canadians do not just enjoy better tasting food, but they also enjoy a healthier diet. They have a penchant for real versus processed food, and even a small restaurant will serve homemade soups and entrees and use fresh toppings, nothing frozen or canned. According to FHGI, a Canadian-based boutique consulting firm specializing in foodservice, franchise and hospitality industries, the failure of successful American restaurants chains when they establish operations in Canada is largely due to differences in consumer preferences. Canadians demand higher quality ingredients and healthier foods than Americans. As similar as the two cultures may be, there are differences in the restaurant industry in four areas: taste, operating costs, tax, and marketing boards controlling market prices (e.g., wine and alcohol). The three latter factors contribute to higher cost structures which translate to higher prices in the restaurant industry in Canada.

While the US and Canada offer each other attractive foreign market opportunities, there remain considerable risks in adapting a marketing strategy to a foreign environment. Many successful businesses in their home

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markets have failed to adapt to what appears to be a nearby, friendly market with a favorable trade environment. For example, successful American retail chains such as Target (Dahlhoff, 2015), Best Buy and Big Lots (La Monica, 2015) have failed in their expansion into Canada. In the restaurant industry, American restaurant chains such as Chi Chi's, Ben & Jerry's and Fudruckers have failed in Canada (FGH International, 2017). According to this source, Wendy's, Taco Bell and Burger King keep struggling to maintain reasonable market share while McDonald's was forced to make significant operational modifications. They added poutine (a mix of French fries, cheese curds and gravy) on their Canadian menu to meet the preferences of their Canadian consumers. Tim Horton's, a historically Canadian chain, has also struggled when entering the U.S. market (Kopun, 2014).

### **Canada-US restaurant comparisons**

Heroux (2002) found that marketing strategy variables are implemented similarly in Canadian and American independent restaurants, with minor modifications to accommodate regional preferences. They seemed equally successful in implementing their marketing strategies. The strongest variables in the marketing strategies related to Place (restaurant internal atmosphere and favorable location) and Product (menu selection, customer service), while the weaker variables were for Promotion (inadequate advertising) and price (lack of value bundling or discounts). As an important marketing tool of independent restaurants, menus communicate food and beverage offerings and position the establishment in the minds of consumers. Gottschall et al. (2018) analyzed marketing strategy variables and 13 features of independent restaurants such as dining styles, product selection, and food trends in the US and Canada. They found that similarities were most evident in fine dining restaurants, while most differences were found in casual dining restaurants. The casual dining restaurants in the US offer significantly more take-out and delivery options for their customers while the Canadian restaurants are more oriented toward in-restaurant dining. The casual restaurants in the US offer significantly more entrée selections, more healthy options, more locally-sourced items. These differences suggest that the US restaurants are more accommodating of different service preferences, offer more selections, and more focus on health or food trends.

As more people consume meals outside home, the foodservice industry continues to grow in the U.S. and Canada. With increased competition and a wide variety of products or services offered by restaurants in each country, identifying and comparing the key elements of the marketing strategy could shed light on similarities and differences between the two markets. Restaurant businesses considering crossing the border in either direction might consider information regarding differences in marketing strategies to help identify appropriate



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marketing strategies for entering a foreign market. The Canada-US restaurant comparisons discussed above examined independent restaurants. The primary contribution of this paper lies in the insights gained by analyzing similarities and differences in marketing strategies of restaurant chains to identify potential marketing strategy adaptations that would increase the chance of success when expanding a restaurant chain across the border.

### **Purpose of the Study**

Substantial economic integration and cross-border traffic is found in the region spanning Quebec, New York, and Vermont (Church and Heroux, 1999). For this reason, it is important to gain an understanding of the challenges that restaurant chains face when crossing the border in either direction. Our research question, therefore, is to determine what similarities and differences in restaurant chain marketing strategies are found on either side of the border in an effort to identify potential aspects of strategy adaptations that may reduce the risk of failure or increase the chance of success when expanding operations across the border.

### **Methodology**

Following a methodology established in a cross-border comparative study of marketing strategies of restaurants in the US and Canada (Heroux, 2002), this exploratory study examined 24 restaurants from large, well-known comparable restaurant chains in the contiguous regions of southwestern Quebec and northern New York/Vermont. The online Yellow Pages directory for the United States and Canada was used to identify restaurants in the geographic regions along the border. One consequence of this selection criterion was to greatly increase the number of fast-food establishments in the sample. The region under study included 12 restaurants located in Montreal (Quebec), Canada, and 12 from the Plattsburgh (New York) and Burlington (Vermont). Restaurants on both sides of the border were paired so that the two samples of restaurants were equivalent (e.g., 2 steakhouse chains, 2 pizza chains, etc.). Although the sample size appears small, these restaurant chains use the same marketing strategy in all of their outlets, so the observations in these 24 cases represent strategies applied in thousands of restaurants on both sides of the border.

The observational research was conducted by international marketing students who were familiar with the marketing concepts. Observers received training on a variety of dimensions of the research process. They received a detailed explanation of each of the variables in the Marketing Strategy evaluation grid and how each variable is operationalized. They were shown how to find and approach their assigned restaurant chains, how to record their qualitative observations, and how to determine a quantitative score (on a scale of 1 to 5, 5



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being superior implementation) for each variable. For example, for breadth of product line, students would look at the assortment of products on the premises and make a judgment on the rating scale as to its appeal to consumers (5 would represent an outstanding assortment, beyond expectations ; 3 would represent an average assortment usually found in chocolateries ; and 1 would be the minimum one would expect.

The trainer and trainees performed a “walk-through” of the research process prior to visiting the restaurant chain to ensure their understanding and consistent implementation of the data collection. Observation and listening were usually sufficient to gather information about each variable. For example, for the target market, they could look at license plates in the parking lot and see how many cars came from what state or province. They could tell what language, French or English, was spoken by the customers. They could ascertain if they were repeat customers if they appeared familiar with the establishment when they arrived, when they referred to past purchases, or when they were on first name basis with the staff. However, if some variables were difficult to observe, students were given guidelines for asking questions of the staff.

Three trained observers visited each establishment together in the two regions, spending 4-5 hours in each location to record detailed notes of how each marketing strategy variable was implemented. Then, the three observers had to discuss and come to an agreement on a score (on a scale of 1 to 5, 5 representing superior implementation of the strategy) for each variable in an attempt to quantify the observational data. Since this process resulted in one rating for each variable, inter-judge reliability measures were not relevant. Each item within a variable category was weighted equally in this research. The data collection thus consisted of qualitative data, the recorded observations, and quantitative data, the assigned scores for each variable.

### **Findings**

The findings are discussed below in terms of quantitative results and qualitative results. Tables 2 and 3 present the quantitative results of the scale ratings for each of the eight variable categories. Although tests of significance cannot be performed because of the small number of cases, inspection of the table reveals that there are more similarities than differences in marketing strategy variables in the two regions. In both regions, the stronger marketing strategy variables appear to be for products/services, location/atmosphere and personal selling. The weaker marketing strategy variables relate to promotion and price. Although promotion is the weakest variable in Quebec, it receives a higher rating in the US.

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### **Product**

Although the overall strategy rating for Product was similar for both countries, some differences were found for different variables within the Product category. US restaurant chains score higher for size than Canadian chains. Portion sizes are often larger in the US, and more options may be available (e.g., small, medium, large beverages), and full portion or half portion may be available. US chains also tend to have larger assortments of national brands available, especially for beverages. In addition, US chains are more likely to have special features, such as daily specials, mix and match, early bird specials, senior menu, gluten free options, and more. On the other hand, Canadian chains scored higher on product line and assortment, suggesting that the menu items in their product lines were more attractive, and the variety of appetizers, main courses and desserts was more versatile.

### **Service**

All of the ratings for the variables for Service were similar, with the exception of Customer Satisfaction. US restaurant chains were more likely to have stated policies about customer satisfaction and complaint handling than Canadian restaurant chains. In both regions, restaurant chains accepted a wide range of credit card and debit card options and received the highest rating for this payment facilitation service to their customers. In Canada, if payment is made at the table, a mobile hand-held device is brought by the server to the table to complete the transaction so that the credit/debit card never leaves the possession of the client, which is perceived as a more secure form of transaction.

### **Place: Location**

Although the Place scores are very similar, some differences were found in how some of the variables within the Place strategy are implemented. The visibility of the restaurant in a prime location scores are slightly higher for Canada, while accessibility of the restaurant from the road is much higher in Canada. Although the building types are equivalent in both regions, the outside appearance of the restaurants scored higher in the US as did the availability of parking.

### **Place: Atmosphere**

Establishment layout, lighting, music, ambient noise, fixtures, crowdedness and access to disabled were similar in chain restaurants on both sides of the border. However, the restaurant scent was more favorable and superior signage was found in the American chains, while Canadian establishments made better use of color and appeared cleaner than their American counterparts. Cleanliness was one of the three most highly rated

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variables for the sample as a whole, along with scent and lighting. This is especially noteworthy since cleanliness is the most important decision criterion to Canadian and American visitors in the hospitality industry in this region (Church and Heroux, 1999).

### **Price**

Price levels and competitive pricing in the area were the most highly rated pricing variables for the sample as a whole. Price levels and availability of group discounts were similar in both regions. However, American chain restaurants had more competitive prices and offered more coupons than Canadian chains, while Canadian chains offered more value bundling options.

### **Promotion: Advertising**

Although both American and Canadian chains use traditional broadcast and print advertising media, they rely more heavily on a variety of other media such as online advertising, mobile apps, special promotions and out-of-home advertising. This is not only due to the changing media exposure patterns of consumers, but also to the nature of the Food-Away-From-Home industry. Restaurant chains need to make their brand visible at the point where and when the consumer is hungry and thinking about getting food on the go. American restaurant chains appear to do more advertising than Canadian chains, especially in print, online, sales promotions and out-of-home media.

### **Promotion: Personal Selling**

Restaurant chains recognize the importance of their front line employees in creating customer loyalty, and invest in their training. Similarities were found in employee helpfulness, making the sale, level of knowledge and listening to their customers in both regions. American chains put more emphasis on approaching the customers and greeting them on arrival. They also put more effort in presenting their menu options and up-selling than their Canadian counterparts. On the other hand, Canadian restaurant chains paid more attention to customer nonverbal cues regarding service and had a neater, more professional appearance, even in uniform.

### **Discussion and Implications**

The findings of this restaurant chain marketing strategy research are consistent with the Heroux (2002) comparison of independent restaurants in the US and Canada. In both studies, the strongest variables are for Place (establishment atmosphere and favorable location) and Product (menu selection and customer service). Price and Promotion received lesser ratings. The results of this study suggest that similar overall marketing

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strategies may be used successfully with some modifications in marketing tactics to accommodate regional conditions, as suggested by Heroux (2002) and Church and Heroux (1999).

For American restaurant chains considering opening locations in Canada, attention should be given to some key variables where differences exist that create different expectations in the minds of consumers. Canadians have higher expectations of food quality, so meeting this expectation may be critical to success in this region. Menu variety is also important to consider. With respect to location, ease of access from the road will affect whether a customer chooses one chain over another on the go. For restaurant atmosphere, color scheme in the décor as well as maintaining clean facilities at all times will impact consumer comfort in the restaurant chain. This includes the neat and professional appearance of service providers as well as attending to client nonverbal cues about service expectations.

For Canadian restaurant chains considering entering the American market, consideration should be given to portion sizes that meet American consumer expectations. Offering popular national brands for beverages and other branded items may also impact choice of restaurant chains. American chains are also more likely to offer unique features, such as Five Guys having soda vending machines where consumers can mix and match sodas and flavors. Offering such unique features to stand apart from the competition and appeal to American patrons might be considered in their strategy for the US market, as would an emphasis on official customer satisfaction policies. With respect to Place, a recognizable architecture for the outside appearance as well as ample parking may be considered, as well as attention given to scent management and more signage. Although Canadian consumers are willing to pay a higher price for higher quality food, American consumers are used to large portions of a lesser quality at lower prices. This is an important, if not critical, strategic consideration in deciding whether a Canadian chain should adapt its marketing strategy regarding product and price for the US market. For restaurants in the fast food and fast-casual categories, use of coupons may help keep up with the local competition. Finally, regarding Promotion, training of servers might include a different approach to greeting customers and speed of service, and possibly up-selling strategies. Canadian chains entering the US market will have to compete with American chains that generally do more advertising in most media than Canadian chains do. Therefore, it might require an increase in advertising expenditure to be successful in this market.

### **Limitations and Future Research**

This comparative exploratory study used a census of the restaurants from chains located in one limited

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geographic area of one cross-border region of the United States and Canada. As a result, the sample size is limited, and generalization of the results should be undertaken with caution. Future research could extend the scope to include additional restaurant chains in the cross-border regions of both countries to increase generalization of the findings.

This study of similarities and differences in restaurant chains marketing strategies in two countries examined similarities was designed to provide greater insights into the nuances of foreign market entry. The data suggests that sometimes apparent similarities and differences can be deceiving. While exploratory, these findings can be useful to researchers and practitioners.

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**Table 1**

### **Summary of the Marketing Strategy Variables Evaluation Grid**

#### **Marketing Mix (4Ps)**

##### **Product:**

**Product variety variables:** Breadth of product line, assortment of accompanying products, size variations, quality, private labels/brands, special features, overall evaluation. (6 variables, maximum score of 30)

**Service variables:** customer services, customized/standardized, credit cards, reservations (computerization), hours of operation, guarantees, customer satisfaction (complaint handling), overall evaluation. (7 variables, maximum score of 35)

##### **Place:**

**Location variables:** Primary/secondary road (visibility), site evaluation (nearness to target market), outside appearance, private/public parking availability, detached building versus strip, general ease of access, overall evaluation. (6 variables, maximum score of 30)

**Establishment atmospherics:** Interior layout (free form, grid, racetrack); atmospherics—scent, lighting, color, mirrors, music, noise, signage; fixtures; cleanliness; size of crowds; access to disabled; overall evaluation. (11 variables, maximum score of 55)

##### **Price:**

**Pricing variables:** Relative high/low prices, competitive in region, group reductions, coupons/rebates, bundle or value pricing (packages offered), variety of payment options, overall evaluation. (5 variables, maximum score of 25)

##### **Promotion:**

**Advertising variables:** Newspapers, magazines, trade publications, television, radio, telemarketing, direct mail, internet, special promotions (sales, coupons, contests), outdoor ad and/or signage, advertising theme—testimonial, comparison, informative, humorous, etc., overall evaluation. (6 variables, maximum score of 30)

**Personal selling variables:** Approaching the customers, helpfulness, presenting product/service, making the sale, knowledgeable, art of listening, verbal/non-verbal cues, general appearance of staff, overall evaluation. (8 variables, maximum score of 40)

##### **Summary rating:**

**Overall marketing strategy evaluation:** addition of the overall rating in the categories.

**Table 2**

### **Summary of Restaurant Chains Marketing Strategy Ratings**

Marketing Strategy Variable Ratings	NY/Vermont N=12		Quebec N=12	
	Mean*	%**	Mean*	%**
Product Variety (30)	24.01	80.0%	23.17	77.2%
Services (35)	28.37	81.1%	27.74	79.3%
Location (30)	23.83	79.4%	23.77	79.2%
Establishment Design (55)	43.41	78.9%	43.04	78.3%
Price (25)	16.44	65.7%	15.50	62.0%
Promotion (30)	21.23	70.8%	17.66	58.9%
Personal Selling (40)	31.15	77.9%	31.33	78.3%



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<b>Overall Marketing Strategy (245)</b>	<b>188.44</b>	<b>76.9%</b>	<b>182.21</b>	<b>74.4%</b>
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\*Mean: Average of the sum of ratings for all variables in the category.

\*\*%: The mean results are represented as a percentage of the maximum score that could be achieved for the variable category.

**Table 3**

**Comparison of Quebec and New York/Vermont Restaurant Chains on Marketing Strategy Variables Ratings**

	New York/VT		Quebec		Overall Sample	
<b>Variable</b>	Mean	Stan. Dev.	Mean	Stan. Dev.	Mean	Stan. Dev.
<b>Product:</b>						
Product line	4.1167	0.8348	<b>4.4167</b>	0.6686	4.2917	0.7506
Assortment	4.1667	0.9374	<b>4.4167</b>	0.5149	4.2917	0.7506
Sizes	<b>3.9170</b>	1.5050	3.6670	1.3030	3.7920	1.3820
Quality	3.9170	0.6690	3.7500	1.2150	3.8333	0.9630
Brands	<b>3.8333</b>	1.1934	3.5000	1.5667	3.6667	1.3726
Special features	<b>4.0000</b>	0.8528	3.4167	1.3114	3.7083	1.1221
<b>Service:</b>						
Guest Services	4.0000	1.1300	3.9200	1.0800	3.9600	1.0800
Customization	4.1667	0.8348	4.0000	1.0444	4.0833	0.92861
Credit	4.8333	0.5774	4.9167	0.2887	4.8750	0.4484
Computerization	3.4167	1.0836	3.5000	1.1677	3.4583	1.1025
Hours	4.1667	1.0298	4.0633	1.0836	4.1250	1.0347
Guarantees	3.5833	1.6213	3.6667	1.3027	3.6250	1.4389
Satisfaction	<b>4.1667</b>	0.9374	3.6666	1.3707	3.9167	1.1765
<b>Place-Location</b>						
Visibility	3.9167	0.9962	4.1667	1.0299	4.0417	0.9991
Site evaluation	4.1667	0.6667	4.3333	0.7785	4.3750	0.7109
Appearance	<b>3.8333</b>	1.1146	3.5833	1.2401	3.7083	1.1607
Parking	<b>4.2500</b>	1.2154	3.5833	1.3114	3.9167	1.2825
Building type	3.8333	1.1934	3.8333	1.1934	3.8333	1.1672
Accessibility	3.8333	1.4668	<b>4.2500</b>	0.8660	4.0417	1.1971
<b>Place-Atmosphere:</b>						
Layout	3.8300	0.8300	4.0000	1.1300	3.9200	0.9700
Scent	<b>4.4200</b>	0.7900	4.0000	1.2800	4.2100	1.0600
Lighting	4.2500	0.9653	4.2500	1.2881	4.2500	1.1132
Color	3.9166	0.7929	<b>4.5000</b>	0.6742	4.2083	0.7790
Music	3.7500	1.1382	3.6660	1.7233	3.7083	1.4289
Noise	3.8333	1.0300	3.917	0.9000	3.8750	0.9470
Signage	<b>3.7500</b>	1.2154	2.6667	1.3707	3.2083	1.3825
Fixtures	4.0833	1.2401	4.0833	0.793	4.0833	1.0818
Cleanliness	4.0000	0.7386	4.2500	1.0553	4.1250	0.9988
Crowdedness	3.5000	1.1677	3.5000	1.3817	3.5000	1.2511
Disable access	4.0833	1.5050	4.1666	1.0298	4.1250	1.2619
<b>Price:</b>						
Price level	3.8333	0.8348	3.9166	1.1066	3.8749	1.4435

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Competitive	<b>4.0833</b>	0.9003	3.6833	0.6685	3.8333	0.8165
Group discount	2.5000	1.4459	2.4167	1.5642	2.4583	1.4738
Coupons	<b>3.6667</b>	1.4355	2.5833	1.3114	3.1250	1.4540
Value bundling	2.3636	1.3618	<b>2.9091</b>	1.5783	2.6364	1.4653
<b>Promotion-Ad:</b>						
Print ads	<b>2.7500</b>	1.3568	2.5000	1.3143	2.6250	1.3126
Broadcast ads	2.9166	1.5054	2.7500	0.9653	2.8333	1.2395
Other ads	<b>4.2500</b>	0.8666	3.3333	1.1547	3.7917	1.1025
Special promos	<b>3.9167</b>	1.2401	2.5833	1.2401	3.2500	1.3909
Outdoor sign	<b>3.1667</b>	1.4668	2.5833	1.4433	2.8750	1.4540
Ad theme	4.1666	0.8348	3.9166	0.7929	4.0416	0.8064
<b>Promotion-Selling:</b>						
Approach	<b>4.0833</b>	1.1164	3.6666	1.3027	3.8750	1.2269
Helpfulness	4.0833	0.7929	4.0000	1.0446	4.0417	0.9079
Food presentation	<b>4.3333</b>	0.7785	4.0000	0.9535	4.1666	0.8681
Making a sale	3.5833	1.2401	3.5000	1.0871	3.5417	1.1413
Knowledge	4.0000	0.8528	4.0833	0.9003	4.0417	0.8587
Listening	3.8333	1.1934	4.0000	1.3484	3.9166	1.2482
Nonverbal cues	3.4167	1.4433	<b>3.7500</b>	1.4223	3.5833	1.4116
Appearance	3.8333	1.3371	<b>4.3333</b>	0.8876	4.0833	1.1389

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# **COUNTRY AND FIRM LEVEL ENVIRONMENTAL SUSTAINABILITY IN LATIN AMERICA, THE MIDDLE EAST, AND NORTH AFRICA : THE PIVOTAL ROLE OF THE UN GLOBAL COMPACT AND GRI INITIATIVES**

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## **Abstract**

The paper examines and describes the UN Global Compact and the Global Reporting Initiative trends at a national level and at a firm level as related to environmental sustainability in selected Latin American, Middle East & North Africa (MENA) and Gulf countries. Composite indexes such as the Human Development Index, the Ecological Footprint Index and Biocapacity ratios provide a snapshot of a country's environmental sustainability level over time. Firm level sustainability is based on a qualitative analysis of companies using the GRI framework and UN Global Compact participation. At the national level, all the selected countries, except Argentina, do not meet the environmental sustainability criteria. However, despite the lack of integration between initiatives proposed by different institutions, firm level sustainability trends are positive and encouraging, albeit not sufficient. The need of a concerted effort to align different organizations and institutions regarding sustainability initiatives in the studied regions is apparent. The synergies between these initiatives are also explored.

**Keywords :** Environmental sustainability, Global Reporting Initiative (GRI), Latin America, Middle East & North Africa, Gulf countries, multinational enterprises (MNEs), UN Global Compact, Human Development Index (HDI), Ecological Footprint Index (EFI) and Biocapacity ratio.

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### **Introduction**

While the world is currently grappling with the COVID-19 pandemic, countries and business are facing more scrutiny regarding their accountability and transparency in terms of how sustainable policies, initiatives and practices meet the challenges the pandemic has brought to light. The strength of the sustainable development concept is that it encompasses all economic activities in the context of a finite environment. A necessary condition for sustainable development is that the regeneration of raw materials and the absorption of waste are kept at ecologically sustainable levels (WCED, 1987).

### **Latin America**

In response to the international commitment to sustainable consumption and production, Latin America and the Caribbean developed a regional strategy of sustainability based on changes in production and consumption patterns. The five priority programs for sustainable consumption and production common to the countries are summarized in Table 1.

**Table 1.** Latin America and the Caribbean: Priority Sustainable Consumption and Production Programs

<b>Program</b>	<b>Brief summary of policies and measures</b>
1. Policies and national strategies for sustainable consumption and production	<ul style="list-style-type: none"><li>• Integration and coordination of sustainable consumption, production in policies, and development strategies;</li><li>• Strengthening the provision of information, education and training to the population;</li><li>• Quantifying of the costs and benefits associated with implementation of sustainable consumption and production in national and sub-regional initiatives;</li><li>• Promotion of corporate social responsibility.</li></ul>
2. Improvement of the productive sector, small and medium sized enterprises (SMEs)	<ul style="list-style-type: none"><li>• Prioritization of sectors at the sub-regional level;</li><li>• Creation or strengthening of mechanisms and economic tools that promote the sustainability;</li><li>• Definition of specific indicators of sustainable consumption and production.</li></ul>
3. Sustainable public procurement (SPP)	<ul style="list-style-type: none"><li>• Establishment of high-level political leadership for</li></ul>

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	the promotion of sustainable public procurement; <ul style="list-style-type: none"><li>• Establishment of a multi-sectoral mechanism that promotes participation, evaluation and monitoring of sustainable public procurement;</li><li>• Adaptation and application of policies that promote a sustainable supply of goods and services at prices accessible for all;</li></ul>
4. Sustainable lifestyles	<ul style="list-style-type: none"><li>• Active promotion of the inclusion of education about sustainable consumption into the education curricula;</li></ul>
5. Information network on SCP	<ul style="list-style-type: none"><li>• Strengthening of the regional information network on sustainable consumption and production.</li></ul>
Source: Third Regional Implementation Forum on Sustainable Development in Latin America and the Caribbean (ECLAC, 2018).	

The Forum of the Countries of Latin America and the Caribbean on Sustainable Development is the result of the leadership and political commitment shown by the countries of the region towards the 2030 Agenda and its 17 Sustainable Development Goals (SDGs) (ECLAC, 2018). One of the challenges to achieving the 2030 Agenda that the region faces is the need for information available to produce the global SDG indicators. The availability of indicators still varies widely among countries and among sub-regions in Latin America and the Caribbean. The following six South American countries are considered in this study: Argentina, Brazil, Chile, Colombia, Mexico, and Peru.

### **Middle East & North Africa (MENA) and Gulf countries**

There are multiple definitions regarding which countries constitute the MENA region. For this study, selected countries located in three sub-groups are considered: the Mashreq region: Egypt, Jordan, Israel and Lebanon; the Maghreb region: Morocco. These two regions will be designated as the MENA countries in this study. The third region is comprised by the Gulf Cooperation Council Countries: Bahrein, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates or Gulf countries in this study.

The MENA and Gulf countries are the most water-scarce in the world. Due to population growth rates, rapid urbanization, improved standards of living and increased frequency of droughts in recent decades, water

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demand has been increasing rapidly, surpassing the region's supply capacity (Abumoghli & Goncalves, 2020). Fossil fuel based energy sectors are facing numerous challenges that remain difficult to solve despite technological advancements. The Gulf Countries supply about 70% of the world's fossil fuels. Thus, most of these countries are dependent on their oil and gas-based economies. The Gulf region has extreme temperature changes, but its modernization has occurred at a faster pace than the Middle East and North Africa due to economic and political stability. In recent years, these regions have attempted to streamline their sustainability approach in the construction industry. They have also tried to setup a holistic framework that reduces the consumption of energy, water, and other natural resources. Regional corporate social responsibility programs have increasingly been integrated to sustainability concepts (Shareef & Altan, 2016).

However, studies show that the majority of the MENA and Gulf countries are not able to structurally formulate national communication policies and programs. Effective policy-making requires the flow of information in a timely fashion. Some countries are not open enough in terms of disclosing their environmental status. In addition, information disclosed by most of the countries tends to be subjective in nature, which makes it difficult to understand and interpret. The research also shows that some countries are not explicit about their current actions and future strategies for adaptation and mitigation of climate change. Another challenge, particularly in Gulf countries is the lack of environmental and sustainability issues awareness, in spite of the high levels of education as measured by the Human Development Index (HDI). In Saudi Arabia, Qatar and the UAE awareness levels seem to be higher than in other countries, but their water consumption per capita per day significantly exceeds the world's average, which is problematic. Finally, although green building codes and rating systems have been implemented, dealing with the existing building stock that was constructed before these codes came into force is a challenge (Issa & Al Abbar, 2015; Rahman & Miah, 2016; Shareef & Altan, 2016).

This study examines and describes the trends in country and firm level sustainability. Country level sustainability is determined using composite indexes such as the Human Development Index (HDI) and the Ecological Footprint Index (EFI) to Biocapacity ratio. Firm level sustainability is based on a qualitative analysis of companies using the Global Reporting Initiative (GRI) framework as well as United Nations Global Compact (UNGC) participation. The following literature review provides a review of the underlying theories about sustainability assessment as well as it describes current environmental sustainability assessment frameworks.

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### **LITERATURE REVIEW**

Most commonly, the three principal components of sustainable development are economic growth, social equity and environmental protection. These three components are also known as the triple bottom line or TBL. The economic component is based on the principle that the well-being of a society should be maximized while poverty is eliminated through the efficient use of natural resources. The social component is concerned with issues related to the general welfare of society, access to basic health and education services, standards of security and respect for human rights. The environmental component is concerned with the conservation and enhancement of the physical and biological resources and ecosystems (Pope, Annandale, & Morrison-Saunders, 2004; UNGC, 2014b).

Finding the appropriate balance between the competing demands on natural and social resources without slowing down economic progress has become a daunting task for businesses and governments alike. Considering only one of the components of sustainable development at a time may lead to errors in judgment and unsustainable outcomes. Focusing only on profit margins has led to environmental damages with negative consequences for society. The interconnected and interdependent nature of sustainable development, therefore, requires to think beyond geographical and institutional borders in order to coordinate strategies and make good decisions (Mishra, 2020; Strange & Bayley, 2008).

### **Sustainability Assessment**

There is an ongoing debate about sustainability assessments. However, the consensus about sustainability assessments is that any sound assessment should include the total integration of economic, environmental, social, and institutional issues; careful consideration of short-term and long-term consequences of current actions; awareness of the uncertainty of the effects of current actions; and public engagement (Gasparatos, El-Haram, & Horner, 2007; Gasparatos & Scolobig, 2012; Hacking & Guthrie, 2008).

The challenge of making sustainable development operational is the ability to evaluate and manage at a macro level the complex interrelationships among economic, social and environmental objectives. Sustainability assessment is increasingly viewed as an important tool to aid in the widespread shift towards sustainability. However, there are still a few examples of effective sustainability assessment processes implemented so far. Many of the existing assessment frameworks are examples of integrated assessments directly derived from the Strategic Environmental Assessment (SEA) and the Environmental Impact Assessment (EIA) frameworks which incorporate economic, environmental and social considerations. These integrated assessment processes



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usually either try to find ways to minimize unsustainability, or attempt to achieve TBL objectives (Bell & Morse, 2018a, 2018b; Gasparatos et al., 2007; Gasparatos & Scolobig, 2012; Spangenberg, 2016).

In order to measure the progress towards sustainable development, it is necessary to identify operational indicators that provide manageable and accurate information on economic, environmental, and social conditions. A review of the consistency and meaningfulness of many sustainable indicators, indicated that the Human Development Index (HDI) and the Ecological Footprint Index (EFI) are both concise and transparent. Nonetheless, the study also revealed that many other indicators do not always comply with fundamental scientific requirements such as the technical aggregation method, normalization, and weighting of variables (Böhringer & Jochem, 2007; Hák, Janoušková, & Moldan, 2016; Liu, Brown, & Casazza, 2017; Parris & Kates, 2003).

The general conclusion regarding the use of indicators and indices is that they can be powerful tools only if used appropriately. Composite indicators may give ambiguous and unreliable information if they are poorly constructed or misinterpreted. The lack of a clear understanding of how the indicators are developed and what information they convey is critical for policy-making decisions using such indicators. The incorrect interpretation of index results may result in flawed policy decisions that could lead to the increase of economic disparities, promote environmental damage, and even decrease the possibilities for long-term sustainability (Golusin & Munitlak Ivanovic, 2009; Liu et al., 2017; Mayer, 2008; Siche, Agostinho, Ortega, & Romeiro, 2008; Singh, Murty, Gupta, & Dikshit, 2009).

### **Criteria for environmental sustainability**

The World Bank's definition of environmental sustainability is the starting point of all the existing indicators that measure environmental sustainability as well as the basis of many governmental policies and firm level initiatives. Three UNGC principles specifically refer to the integration of the principles of environmentally sustainable development into business policies and programs to reverse and prevent the loss of environmental resources (UNGC, 2014b).

The Human Development Index (HDI) created by The United Nations Development Programme (UNDP) is a composite index commonly used as a proxy metric to measure the progress towards human development goals because the index combines conditions of longevity, health, education, and economic well-being of a population. Countries with HDI scores of 0.80 or higher are considered to have very high human development.

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Countries with HDI scores between 0.80 and 0.70 are considered to have high to medium development (UNDP, 2018).

The HDI does not include an environmental component. Thus, the HDI alone is not sufficient to determine environmentally sustainable development. The Ecological Footprint Index (EFI) measures the regenerative capacity of the biosphere used by human activities. A country's ecological footprint is the total area including infrastructure required to produce everything a population consumes and absorb the waste it generates. On the other hand, Biocapacity measures the productive capacity and the ability of the biosphere to provide biological resources and services for humans. Both the EFI and the Biocapacity are measured in global hectares ("Global Footprint Network," 2020).

According to Moran, Wackernagel, Kitzes, Goldinger and Boutaud (2008) the comparison of the EFI to Biocapacity is a useful indicator of ecological sustainability. The environmentally sustainable development of nations can be examined in terms of two dimensions: the HDI as an indicator of development and the EFI to Biocapacity ratio as an indicator of human demand on the biosphere. In addition, they argued that HDI scores of no less than 0.8 ( $HDI \geq 0.8$ ) and an EFI to Biocapacity ratio of less than 1.0 ( $EF/Biocapacity \leq 1.0$ ) is the minimum requirement for environmentally sustainable development that is globally replicable. Moran et al. (2008) used this methodology to survey 93 countries. They found that despite increased global adoption of sustainable development policies only a handful of countries met both minimum requirements.

A large body of literature has examined the strengths and shortcomings of the Ecological Footprint approach. Yet despite acknowledged limitations, the EFI is one of the most commonly used biophysical indicators for comparing present aggregate human demand on the biosphere with the Earth's gross ecological capacity to sustain human life (Chambers, 2001; Kitzes et al., 2009; Lin et al., 2018; Monfreda, Wackernagel, & Deumling, 2004; Wackernagel, Hanscom, & Lin, 2017). This methodology was used to examine whether selected Latin American, MENA and Gulf countries meet the minimum requirements for environmentally sustainable development.

### **The Global Reporting Initiative**

At a firm level, a lot of research has been devoted to understand the factors that determine the incidence of sustainability initiatives in different countries as well as the relationship between the firm and its stakeholders

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regarding sustainability. The Global Reporting Initiative (GRI) framework for measuring sustainability has emerged as the global standard. The GRI is a not-for-profit, network-based organization that enjoys [strategic partnerships](#) with, among others, the [United Nations Environment Programme](#) (UNEP) and the [UNGC](#). Studies have found that, since the GRI's establishment in 1997, enterprises have increased their participation in the GRI sustainable reporting standards (GRI, 2020; Marimon, Alonso-Almeida, Rodríguez, & Alejandro, 2012; Perez-Batres, Miller, & Pisani, 2010; Rimmel, 2020; Sethi, Rovenpor, & Demir, 2017; Simmons Jr, Crittenden, & Schlegelmilch, 2018).

The GRI reporting framework outlines the principles and performance indicators to measure and report their economic, environmental, and social performance. A sustainability report based on the GRI framework provides a relatively accurate picture of the sustainability performance of the reporting organization. The sustainability reports must disclose the outcomes and results that occur within the annual reporting period. Since different companies and organizations follow the same framework, these reports can be very useful in benchmarking and assessing the sustainability performance of performance standards, norms, codes, laws and voluntary initiatives. In addition, the organization's performance can be tracked over time as well as compared with other organizations and companies in a similar category. Another advantage of the GRI reporting framework is that it applies to any size company and it is independent of the location and the sector of the company. In other words, small companies can use the framework as well as companies with geographically dispersed operations (GRI, 2020; Rimmel, 2020).

### **United Nations Global Compact Sustainability Initiative**

The United Nations Global Compact (UNGC) is a strategic policy initiative for businesses that are committed to align their operations and strategies with universally accepted principles in the areas of human rights, labor, environment and anti-corruption. Since its official launch in July of 2000, the initiative has grown to more than 10,000 participants (Brown, Clark, & Buono, 2018; Dernbach, 1998; Rasche, 2020; UNGC, 2014a, 2020).

The UNGC launched a Sustainability Coalition with the World Business Council for Sustainable Development (WBCSD) and the Global Reporting Initiative (GRI). This coalition aims to promote and support corporate commitments and actions that advance the UN goals elaborated in the *Post-2015 Business Engagement Architecture* report (UNGC, 2013). The very distinct nature of these organizations presents the opportunity for building on complementary strengths and creating synergies: the UNGC being an open action and learning

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network and the GRI being the recognized global standard on sustainability reporting (UNGC, 2014a).

### **METHODOLOGY**

To assess environmental sustainability at the country level, the methodology proposed by Moran et al., (2008) was followed. The changes in the HDI and EFI to Biocapacity ratio scores for selected Latin American, MENA and Gulf countries were calculated based on the available data.

#### **Data**

Most of the EFI and Biocapacity scores are available through a free license at [www.footprintnetwork.org](http://www.footprintnetwork.org). However, complete EFI and Biocapacity time series have to be purchased. HDI scores and country rankings are released to the public each year (UNDP, 2018).

A database of all the companies and GRI filings can be directly obtained from the GRI website (GRI, 2020). The country of origin of the companies, the industrial sector, the size of the company and links to the sustainability reports are also available. The GRI database lists the country of origin of the companies and the operating region. For example, a previous study indicated that in Central America, firms in the chemical manufacturing sector had the highest incidence of GRI filings companies, followed by companies in the advanced manufacturing sector (Frutos-Bencze, 2014).

The searchable UNGC participant database provides the name and type of the organization, the country of origin, and the year the organization began participation. The UNGC participant type classification is slightly different to the GRI reporting categorization. The GRI organization categories are: non-profit organization, private company, public institution, state-owned company and subsidiary. The UNGC participants are classified by organization type as academic, local and global business associations, cities, foundations, local and global non-governmental organizations (NGOs,) public sector organizations, private companies and SMEs. For this study only private companies and SMEs were considered.

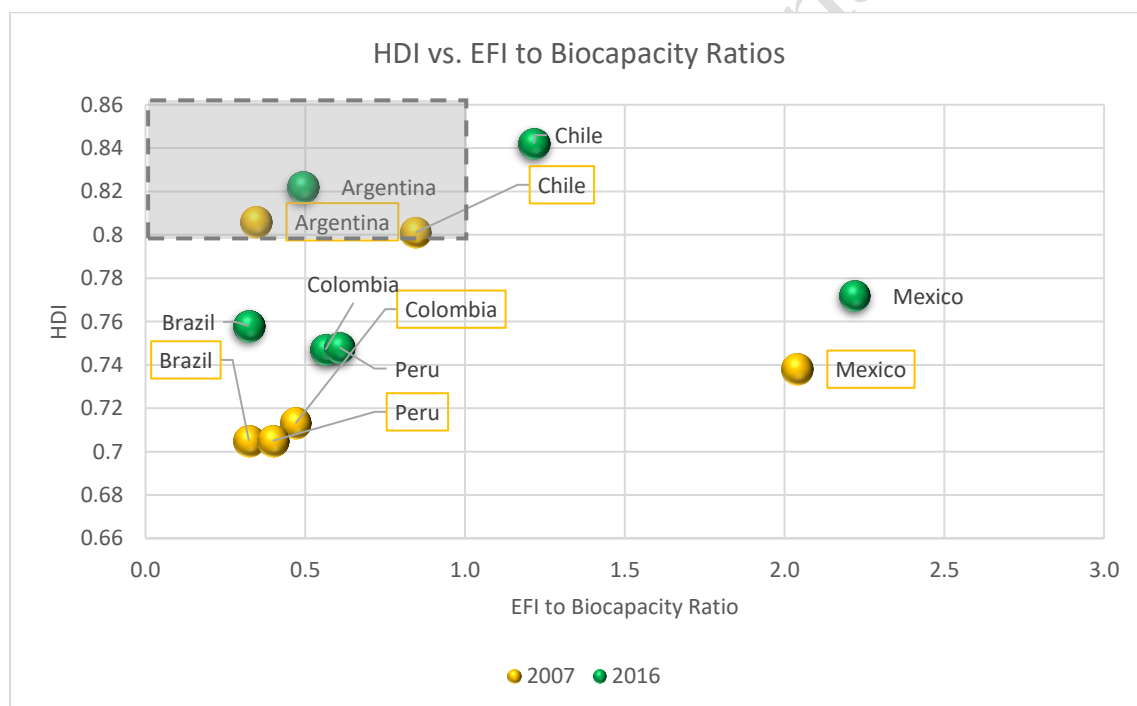
### **DISCUSSION OF RESULTS**

As described so far, environmental sustainability issues are many and far reaching, and this study does not seek to address the entire scope of the subject. However, as economic integration has increased, what happens in one country or in an economically integrated region often impacts other countries or economically integrated regions.

### Country Level Sustainability

The EFI to Biocapacity ratios were calculated for selected Latin American, MENA and Gulf countries for the years 2007 and 2016 due to data availability. Figure 1 shows the HDI versus EFI to Biocapacity ratio for selected Latin American countries for the years 2007 and 2016. The grey box area above 0.8 in the HDI scale and below 1.0 in the EFI to Biocapacity ratio scale represents the value range a country should have in order to be considered an *environmentally sustainable nation*. In other words, the HDI value of the country should be 0.80 or higher, and the EFI to Biocapacity ratio value should be less than 1.0 (Moran, Wackernagel, Kitzes, Goldfinger, & Boutaud, 2008).

In Figure 1, the lighter (yellow) color spheres represent the HDI vs. EFI to Biocapacity ratios for each country for the year 2007. The slightly darker (green) color spheres represent the HDI vs. EFI to Biocapacity ratios for each country for the year 2016. Figure 1 shows a general HDI increasing trend. With the exception of Brazil, where the EFI to Biocapacity ratio remained the same for 2007 and 2018, the rest of the selected Latin American countries display a deterioration in the EFI to Biocapacity ratio.



**Figure 1.** HDI versus EFI to Biocapacity ratios for selected Latin American countries

Argentina is the only country that would be considered environmentally sustainable based on Moran et al.

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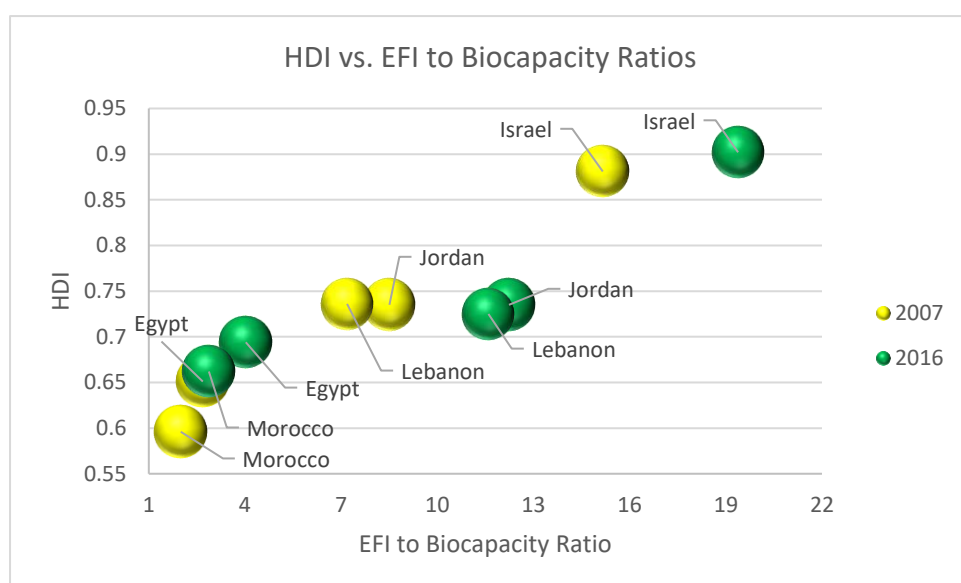
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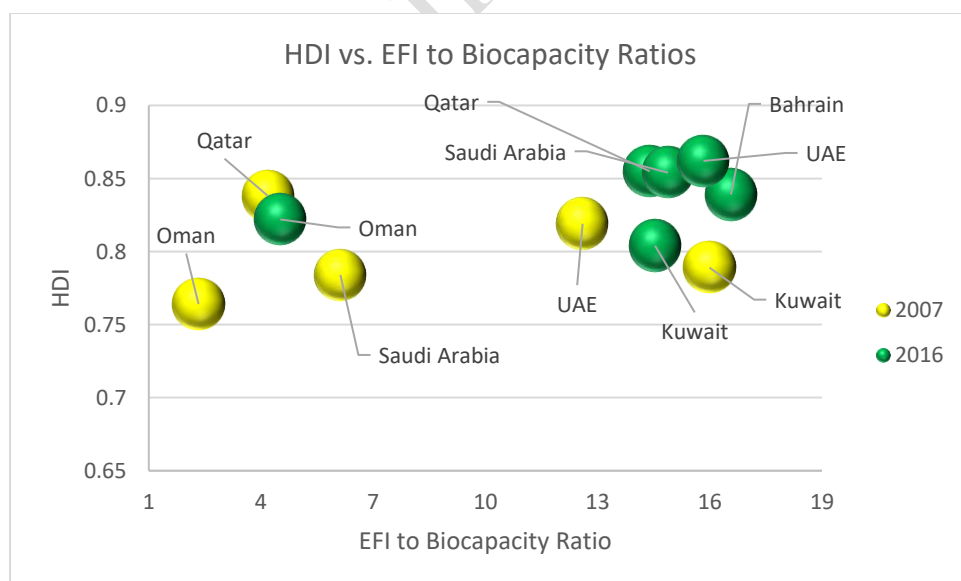
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assessment methodology. The HDI in 2007 and 2016 was higher than 0.8 and the EFI to Biocapacity ratio was below one in 2007 and 2016.

The EFI to Biocapacity ratios in Figures 2 and 3, are above 1.0, and thus the grey box that represents environmental sustainability is not shown in the figures. In other words, based on the Moran et al. assessment methodology, the selected MENA and Gulf countries are not environmentally sustainable nations. Similarly to the Latin American countries, the tendency of the EFI to Biocapacity ratios is to increase for all countries.



**Figure 2.** HDI versus EFI to Biocapacity ratios for selected MENA countries



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**Figure 3.** HDI versus EFI to Biocapacity ratios for selected Middle East countries

The observed trends in Figures 1, 2 and 3 are consistent with Moran et al. (2008) findings which indicate that national and regional trends are almost all moving away from environmentally sustainable development. However, some countries with a lower HDI such as Brazil, Colombia and Peru experienced gains in human development without substantially increasing their EFI to Biocapacity ratios. Higher level development income countries, such as Qatar and Israel exhibit a significant trend away from environmental sustainability from 2007 to 2016. Generally speaking the ecological footprint per capita would be reduced if reductions in resource use are achieved either through decreasing consumption or by improving efficiency of production. Even though this methodology cannot be used to determine the specific impact of UNGC Sustainability and GRI initiatives in each country, the analysis is useful in determining national benchmarks and for monitoring these benchmarks over time. Inferences on how specific initiatives are impacting sustainable development based on these results should not be made. However, these findings combined with firm level analysis can provide a more accurate picture of the situation in the regions. The following section will look at the landscape of sustainable initiatives at a firm level and how businesses have been affected in Latin America, MENA and Gulf countries.

### **Firm Level Environmental Sustainability**

Since companies usually provide the year in which a GRI report is filed, it is possible to determine when the company started using the framework. Based on the yearly information, a slow increasing trend of GRI reporting in the sample is observed. This increasing trend of GRI filing of domestic businesses in the sample mirrors the worldwide trend.

Figures 4, 5 and 6 show the trends and distribution of enterprises based on GRI sustainability report filing in the studied regions. The filings are increasing year to year. It is possible that due to COVID-19, a stabilization in the filings will be observed in future filings.

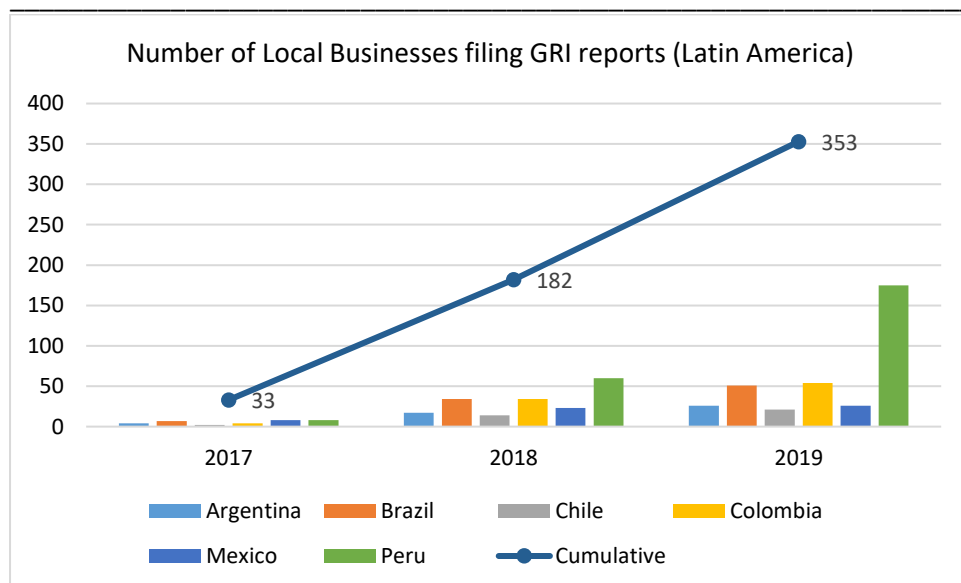


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**Figure 4.** Number of GRI filing enterprises in the sample of Latin American countries

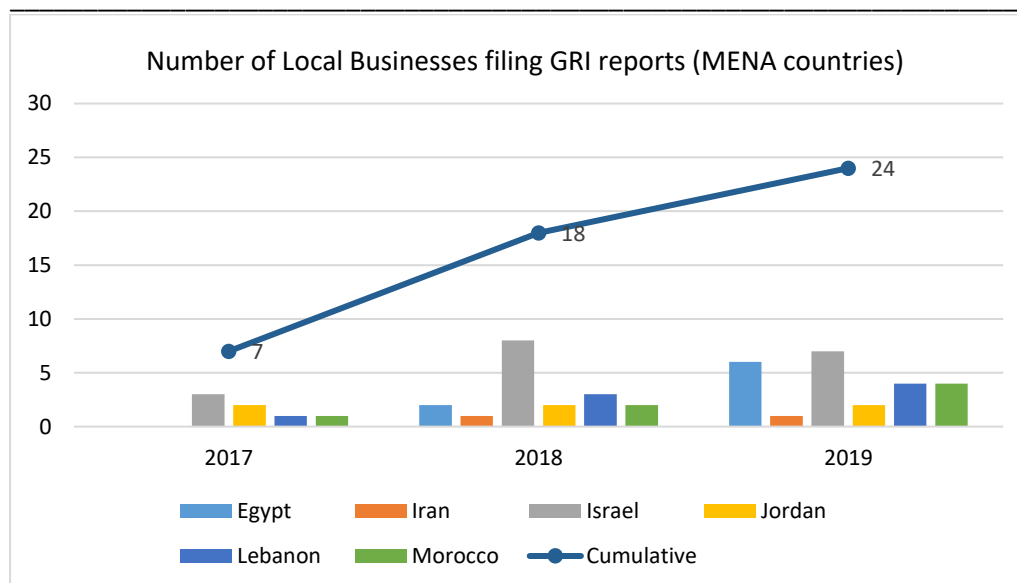
Figure 5 shows the GRI filing trends of local businesses for the selected MENA countries, and Figure 6 shows the GRI filing trends of local businesses for Gulf countries. In these countries the urgency of addressing climate change is slowly driving business and investors to put sustainability, environmental, social and governance practices at the heart of their business strategies. For example, some Gulf countries have expedited investments in renewables including solar and waste to energy. In 2019, Saudi Arabia implemented a \$28 billion renewable energy development program. There are several other recent efforts in the UAE and the wider region that have sought to tackle the broad range of SDGs. However, there's still a significant gap that financial institutions and government authorities must work to address through the adoption of an entirely sustainable agenda (Kaushal, 2020; van der Lugt, 2017). The positive trend in GRI filings has not offset the deterioration in the EFI to Biocapacity ratios for any of the countries.

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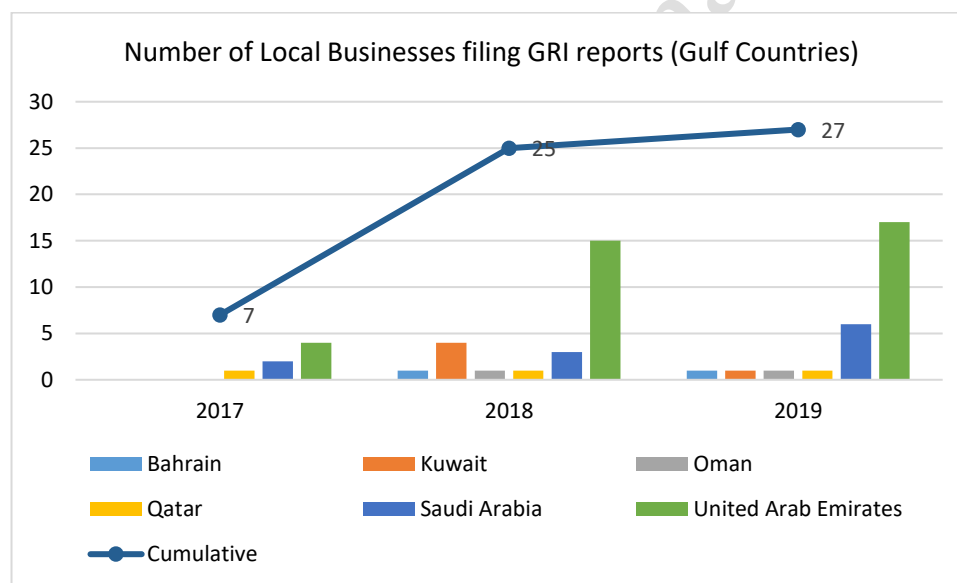
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**Figure 6.** Number of GRI filing enterprises in the sample of the MENA region



1.

**Figure 5.** Number of GRI filing enterprises in the sample of Gulf countries

### **UN Global Compact Sustainability Initiative**

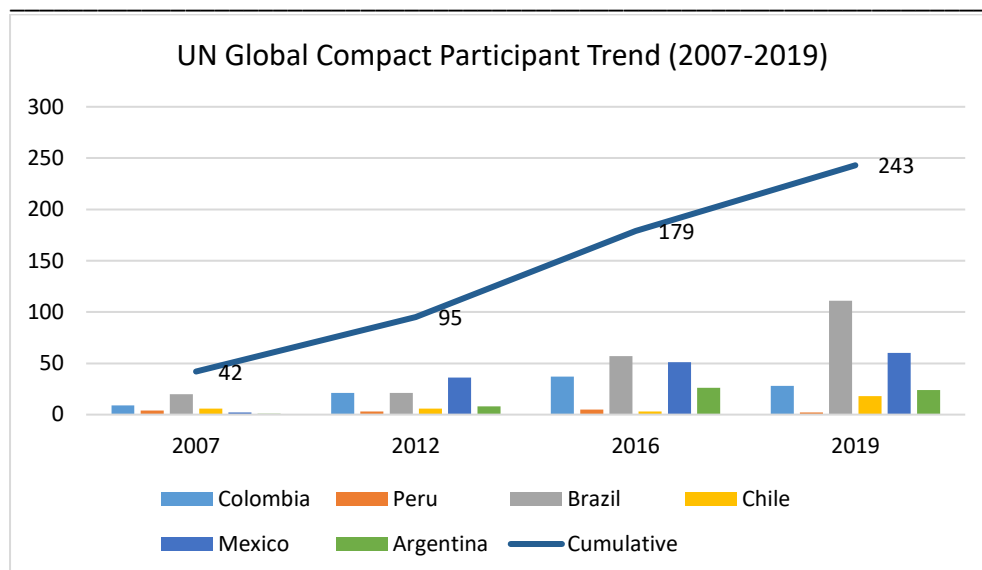
As of 2019, the selected Latin American countries had 243 participants in the private company and SME categories. Brazil is leading the trend. The breakdown per member country, yearly totals and cumulative total are presented in Figure 7.

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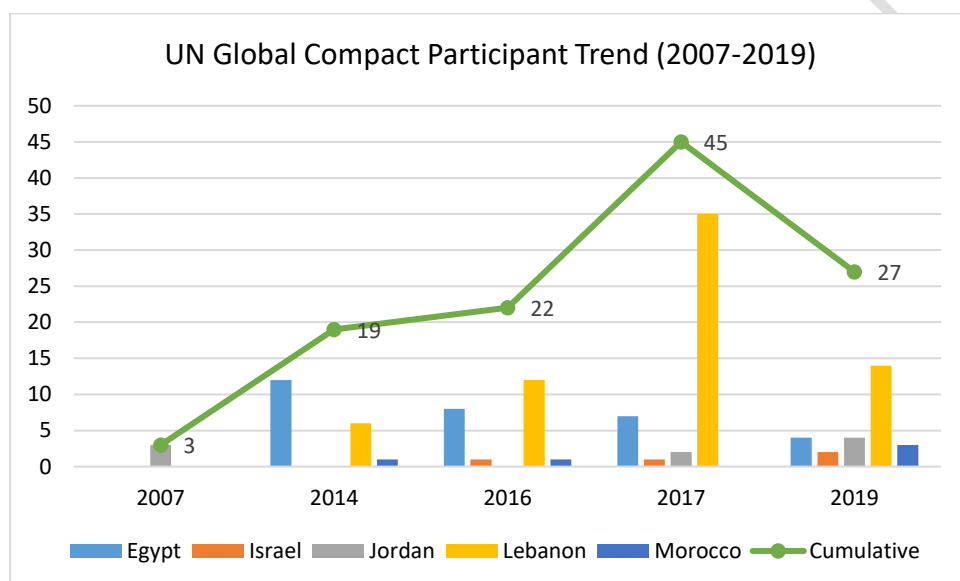
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**Figure 7.** Number of UN Global Compact Participants in the selected Latin American countries



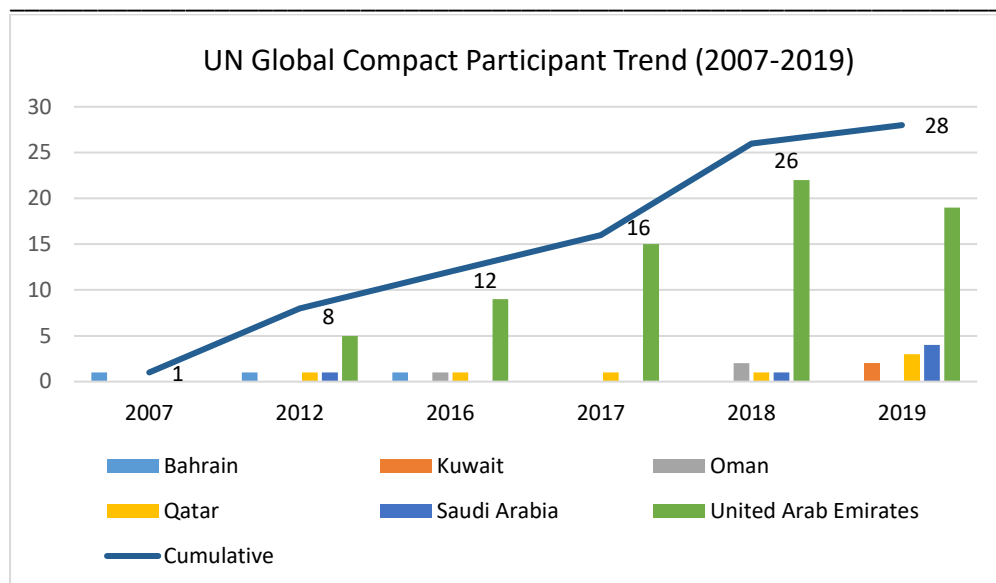
**Figure 8.** Number of UN Global Compact Participants in the selected MENA countries

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**Figure 9.** Number of UN Global Compact Participants in the selected Gulf countries

Despite the observed positive trends in the sample for all regions, the MENA and Gulf countries are lagging significantly behind Latin American. Similarly to GRI filings, the positive trend in UNGC participation does not seem to offset the deterioration in the EFI to Biocapacity ratios for any of the countries studied. Unfortunately according to the 2019 Accenture Strategy-UN Global Compact CEO study on sustainability, sustainability initiatives may have reached a plateau, and the COVID-19 pandemic may exacerbate this lag (Accenture, 2019). Based on this study, the diversified and support services sectors made significant progress in terms of sustainability initiatives in Latin America. In the MENA region the support services, diversified and bank sectors made progress in terms of sustainability initiatives. In the Gulf countries, diversified, construction & materials, and general retailer sectors increased their participation in sustainable activities. Figure 10 shows the industrial sectors that account for at least 6% of GRI filings and UNGC participation.

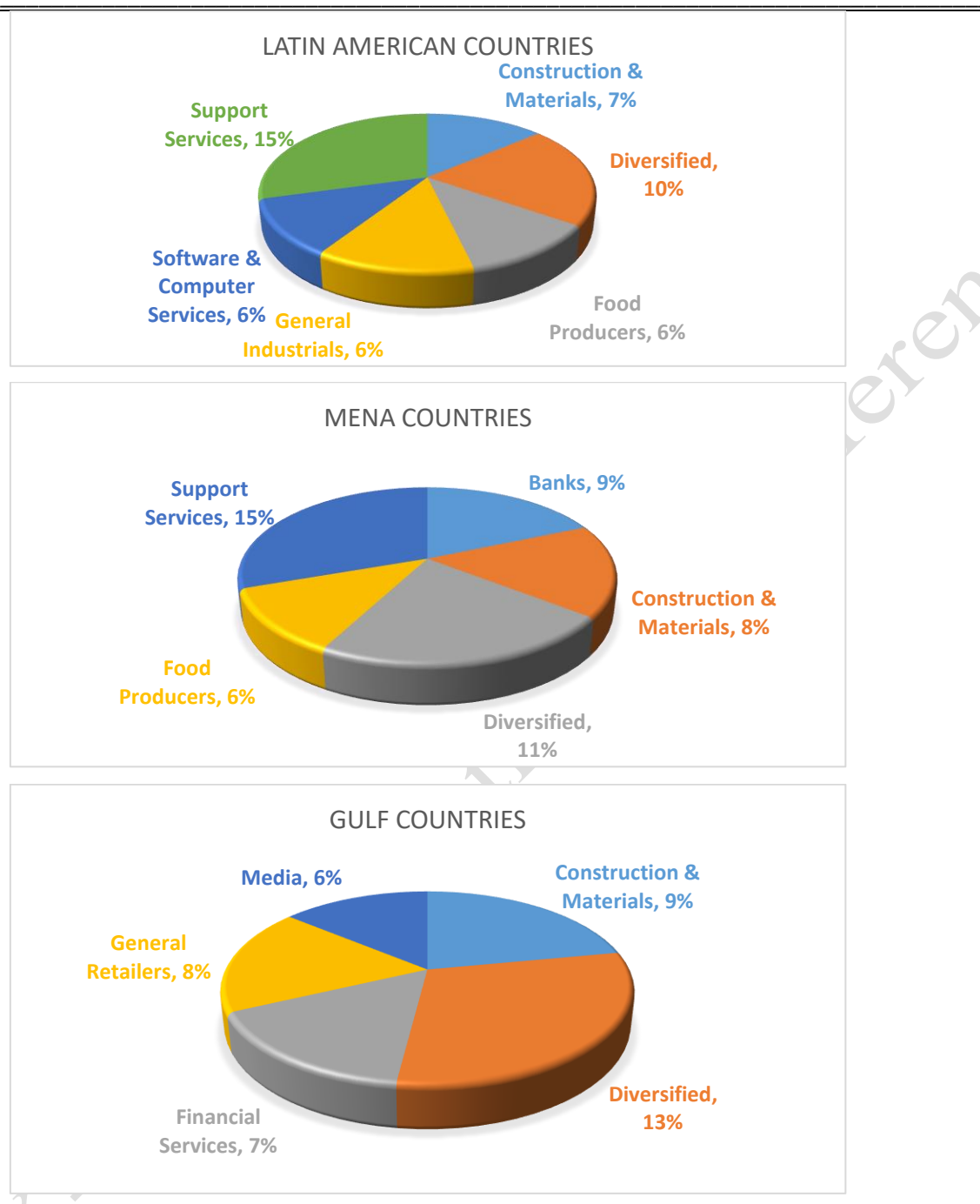
**Figure 10.** Number of UN Global Compact Participants in the selected Gulf countries

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### **Concluions**

In recent decades, the environmental concerns about the earth have significantly increased and are now one of the most serious challenges that affect the quality of life of people. The whole world is affected by environmental degradation, but it occurs quite often that the least privileged populations and poorest countries are the most afflicted. These countries have the fewest resources available to recover from environmental

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damage and to adapt to changing situations.

By comparing the HDI and EFI to Biocapacity ratios and their changes over time we can capture the changes in environmental sustainability and consumption patterns in country. Based on the calculated values for selected Latin American, MENA, and Gulf countries, from 2007 to 2016 the HDI scores generally increased for all countries, but unfortunately the EFI to Biocapacity ratio also increased, except for Brazil where the ratio remained the same. An increase in HDI scores is desirable, but an increase in the EFI to Biocapacity ratio is not.

At a firm level, there is an observable increase of GRI sustainability reporting of local businesses in all regions, albeit the filings in the MENA and Gulf Countries are low in general. Another observable trend is that MNEs are implementing sustainable initiatives locally. These initiatives mirror global corporate sustainability and environmental policies. This is a positive trend that benefits not only these countries in general, but also domestic firms. Although based on the results using Moran et al. (2008) methodology there is a decrease in environmentally sustainable development at the national level, at a firm level, MNEs and SMEs are complying with local environmental regulations and are not lowering neither national nor global environmental standards (if they follow such standards) when they establish operations in the selected countries.

These findings seem to indicate that businesses in general are making progress in embedding sustainability in their operating processes. However, the positive trends in GRI filings and UNGC participation do not offset the deterioration in the EFI to Biocapacity ratios for any of the countries. The active intervention of governments, policymakers, and institutions such as the United Nations is necessary to move beyond the current plateau and continue to enable businesses to pursue the operationalization of sustainable processes. A closer integration of business and such institutions will help to align public policy with sustainability goals at global, national and local levels. Simultaneously, businesses should continue to foster innovation and pursue new technologies that mitigate environmental degradation and lead to environmental sustainability.

The most identifiable components of most sustainability programs are clean production and sustainable consumption. Significant progress has been made in the regions studied concerning initiatives for clean production, especially in activities concerning sustainable public procurement. However, several challenges still remain. The consumers' rationales and the factors that would make it possible to change their consumption patterns are not fully understood. Multi-stakeholder participation (i.e. government, the private sector,

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consumers, universities, NGOs and trade unions, etc.) need to have more opportunities to work together on sustainability issues. SMEs are very important in the region, especially in terms of job creation. Support for SMEs in order to promote practices of sustainable consumption and production are highly recommended. The United Nations Industrial Development Organization (UNIDO), in cooperation with UNEP, has supported the establishment and operation of national centers of clean production in Latin America. Argentina and Brazil reported advances in education on sustainable consumption and production (Jiménez, 2019). Finally, effective education programs for sustainable consumption and production could enhance government and business sustainability programs. The implementation of “green” practices in the construction sector has been a significant issue in all regions, but especially in the MENA region.

The main research limitation for this study was the lack of free access to EFI and Biocapacity data in order to estimate national environmental sustainability for a longer period. In addition, although the research focused on surveying GRI reporting and UNGC sustainability initiatives there are many other entities and institutions that also encourage sustainability which were not included in the study. The study can be expanded in the future to obtain a more comprehensive understanding of environmental sustainability in the regions.

### **Recommendations**

- The research in this study suggests that the ability to quantify the value of sustainability initiatives still needs improvement. Businesses are becoming more aware of the challenges of sustainability and how important it is to measure and manage metrics of waste reduction and mitigation and should continue to turn to innovation and technology to solve those challenges.
- As described throughout the study, there are several sustainability initiatives in the studied region sponsored by different organizations and institutions. The UNGC and the GRI have an established partnership. This collaboration could potentially be expanded and streamlined to increase participation.
- Business leaders should strive to establish a constructive, two-way dialogue with consumers and local communities; regulators and policy makers; investors and shareholders; employees and labor unions regarding sustainable development and business practices. In other words, business leaders and managers should actively engage all stakeholders.
- Finally, business leaders should revisit their business models and value chains to understand the impact of sustainability initiatives across multiple sectors and industries with a system dynamics mindset. Traditional linear business models encourage increased consumption and more waste; moving towards a system economy can have tangible benefits for production costs, the environment and the supply chain.



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### **AN EXAMINATION OF THE GREAT RECESSION: DOES THE UNITED STATES UNEMPLOYMENT RATE AFFECT INDIVIDUALS MENTAL HEALTH?**

**Neeka Asgary**  
Bentley University  
Waltham MA

#### **Abstract**

This paper presents the findings of a statistical regression model between the United States unemployment rate and individuals days of poor mental health. Specifically, the years of the Great Recession of 2007-2009 in the United States are covered, which have not been examined in previous studies. We test the theoretical Model of Health Demand developed by Grossman (1972) and employ 7 million observations from the Center for Disease Control's Behavioral Risk Factor Surveillance System and unemployment rate from the Bureau of Labor Statistics.

Our findings show that given a 1 percent increase of the United States unemployment rate, individuals' poor days of mental health increased by 3.7%. We also found that 46% of this effect can be attributed three variables: employment status, health plan status, and income level. These findings are in line with the Grossman Model of Health Demand, which our model is derived from. Other significant findings include the larger magnitude of the number of poor mental health day increases in married individuals, males, and those with no educational background.

**Keywords:** unemployment rate, health plan status, women's struggles, Grossman Model of Health Demand, education

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### **1. Introduction**

Times of recession are poor on morale. Individuals are losing their jobs, but is it having a significant effect on mental health? In May of 2018, The University of Michigan Health Lab partnered with The Conversation to release an article titled “39% of Americans More Anxious Today Than This Time Last Year.” While the title may have the intention of being eye catching, many sources have begun touching upon this topic, so the overall essence of the title may be true, we are getting more anxious. This is where greater investigation is needed. Within the past year and a half, numerous sources such as Time, American Academy of Pediatrics, Psychology Today, Medical News Today, The New York Times, and so on, are reporting millennials to be the most anxious generation thus far.

As millennials are currently considered to be individuals in the age range of 22 to 37, born in the years 1981 to 1996, defined by the Pew Research Center, they comprise a generous amount of our society, and more importantly, our labor force. As the last of these individuals join the workforce, our poor mental health days have been increasing, as will be discussed later in this report. According to a survey done of over 1,000 adults by the American Psychological Association in 2018, anxious feelings increased the most over the past year in the baby boomer generation (ages 54-72), but millennials were still the most anxious overall. As millennials comprise a significant amount of our population, it is imperative that we investigate further into what is increasing poor mental health days in our society.

I believe we must study this potential connection, as it has only become more prevalent now that researchers have access to data from the Great Recession. With access to this data, we are able to investigate the connection between increases in unemployment rate and increases in the days of poor mental health of individuals in the United States, creating a larger pool of data in the study of our overall increasing anxiety into the future.

### **2. Review of Literature**

In this research project I aim to examine the effects of recessions, specifically those within the past 20 years, on individuals anxiety levels, and more importantly overall poor mental health days, in the United States. I explored all literature in which the effect of unemployment or recessions had an effect on individuals' mental health. In all cases researched, there seemed to be a significant procyclical nature in regards to increasing unemployment rate and therefore, negative effect on an individual's health, even those that remained employed.

As discussed by Professor of Economics Nathan Tefft in the article “Insights on unemployment, unemployment insurance, and mental health,” “a common finding in previous research is the continued procyclical nature of mental health with respect to the unemployment rate” (Tefft, 2011). This holds up in all research we investigated for this report, there has not been an article that has not seen a procyclical relationship between the two variables. While each study reviewed may have used different sources of data or different empirical methods, all findings aligned in the nature of

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the relationship between the two variables. Regardless of measure, the outcome of potential adverse mental health effects were significant in all studies, and my aim is to expand those studies into the view of the milder recession in the early 2000s, as well as the Great Recession from 2007 to 2009.

In Professor Brian Cooper's article "Economic Recession and Mental Health: an Overview," Professor Cooper's first takeaway from his research is "In a globalised world, human health, including mental health, is more and more influenced by man's economic activities and their consequences" (Cooper, 2011, pg. 116). While he then goes on to apply his derivations to psychiatry, he notes that the effect of mental health on suicide risk is just "the tip of the iceberg." As mental health effects become clearer, coupled with the demand for mental health professionals has increased, Cooper's assumption that "effects of the current global economic downturn on population mental health will emerge in the years ahead. Judging from earlier experience of financial crisis in various parts of the world, stresses associated with rising unemployment, poverty and social insecurity will lead to upward trends in many national suicide rates," (Cooper, 2011, pg. 113) has held strong since the publishing of this article in 2011. It has been clear that over this period of time, individuals in the United States have begun to realize the need for mental health work, creating a need for more professionals in the area. It is finally becoming clear, just how pertinent our mental health is to overall health stock, as was theorized by Michael Grossman over 40 years ago. His theory was just that, a theory, which needs further research to back it, and this study hopes to add to that body of research.

While studies of the number of poor mental health day increases in relation to rising unemployment rate in the United States has not been specifically studied, economists such as Aaron Reeves and Christopher Ruhm have investigated "economic suicides." Reeves and colleagues found at least 10,000 additional economic suicides between 2008 and 2010 that were associated with the Great Recession. They used a dummy variable to account for the economic downturn, yielding the estimated excess deaths of 4750 (Reeves et al., 2014).

Christopher Ruhm has conducted much research in the space of positive health connections in individuals during recessions. In 2002, Ruhm found that "a one percentage point fall in the national unemployment rate is estimated to raise total mortality by 0.4 percent" (Gerdtham & Ruhm, 2002, pg. 13). Ruhm found more recently, in 2015, that this relationship has begun to deteriorate, due to both the number of confounding variables in death versus suicides measured in Reeves and colleagues studies', as well as the scope of the study. Anything less than 15 years has been found to be problematic.

One thing that this study hopes to investigate is the approximate time frame, in years, of the lasting effects of this increase in poor mental health days given an increase in the unemployment rate. I am hoping to gain more insight into the amount of time the effects may stay present in individuals, even after the economy has recovered.



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While my own the findings may be similar to previous studies, I plan to use updated data for the entirety of the United States. Especially considering we are almost 10 years out from the end of the Great Recession, it may be clearer to see mental health effects post recession now. As of now, no other study has used individual level data to capture both the milder recession in the early 2000s, and the Great Recession of 2007 to 2009, in the United States. As many of the articles found were from 5 or so years ago, between 2009 and 2013, and were conducted in various European countries, as well as Australia and New Zealand. There has not been a long term study done in the United States to see the potential long term effects on mental health of individuals after the Great Recession, and that is what we hope to achieve in this report.

### **3. Theoretical Model**

The theoretical model that precedes this study is the Grossman Model of Health Demand. This model was laid out by Michael Grossman over 40 years ago, and the theoretical model essentially states this: health stock is both an output of cost of capital, as well as an input of number of healthy days. In this model, mental health is another capital input, like income or health plan status. For example, if an individual were to receive a pay increase, they would move to a higher curve further up and to the right of Figure 1. As a pay increase would be an increase of capital input, that higher curve would then output a higher health stock for the individual. Moving to Figure 2, they would then have a higher increase of health stock, and therefore a greater today healthy days.

In this model, health is produced using inputs such as health plan, mental health, employment status, and income for example, as these are the variables that apply to this study. The increase or decrease of these variables have theoretical applications to the overall health of an individual. Grossman's model is essentially as follows:

$365 \text{ days} - TH \text{ (time invested to improve health)} - TL \text{ (time lost to illness)} = TB \text{ (leisure time)} + TW \text{ (time spent working)}.$

Other variables we are controlling for, such as race and education level, also have theoretical implications in Grossman's model. Education is also highly correlated with income in Grossman's model, which was not specifically investigated in this study. Nevertheless, higher levels of education had a significant inverse relationship with number of poor mental health days, as education level increased, poor mental health days decreased. This was seen significantly in the larger magnitude increase of number of poor mental health days of those with no education, versus the smaller magnitude of individuals whom completed college, given an increase in the United States unemployment rate, which will be discussed in further detail later on in this report.

### **4. Data and Variables**

This study uses twelve total variables, not including additionally defined dummies within qualitative variables. Overall,



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this model has approximately just below 7 million observations. The two main variables that will be investigated are mental health, per the Center for Disease Control's Behavioral Risk Factor Surveillance System, and unemployment rate, per the Bureau of Labor Statistics. Mental health is measured in number of days on which the individual felt their mental health was poor. If the individual did not have any days that month which they felt bad, they would maintain a data value of zero, and if they had any poor mental health days, they would then list that number from 1-30 days of the month.

The majority of variables were pulled from the Center for Disease Control's Behavioral Risk Factor Surveillance System, then year and state fips code were matched in between this data set and the University of Kentucky's Welfare Data, additionally adding unemployment, which is the key independent variable discussed in this research. Individual-level data is used, from the years 1993 to 2015 across all states in the US. Unemployment rate is measured as a percentage of the labor force. Age is another variable defined in this model, measured in years of the individuals life, and also pulled from the Center for Disease Control's Behavioral Risk Factor Surveillance System.

The Behavioral Risk Factor Surveillance System (BRFSS) is the leading telephone survey which collects health-related state data from United States residents. This survey was established in 1984, initially only collecting data from 15 states, reaching all 50 states by 1996 and all territories by 2001. More than 400,000 interviews of adults are completed by the BRFSS each year, making this survey the largest continuously collected health survey system in the world (U.S. Department of Health & Human Services). The two data sets were matched in a many to one merge, combining the data set with number of poor mental health days and all other pertinent qualitative variables with the unemployment rate data, which also included year and state code.

Other relevant variables that have been defined as dummy variables in this study are marital status, education level, sex, year, income level, employment status, state, race, hispanic, and health plan, which will be discussed more in detail further in this report. Each variable in this model was extracted from the Center for Disease Control's Behavioral Risk Factor Surveillance System data, aside from unemployment rate. All of these variables describe the conditions in which the individual presides, and need some need to be initially controlled from in the model. Income level, employment status, and health plan, are not controlled for in my initial model, as they may have an effect on outcomes of the individual's mental health. Each other variable is defined by answer numbers to questions in the survey, for example, sex is defined as 1 for male and 2 for female.

### **5. Empirical Methodology**

In this study, as mentioned previously, we are looking for a potentially significant relationship between an increase in the United States unemployment rate and number of days of poor mental health at an individual level. The basic empirical model built around this study is as follows:

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# of Days of Poor Mental Health =  $B_0 + B_1(\text{Unemployment Rate}) + B_2(\text{Age}) + B_3(\text{Age}^2) + B_4(\text{Male}) + B_5(\text{White}) + B_6(\text{Black}) + B_7(\text{Married}) + B_8(\text{Divorced}) + B_9(\text{Widowed}) + B_{10}(\text{Separated}) + B_{11}(\text{Single}) + B_{12}(\text{No School}) + B_{13}(\text{Elementary}) + B_{14}(\text{Some High School}) + B_{15}(\text{High School Graduate}) + B_{16}(\text{Some College}) + B_{17}(\text{College Graduate}) + B_{18}(\text{Year})$

In further models there is inclusion of individuals employment and health plan status, as well as income level. In another iteration of the model state dummies are also included, to measure for the power of individual state's poor mental health day increases. It is expected that for a one percentage point increase in unemployment rate, there will be a positive increase in the number of poor mental health days. Only linear models will be used in this study, while also including variables such as the age squared to control from any variance and to smooth out the function laid out above.

The majority of variables used in this model are qualitative. Many are used to control and investigate individual factors that we may then draw conclusions from, given they are significant. Aside from unemployment rate and age, the remaining variables used in this model is quantitative, and from those variables we can interpret the differences in number of days poor mental health increased given in specific groups.

We also assumed that increases in the number of poor mental health days would increase with factors such as no education, versus those individuals that have completed college. This was found to be true in our results, and is backed by the lower expendability of individuals with higher education levels. As determined from the Grossman Model of Mental Health Demand, health stock is determined by many factors. Health stock is both an output of the cost of capital, and input of number of healthy days. Like capital, mental health is another input into health stock, and therefore effects number of healthy days output. Other key inputs would be the exact factors we are testing in our second model: employment status, health plan status, and income level. As explained in Grossman's Model (Figures 1 and 2 for reference) as an example, if an individual were to get a raise, their cost of capital would therefore increase, and they would move to a curve farther and higher to the right. This would then increase health stock, and number of healthy days the individual may work.

### **6. Results**

The majority of variables used in this model were proven to be significant. As predicted, both the three sets of factors, employment status, income level, and health plan status, as well as individual state dummies, were significant. We were mindful of the potential effect of these three variables, therefore starting with a base model while also running models to control and look for the effect of such variables.

It was found that if unemployment rate increases by 1%, the number of poor mental health days in a month of an individual rises by 3.7%, all things held equal. This has large implications, as during the Great Recession, the unemployment rate went from a low of 4.4% in March of 2007, to 10% in October of 2009. That is a 5.6% increase in

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the unemployment rate, theorizing a 20.7% increase in the number of poor mental health days over the past 30 days. 46% if the variability of our original model can be accounted for in the three variables defined earlier: employment status, income level, and health plan. The effect of these variables on what we are investigating in this model are affected by the Grossman Model of Health Demand outlined previously. After running out initial model, we ran a model including the dummies for these three variables, and results can be seen in Table 1 (Appendix A) for the variance of this model in comparison to the original. Autocorrelation was adjusted for by clustering panel data with by state. Therefore, it was possible to see the results with and without state significant variables as a part of the regression. By doing so, we were able to have data grouped in our initial regression, and then later were able to look at effects on the most pertinent states.

Something important to note is the status of the job market in these states in 2009. Since the dummy variable that is being dropped is the first state, Alabama, we must investigate the health of their job market during the years of the Great Recession. As determined from the Birmingham Business Journal and Market Watch, Alabama is the state that was hit the worst, and had the worst recovery post Great Recession. According to the work of Brian Thiedea and Shannon Monnat, Alabama was also the state that was predicted to be impacted the most by the country's unemployment rate. 10 years after the end of the Great Recession, Alabama still has less jobs than prior to the Great Recession, at about a 2% deficit in these 10 years. Relative to Alabama, there were states that were doing significantly better than Alabama, such as the District of Columbia and North Dakota. This can be attributed, potentially, to the relatively strong job market in both of these states during the years of the Great Recession. According to the Gallup Job Creation Index, in 2010, North Dakota and the District of Columbia had two of the highest scores, at 29 and 25 respectively, while Alabama had a score of 7 (Jacobe, 2011). North Dakota's job creation advantage lies in their natural resources, and the District of Columbia's is theorized to lie in their large percentage of government workers, as theorized by Gallup.

The only state which had a greater number of poor mental health days than Alabama. On average, an individual in Kentucky experiences .469, or 14%, more days of poor mental health than an individual in Alabama. We are unsure of what may cause Kentucky to have such a great increase in comparison to other states, as they were not hit particularly hard by the Great Recession. Aside from state dummies, for all other dummy variables used, individual models were run given our initial framework: within the working age range of 24-64, clustering by state. Then, whether or not that dummy was a 1 was also included in the if statement. For example, individual models were run for the basic regression, and then whether the individual was married, divorced, widowed, separated, or single. The same was done for race, sex, and education level. We found it to be more valuable to be able to compute the differences in these groups number of poor mental health days in relation to unemployment rate. In comparison to the initial findings that if there is a 1% increase in the unemployment rate, an individual's number of poor mental health days will rise by 3.7%, we ran models for each dummy within these qualitative variables to see which groups experienced the most and least percentage increases if the unemployment rate were to increase by 1%. Then, dividing the output from stata, which accounted for

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number of poor mental health days, by the mean of that model, we were able to derive the percent increase in poor mental health days for each group.

There were also several variables that produced seemingly strong results, but proved to be insignificant at a 95% confidence interval. For variables such as marital status, the percentage of separated people, while proved to be non-significant, was 3.3% lower than the highest increase in number of poor mental health days, which was in married people. Separated individuals showed an average of 1.2% increase in the number of poor mental health days if the unemployment rate increased by 1%, while married individuals experienced a 4.5% increase in the number of poor mental health days. The next highest group was a 3.9% increase in widowed individuals, a 3.2% increase in divorced individuals, and a 2.9% increase in the number of poor mental health days in single individuals, all in relation to a 1% increase in unemployment rate for the dummy group.

There was also an effect seen in those with no education versus individuals with college level degrees. If unemployment rate increases by 1%, the number of poor mental health days in a month of an individual who has received no education rises by 5.8%. On the other hand, if unemployment rate increases by 1%, the number of poor mental health days in a month of a college educated individual only increased by 2.2%.

### **7. Conclusion**

As the results show, not only are the effects of rising unemployment rate evident in individuals poor mental health rising, but aside from this procyclical relationship, individuals poor days of mental health have been increasing on average regardless since 2009. While our data stops in 2015, it is clear there may be something else affecting our economy's mental health. As discussed prior in the University of Michigan report, we have only been getting more anxious as a society, which is why we must do further research. While many studies have been done overseas, none have been done that consider mental health effects on the United States, especially now that access to longer term data after the Great Recession is available. And this is what I hoped to achieve with this report, a greater knowledge base of the trends in the number of poor mental health days on an individual level.

As we seem to be getting more anxious, or mentally unwell in number of days as backed by this study, this is a clear topic of concern that must be addressed. From 2009 to 2015, the number of poor mental health days an individual is experiencing each month has increased by 15 percent. Even though the Great Recession ended in 2009, this steady and consistent incline since then is a great concern. While higher unemployment has proved an increase on the number of poor mental health days individuals in the United States have, this steady increase in poor mental health days since 2009 is cause for investigation. Although we do not have data up until today, the near 50 year low in unemployment rate we are currently experiencing would be quite fascinating to juxtapose with number of poor mental health days currently experiencing. In this light, this study hopes to add to this working body of knowledge available in studying the increasing number of

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poor mental health days individuals are experiencing. There is potential that we may continue to experience an increase in poor mental health days, and it may be due to something other than rising unemployment rates, such as current political climate or individuals overall increasing anxiety levels, and the intention of this report is to call into action the scrutinization of these potential variables moving into the future.

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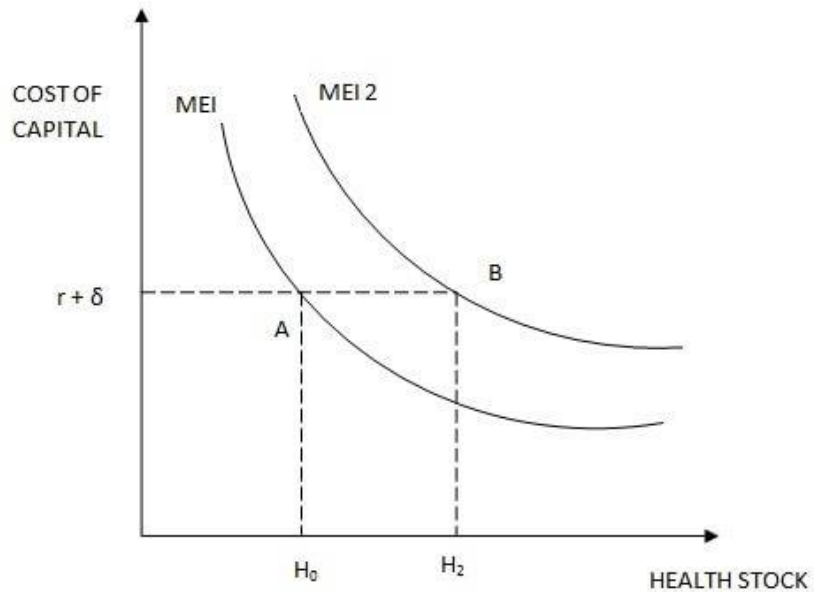
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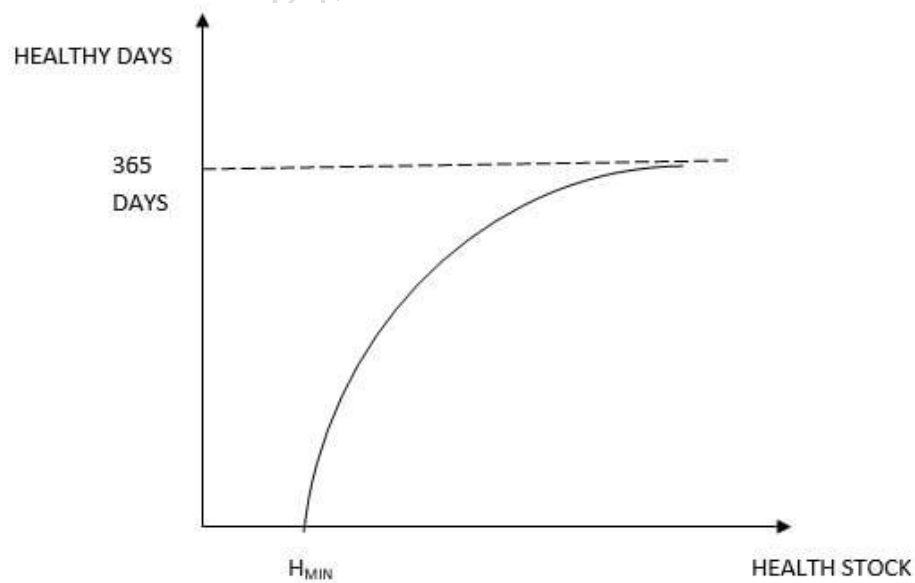
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Journals. <https://www.bizjournals.com/birmingham/news/2018/03/14/alabama-has-a-great-jobless-rate-but-thats-only.html>

### **1. Figures and Tables**



**Figure 1**



**Figure 2**



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**Appendix A - Table 1**

Initial Model vs. Adjusted for Three Factors
Variable Initial Adjusted
unemployment .13959853*** .07654805***
age .16678829*** .19179175***
age2 -.00205864*** -.00257144***
male -1.2061307*** -1.0659283***
white .17753687** .5207223***
black -.33625237*** -.55993354***
married -1.3491207*** -.71805573***
divorced 1.0042608*** .32668828***
widowed 1.1563203*** .44352516***
separated 2.7435065*** 1.6732491***
single .21864686*** -.40432378***
no_school .70547222*** -.48819209***
elementary 2.2069027*** -.13084666*
some_hs 2.5030396*** .52617907***
hs_grad .6070908*** -.02829731
some_col .36428483** .15642945*
col_grad -.90077386*** -.41286933***
year
1994 .09149941* .00955355

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1995 .31741027*** .38288203***
1996 .36176614*** .44339523***
1997 .38610133*** .47460129***
1998 .54472324*** .63790385***
1999 .64986354*** .72714703***
2000 .78323433*** .86253342***
2001 .90997416*** 1.0143343***
2002 .5700852*** .70784183***
2003 .79719932*** .87266677***
2004 .95134564*** .97524711***
2005 .98008961*** .98322648***
2006 1.1013779*** 1.0829037***
2007 1.152055*** 1.1077456***
2008 1.1028099*** 1.1227296***
2009 .75318758*** .86993168***
2010 .83562238*** .91547481***
2011 .93047627*** .93274893***
2012 1.0976277*** 1.0585619***
2013 1.064601*** .80627158***

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2014 1.153909*** .91136122***
2015 1.3216741*** 1.0847058***
income_new
2 -.58571607***
3 -1.2514511***
4 -1.6343997***
5 -2.1302446***
6 -2.4540623***
7 -2.7349401***
8 -3.1602669***
9 -2.716926***
77 -1.8653295***
99 -3.201182***
employment
2 -.00867061
3 3.1590519***
4 2.2249932***

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5 .11976716**
6 .71967524***
7 .53267478***
8 7.4778621***
9 .92140163***
healthpln
2 .30285728***
7 .45347663***
9 -.63050799***
_cons -.22663314 1.4640025***
N 4387864 4380310
r2_a .04183848 .12075078
legend: * p<.5; ** p<.1; *** p<.01

**Appendix A - Table 2**

Male vs. Female	
Variable	Male
	Female

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unemployment	.12704612***	.14705944***
age	.10615601***	.21276255***
age2	-.00126358***	-.0026641***
white	-.08576217*	.38388015***
black	-.20545233**	-.38390112***
married	-1.3300341***	-1.3865159***
divorced	.65614621***	1.2170048***
widowed	1.4436105***	1.1710476***
separated	2.3625364***	2.9094964***
single	.1537506**	.29461222***
no_school	.33019672*	.97660661***
elementary	1.9121035***	2.423401***
some_hs	1.8446997***	2.9798866***
hs_grad	.17343404*	.9352763***
some_col	-.00036918	.61663241***
col_grad	-.99497987***	-.849067***
year		

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1994	.0710378*	.10967636*
1995	.24527035***	.37627709***
1996	.2594492***	.44691646***
1997	.2493342**	.4979615***
1998	.37008277***	.68272448***
1999	.54287287***	.73799398***
2000	.57402998***	.94659811***
2001	.65596152***	1.107463***
2002	.31465145**	.77074679***
2003	.62037793***	.94433833***
2004	.72715298***	1.1267821***
2005	.77422276***	1.1441036***
2006	.84454606***	1.2986986***
2007	.95976592***	1.3114758***
2008	.89596443***	1.2742686***
2009	.59029642***	.89884864***
2010	.68290993***	.97616926***

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2011	.76843107***	1.0828505***
2012	.8562341***	1.308953***
2013	.54141612**	1.4702735***
2014	.62409902***	1.5599084***
2015	.77319465***	1.742116***
_cons	.38487388*	-1.583755***
N 1792927		2594937
r2_a .03109485		.0385883
legend: * p<.5; **		p<.1; *** p<.01
.		

**Appendix A - Table 3**

Marital Status				
Variable	Married	Divorced	Widowed    Separated	Single
unemployment	.13126369***	.17343944***	.22296939*** .09118065*	.12695746***



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age	.09670355***	.24014997***	.51965794*** .29226551***	.20867154***
age2	-.00123022***	-.0029444***	-.00646135*** - .00348602***	-.00252983***
male	-1.0896498***	-1.7292632***	-.77672213*** - 1.8383824***	-1.2718203***
white	.03774706	-.21334916*	.14239203* 2.4282906***	.29380078***
black	.10846181*	-1.2638489***	-1.133458*** -.28227003*	-.30534577**
no_school	.89155833***	-.48911016*	.84440488* .40717298	-.36801861*
elementary	1.8660239***	3.1496862***	2.1510398** 2.4984665***	1.8443015***
some_hs	2.2461666***	2.3000323***	1.9632855*** 2.8618824***	1.9426773***
hs_grad	.52561509***	-.30455397	-.05183201 1.2444188*	-.01232263
some_col	.27330864**	-.65662396*	-.40043421 1.0615468*	-.11767465
col_grad	-.78344655***	-2.3707102***	-2.0506924*** -.99476591*	-1.6230536***
year				
1994	.02903701	.21715728*	.38060963** .00296426	.22728998**
1995	.22689182**	.50635698***	.64953878** .22489863	.39940067***

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1996	.26428764***	.52629069***	.88085455*** .19165643	.57204433***
1997	.29095374**	.63611842***	1.324662*** .26589226	.37556877**
1998	.43791317***	.73012964***	1.3753744*** .49283325*	.71518852***
1999	.53241482***	.85573353***	1.492899*** .95999595**	.77126585***
2000	.61153236***	1.1344525***	1.6518126*** .97057345**	.94049926***
2001	.75752903***	1.2969676***	1.6034761*** 1.1349626**	.99818084***
2002	.34247717*	.82228616***	1.8404403*** 1.1041964**	.94199236***
2003	.55771031***	1.2446957***	1.9559246*** .96653672***	1.0419085***
2004	.64385478***	1.4943824***	2.2625853*** 1.4543677***	1.2852623***
2005	.68620272***	1.4582631***	2.3823721*** 1.5747297***	1.3363954***
2006	.75410864***	1.6345331***	2.7308179*** 1.8901475***	1.5128156***
2007	.75824816***	1.9006721***	2.7745445*** 1.8770169***	1.5364322***
2008	.6923973***	1.8235917***	2.7552931*** 1.9563131***	1.5582043***

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2009	.35565294***	1.4090056***	2.0416665*** 2.2335318***	1.2124977***
2010	.39460959***	1.655149***	2.1928234*** 1.9221882***	1.3529269***
2011	.49233212***	1.6699344***	2.5170068*** 2.1092085***	1.430128***
2012	.62358187***	1.965847***	2.7698589*** 2.1628323***	1.582487***
2013	.52591503***	.95761237**	2.232878*** 2.996646***	.94675004**
2014	.57433759***	1.1929686**	2.3246965*** 2.9590554***	1.1143812***
2015	.70576044***	1.3336803**	2.7094861*** 3.1173335***	1.351571***
_cons	.26229393*	.17705251	-5.9051462*** -2.0909008**	-.6084515*
N	2664334	676017	160567 123695	619563
r2_a	.01855853	.02791716	.02803007 .02934717	.02097377
	legend: * p<.5; **	p<.1; *** p<.01		
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**Appendix A - Table 4**

Education Level					
Variable	No_School	Elementary	Some_HS	HS_Grad    Some_Col	Col_Grad
unemployment	.24116121** *	.21574913***	.17175831**	.16319797*** .15201655***	.05721354***
age	.0707742*	.65113267***	.43771561** *	.20105416*** .17237289***	.07611496***
age2	.00050194	- .00693047***	- .00517196** *	-.00253372*** - .00219109***	-.00099856***
male	- 1.171794***	- 1.2929916***	- 1.8716442** *	-1.4684645*** - 1.3306926***	-.91355798***
white	.78327289** *	3.533486***	1.8050703** *	.16068798* - .29913243**	-.1828408**
black	.60196423**	1.7347087***	.19184515*	-.60105965*** - .80537376***	-.27541074***
married	1.1035535**	-.43450073**	-.9687914***	-1.5617165*** - 1.8105882***	-1.1877441***
divorced	.38998525	3.0428333***	2.0570436** *	.80440513*** .5263027***	.51521749***
widowed	1.0111992*	1.7508767***	1.5935787** *	.90822703*** .71602989***	.80253697***
separated	.90964646*	3.0014233***	2.7899315** *	2.5555631*** 2.5043935***	2.3773633***
single	.38785241*	1.5059504***	.90229215** *	-.03769829 - .17444971**	-.00695634
year					
1994	.46272363	.08821494	.21628688*	.16626258** .04168247	.00578975
1995	.44265751	.20721901	.4721477**	.3167188** .38094593***	.15412058**
1996	.77582945	.742251**	.51782296**	.39139933** .32389839**	.20145294***
1997	1.641108*	1.0203298***	.55438504**	.44117578*** .46651135***	.07014362*

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1998	1.6245856*	1.3858165***	1.1516404** *	.5850238*** .52708964***	.23788428***
1999	2.49971**	1.5392739***	1.432541***	.75227527*** .68138595***	.17671449**
2000	1.6649061*	1.7266032***	1.6153399** *	.97115342*** .76338211***	.24843793***
2001	3.3738881** *	2.1403748***	1.7458286** *	1.0866316*** .8861302***	.38249111***
2002	.40272018	1.7187726***	1.518287***	.82132697*** .4594584**	.10749395*
2003	2.1906433**	2.1199835***	2.0962043** *	1.0433352*** .71384279***	.26779273***
2004	1.4431695*	2.3199959***	2.2793157** *	1.2232291*** .99860255***	.2930093***
2005	.78541162*	2.1326107***	2.4143419** *	1.2208933*** 1.026009***	.32648886***
2006	1.6683683**	2.3089705***	2.6866188** *	1.4714183*** 1.1544245***	.30508459***
2007	1.5677558**	2.3694768***	2.6033191** *	1.5150979*** 1.2265652***	.36064904***
2008	1.3396383*	2.4964847***	2.7863976** *	1.4252769*** 1.1832655***	.35590276***
2009	1.0512776*	1.9372003***	2.4717352** *	1.0426891*** .82977691***	.18457382***
2010	1.9022791**	2.0350382***	2.7483412** *	1.2286176*** .85628245***	.22780689***
2011	.18590689	2.1432884***	2.6992505** *	1.3578487*** .97509095***	.27117254***
2012	.85817429*	2.2219795***	3.1044542** *	1.5534336*** 1.1558715***	.35134912***
_cons	.34100083	- 13.360861***	- 5.9643234** *	-.17952848 .96989888***	1.948759***
N	5949	78622	190800	1004016 981911	1286191
r2_a	.02310378	.06452113	.04371769	.03158821 .03147549	.02285784
		legend: * p<.5; **	p<.1; *** p<.01		

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# **A COMPARATIVE STUDY: GLOBALIZATION AND DEVELOPMENT OF REGIONS OF EUROPE, ASIA PACIFIC, AND LATIN AMERICA**

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## **Abstract**

Globalization is one of the most significant concepts of our time that has led to countless academic discussions and public debates. Several empirical literatures have explored how globalization has impacted developed and developing economies. It is critical to study the effects of regional globalization and the impact of different methodological perspectives. This paper examines the effects of globalization across various regions of Europe, Asia Pacific and Latin America. The secondary data used for this paper is obtained from Statista and the World Bank. The methodologies used include One-way Anova, Regression Analysis and Ancova. The findings of the Anova show how globalization significantly impacts the regions discussed in this paper. This indicates that the regions derived substantial benefits from globalization. The regression analysis results highlight that there is no relationship between globalization and democracy, and the Ancova results support that the interaction of region and democracy is not significant. We therefore conclude that the growth and development of these regions related to globalization is based on increased competition, employment, investment and capital flows, foreign trade, spread of technical know-how, spread of culture, high standard of education, and structural institutions. This paper provides a platform to better inform policy makers in these regions, as well as the world, on how the benefits of globalization lead to the expansion and growth of developed and developing countries.

**Keyword: Globalization Index, Europe, Asia Pacific, Latin America, Democracy Index.**

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### **1.0 Introduction**

The world has gone through increasing interconnectedness and interdependence among nations in all aspects of life and through its widespread influences on trade, investment, labor, banking and the movement of people, goods and services (Reed, 2020). Globalization has strengthened the existing ways of social interaction and has influenced human societies to transcend diverse barriers. However, the term ‘globalization’ continues to mean different things to different people (Kefela, 2011). Scheuerman (2010) believes that there is no unified definition of globalization and that the effects, benefits and adverse influences of globalization depend on different opinions and research findings. Ardiç (2009) sees globalization as a single phenomenon and a unified process which covers a wide range of distinct political, economic, and cultural trends across the globe while Giddens (1990) defines globalization as the intensification of world-wide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away. Globalization has changed the world with increases in global GDP from \$63.2 trillion in 2007 to 80.9 trillion in 2017 (World Bank, 2019). World transformation continues to reflect in Asia, Europe and Latin America regions.

Recently, there has been a great controversy on the impact of globalization (Steif, 2019), hence this study seeks to investigate the effects of globalization in Europe, Asia-Pacific and Latin America region. Several studies have accessed the impact of globalization on the regions of the world, but most studies did not do a comparison on the significance of globalization on the three regions in this study together. It is a belief that globalization stimulates new technology development, particularly with the growth in FDI, and this improves economic output and makes processes more efficient. While in the average developing economy the poor as well as the wealthy benefit from globalization, in many advanced economies, globalization often has little effect on the incomes of the poor. We construct the framework of this study on the theoretical notion that economic, political and socio-cultural change associated with globalization does not mean the replacement of old practices with new ones, but the integration of old and new in forming a better way of doing business, and expanding institutional structures.

Trade liberalization is one of the consideration policies of globalization and it has led to the rapid growth in emerging nations. In countries such as China and India, the number of people living on less than a dollar a day decreased by 200 million since 1980s (International Monetary Fund [IMF], 2003). The survey conducted by IMF showed that Asia-Pacific region embraced globalization and grew faster than developed countries in the 1990s. Their share in global trade rose during this period and during the second half of the 20th century, there was an increase in the scope of export growth in the region. The geographical location of the Asia-Pacific region characterized with the cost of a peripheral location relative to markets for inputs and outputs reduced.



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Transportation cost, for example, ocean freight rates were reduced and advances in information technology made communication faster and efficient (Findlay & Williamson, 2001). Most markets in Asia expanded outside the region and this opportunity has positively affected the region's development. The relevance of growth and development of the Asian region includes a boost in life expectancy, higher literacy level, decline in infant mortality rates and a rise in real gross domestic products.

The openness of an international market in Latin America in the 1980s replaced the state control over resources, production, and services with privatization strategies. This openness deregulated and reformed financial markets, shifted inflexible labor markets to flexible ones, and moved restrictive institutions to more innovative establishments in the region. In the study by Gwynne & Kay (2004), they discovered that globalization has limited state power and provided more technical, disciplined, and flexible national economy in the Latin America region. Over 50% of the active populations of the seven highest-income countries in Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Venezuela, and Uruguay) are involved in tertiary and quaternary employment, whereas the percentage of the labor force engaged in traditional industry continues to show a deterioration (World Bank, 2000). Globalization has also expanded the trade and investment relationships of Latin America with other regions. In addition, non-manufacturing exports such as agriculture, mining, fishing, forestry, and ranching have increased. In Asia Pacific globalization has resulted in rapidly growing international flows of goods, portfolio capital, and direct investments (Ljungwall & Sjöberg, 2005). All over Latin America, globalization increases female literacy, decreases population growth with reduction in fertility rates, enhances healthcare service and improves life expectancy. Nevertheless, Latin America has been experiencing adverse events since the year 2013. The new wave of the political development in advanced economies is affecting the benefits derived from globalization. These effects have produced an increase in international interest rates, an increase in U.S protectionism, and a greater uncertainty about the change of the main economic variable (exchange rates between major currencies).

Globalization promises opportunities to those who can serve new markets or existing markets with cheaper inputs. Over the past decade, some European countries see globalization as a threat than an opportunity. The shift towards service activities in European nations is much stronger in global market compared with other regions. The effects of globalization in Europe is evident in their service sector than any other sectors of the region. There has been growth in employment for services, while employment in manufacturing has reduced. Europe remains one of the largest players in international trade with more than 15% of global exports next to U.S and China. The region's exports and services increased from about €1160 billion in 2000 to €2900 billion in 2018 with more than 80 percent of exporters in small and medium sized enterprises (European News, 2019).

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There is a growing concern that countries from the Europe, Asia Pacific and Latin America regions are developed and globalization is essential in developing and emerging countries. Globalization increases international trade and the status of various underdeveloped nations by giving them a chance to showcase their goods and services in the global market. It even increases the cultural relations among nations through government policies in making the benefits of globalization more inclusive. But, has the globalization mean cut across Europe, Asia Pacific and Latin America in recent times? Is there an impact of democracy in the regions that are globalized? This study utilizes the KOF index of globalization and democracy index from Statista and World bank for the year 2019 to measure the rate of globalization and the status of democracy on Europe, Asia Pacific and Latin America regions. The methodologies used include One-way Anova, Regression Analysis and Ancova. This study tends to add to the body of knowledge by comparing how globalization has affected Europe, Asia Pacific and the Latin America regions together. With empirical results and evidence, the study will better inform government and policymakers about the recent impact of globalization in the Europe, Asia Pacific and the Latin America regions while other regions can understand the relevance of globalization in an economy.

In the following section we present review of literature, the data and method used in this study. Next is the main findings and results. Lastly, we discuss the concluding remarks of the study and the recommendations.

### **2.0 Literature Review**

Several literatures show the diverse view of globalization and its development impact on developed and developing regions (Frieden & Rogowski, 1996). Johnson (2000) claimed that globalization is based on a hierarchical system involving the control of the world polity by one single hegemon. Strange (2001) indicated that globalization is predominantly an economic transformation where “the impersonal forces of world markets” (technology, finance capital and transnational actors) are responsible for “the declining authority of states” and Harvey (1989) argued that the state is in a position to regulate the activities of corporate capital in national interest on one hand and attract them by creating a “good business climate” on the other. These lead to the empowerment of finance capital at the expense of the nation-state and organized labor. Berg & Kruger (2003) pointed out that globalization with attractive domestic policy will enhance growth and development in nations. Shaw (2000) believed that globalization has resulted in the emergence of a “global state” while Rosenau (2001) linked the rise of global governance to complex relations among technology, society and the capitalist economy that undermines the capacity of nation-states within their boundaries.

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The steady growth of the Europe, Asia Pacific and Latin America regions have been evident in trade openness, ease of technology transfer, and improvement in communication system. In the European News (2019), it was reported that globalization created 21.7 million jobs in the year 2000 and increased to 36 million jobs in the year 2017. According to Zhou et al. (2011) international institutions claim that globalization and free market policies would lead to rapid growth, higher employment and prosperity in nations. Globalization benefitted low income countries in the area of international trade and employment opportunities (Pillai, 2011). Jaumotte et al. (2013) found the role of technology and globalization in the rise in income inequality. Income inequality increased due to technological changes in emerging nations (LI and Zhou, 2015). In the developing regions, globalization has decreased the inequality of income (Firebaugh & Goesling, 2004). Milanovic (2003)'s study on household surveys indicated an increase in income inequality throughout the world while Milanovic (2005) recounted that the Asia Pacific region had a decline in income inequality. Longworth (1998) acknowledged that in the long run, globalization increases domestic losers and reduces the ability of the state to reward the losers financially. The study by Siddiqui (2016) suggested that capital liberalization facilitates globalization in most of the nations since economies have become global.

Rodrik (2012) reasoned that if a country would be responsive to local democratic aspirations and demand, it would be difficult to adopt some of the globalization policies and global economic integration. In his research, he argued that globalization involves sacrificing the democratic policy of the nation-state where the government is supposed to be accountable to the populace. Cammack (1998) asserted that globalization limit state policy and encourages public policy that attract foreign investors. Boli & Thomas (1999) acknowledged that globalization strengthens domestic institutions that support democracy since the efficient operation of the market requires an enforceable system of property rights and impartial courts, and an economic openness that compels the popularization of norms respecting the rule of law and human rights. The adverse effect of globalization will enhance lack of transparency in nations. In the study by Gill (1995) and Martin & Schumann (1997), they observed that globalization empowers the government and multinational companies to control information given to the public. The advancement in information technology has helped the government and multinational firms to give processed information to the public and to monitor people's information closely. An aspect of globalization is capital mobility in which advanced and emerging nations derive benefit through foreign direct investment (FDI). FDI makes it possible for nations to integrate financially and to generate jobs for both the host and home countries. In this context, Woepking (2008) emphasized that increasing liberalization of capital flow in developing countries makes their financial markets more liable to volatility. Fischer (2003) reasoned that the integration of developing economies to global markets should be materialized

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progressively with the establishment of necessary infrastructures otherwise their economies would be open to capital flow volatility that triggers economic crisis, loss of output and unemployment.

The impact of globalization and development in developed and developing regions generate different results in each region. Some regions which have been able to direct globalization can benefit from it and others can face economic losses (Stiglitz, 2006). The income divergence between developed and developing regions can be observed by assessing the average per capita daily incomes of regions. As seen in the World Bank global indicator of average per capita daily incomes, people of the industrialized countries earn the highest level of daily income in the world in comparison with the rest of the world. Europe, Latin America, and Asia Pacific have experienced a relative increase in their incomes despite ongoing income gap between developed and developing countries

Several theoretical and empirical studies have different conclusions about the study on globalization and development, hence this study examines globalization and development of Europe, Asia Pacific and Latin America to assess how globalization impact international and domestic development.

### **3.0 Study Data and Methodology**

The globalization index is obtained from KOF Index of globalization which was developed by Dreher (2006) and updated by Dreher et al. (2008). The KOF Globalization index used as dependent variable, is internationally accepted as a general indicator of international competitiveness and integration of national economies in globalization trends. The KOF index of globalization and democracy index for the year 2019 was retrieved from Statista and World bank. The independent variable is the regions grouped into three categories. The overall index of globalization covers the economic, social, and political dimensions of globalization. Higher index denotes greater globalization. The data statistic shows 77 countries in the globalization index for the year 2019. The 2019 globalization index is used to determine the mean globalization among the three regions (Europe, Asia Pacific and America) to compare the globalization mean. The Democracy Index is an index compiled by the Economist Intelligence Unit. The Democracy index measures the states of democracy in 167 based 60 indicator groups in five different categories: electoral process and pluralism, functioning of government, political participation, political culture, and civil liberties. Each country was given a score between 0 and 10 in each of the five categories, which was then averaged for an overall score. Overall scores between 8.01 and 10 are full democracies, and there are 20 of such in the world. There are ten countries with scores of 9.0 or higher; these are the most democratic nations in the world. A One-Way Analysis of Variance using unequal sample size was conducted to evaluate the hypothesis that

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there is equal globalization mean among Europe, Asia Pacific and Latin America. The sample size consists of 77 countries from the three regions. We have 41 countries from Europe, 20 countries from Asia Pacific and 16 countries from Latin America. Regression Analysis was utilized to assess the relationship between globalization index and democracy index. In ANOVA, we assess the effect of an experiment by comparing the amount of variability in the data that the experiment can explain against the variability that it cannot explain. If we can explain some of this 'unexplained' variance (SSR) in terms of covariates, then we reduce the error variance. ANOVA allows for an accurate assessment on the effect of testing manipulation (SSM). ANCOVA is used in this study because of the presence of covariates. The ANCOVA looks at the effects of the categorical independents on the response variable after-effects of interval covariates are controlled. The covariate, a continuous independent variable is used as control variable.

### **ANOVA:**

#### ***Hypothesis 1***

H<sub>0</sub>1: The globalization means of Europe, Asia Pacific and Latin America are equal

H<sub>A</sub>1: Not all the region globalization means are equal

$$H_0: \mu R_1 = \mu R_2 = \mu R_3$$

$$H_1: \mu R_1 \neq \mu R_2 \neq \mu R_3$$

#### ***Hypothesis 2***

H<sub>0</sub>2: The democracy means of Europe, Asia Pacific and Latin America are equal

H<sub>A</sub>2: Not all the region democracy means are equal

$$H_0: \mu R_1 = \mu R_2 = \mu R_3$$

$$H_1: \mu R_1 \neq \mu R_2 \neq \mu R_3$$

### **Regression Analysis:**

#### ***Hypothesis***

H<sub>0</sub>: There is no relationship between Globalization index and Democracy index

H<sub>A</sub>: There is a relationship between Globalization index and Democracy index

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

The above equation is the linear regression model that can be used to explain the relationship between x and Y, where x = democracy index and Y = globalization index. The slope,  $\beta_1$  can be interpreted as the change in the mean value of Y for a unit change in x.

### **ANCOVA:**

#### ***Hypothesis***

H<sub>0</sub>: There is no difference in mean globalization index between the three regions after controlling for level of

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democracy.

H<sub>A</sub>: There is a difference in mean globalization index between the three regions after controlling for level of democracy

### **4.0 Results and Findings**

**Table 1:** Analysis of Variance (ANOVA) for hypothesis 1

GI	Sum of Square	Df	Means Square	F	Sig
Between Group	653.748	2	326.874	4.711	0.012
Within Group	5134.856	74	69.390		
Total	5788.604	76			

Source: The secondary data is computed in SPSS 26.

Table 1 explains the mean of globalization within the three regions (Europe, Asia Pacific and Latin America). There was a significant impact on the three regions at the  $p < 0.05$  level. Therefore, we reject the null hypothesis, H<sub>0</sub> and conclude that not all the regions globalization means are equal.

**Table 2:** Analysis of Variance (ANOVA) for hypothesis 2

DI	Sum of Square	Df	Means Square	F	Sig
Between Group	18.809	2	9.404	3.714	0.030
Within Group	154.468	61	2.532		
Total	173.277	63			

Source: The secondary data is computed in SPSS 26.

Table 2 indicates that the mean of democracy index within the three regions (Europe, Asia Pacific and Latin America) are not equal at  $P < 0.05$ . We reject the null hypothesis, H<sub>0</sub> and conclude that not all the regions' democracy means are equal. The result shows evidence that a region can be democratized and not enjoy the full benefits of democracy.

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**Table 3:** Regression Analysis

Model	R	R Square	Adjusted R Square	F	Sig
1	0.201	0.040	0.025	2.601	0.112

Predictor: Constant DI; Dependent Variable: GI

Source: The secondary data is computed in SPSS 26.

**Table 3b:** Coefficient

Model	B	Std.Error	F	Sig
Constant	66.248	4.589	14.436	0.000
DL	1.026	0.636	1.613	0.112

Dependent Variable: GI

Source: The secondary data is computed in SPSS 26

Table 3 shows that there is no relationship between globalization and level of democracy in Europe, Asia and Latin America regions (i. e.  $P=0.112 > 0.05$ ). Therefore, we fail to reject the null hypothesis and conclude that there is not enough evidence. The  $R^2$  value of 0.040 shows that 4% of the variation in democracy can be explained by the globalization index. Every one percent increase in democracy index will increase the globalization score by 1.026 in all the three regions when the globalization index, Y is constant.



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Table 4: ANCOVA (With Interaction Term)

Test of Between Subject Effect

Dependent Variable: Globalization Index

Source	Type III sum of Square	Df	Mean Square	F	Sig	Partial Eta Squares
Corrected Model	471.8869	5	94.377	1.348	0.257	0.104
Intercept	12190.259	1	12190.259	174.087	0.000	0.750
Regions	186.778	2	93.389	1.334	0.271	0.044
Democracy Index	0.259	1	0.259	0.004	0.952	0.000
Region*Democracy Index	193.93	2	96.965	1.385	0.259	0.046
Error	4061.399	58	70.024			
Total	349848.177	64				
Corrected Total	4533.284	63				

R squared=0.104 (Adjusted R squared=0.027).

Source: The secondary data is computed in SPSS 26.

The table 4 indicates that there is no interaction between the regions and democracy. The slopes are homogenous. The P-value of  $0.259 > 0.05$  does not significantly predict the dependent variable. Therefore, the globalization index is not influenced by the interaction effect of the regions\*democracy, hence, we conduct the ANCOVA again without the interaction term (see table 5 below).

Table 5: ANCOVA (Without Interaction Term)

Test of Between Subject Effect

Dependent Variable: Globalization Index

Source	Type III sum of Square	Df	Mean Square	F	Sig	Partial Eta Squares
Corrected Model	277.956	3	92.652	1.306	0.281	0.061
Intercept	14571.619	1	14571.619	205.459	0.000	0.774
Regions	95.433	2	47.717	0.673	0.514	0.022
Democracy Index	92.113	1	92.113	1.299	0.259	0.021
Error	4255.328	60	70.922			
Total	349848.177	64				

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Corrected Total	4533.284	63				
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R squared=0.061 (Adjusted R squared=0.014).

Source: The secondary data is computed in SPSS 26.

The table 5 indicates that there is no significant effect of democracy index between the development of the regions (Europe, Asia Pacific, Latin America) as a result of globalization. The P-value,  $0.259 > 0.05$  does not significantly predict the dependent variable. Therefore, the democracy index is not impacted by the globalization index in the regions

### **6.0 Conclusion and Recommendation**

Globalization has influenced the development of Europe, Asia Pacific and Latin America regions. It is an inevitable process for regional development and growth due to its advantageous nature. The integration of regions has improved the standard of living, the level of education, the transportation system, the transfer of technical know-how, the mobilization of capital, and the mobility of workforce around the world. Despite the negative impacts of globalization in Latin America, there are improvements in the social, economic, educational, technological, political and legal areas in the region. However, additional progress needs to be made in the same areas for the region to be able to compete effectively and efficiently worldwide. Asia Pacific region has benefited from globalization in numerous areas like healthcare service, advanced technology, high increase in export goods and services, reduction in mortality rate and increase in life expectancy.

The economy of the Asia Pacific region has experienced steady growth under the influence of globalization. The size of direct foreign investment increased, and a lot of bad traditions ceased. Additionally, globalization has also brought many drawbacks to the Asia region. Many customs and cultures such as traditional clothes have disappeared, and some language and expressions have changed. Violence and drug abuse have increased, and a lot of deadly diseases have spread under the influence of globalization. In Europe region, there are opportunities for people in developed countries to transact business across regions. Globalization benefits for consumers in this region also come from import. The consumers have access to a variety of goods sold at reasonable prices. There is an increased competitiveness and lower prices for goods and services. The level of wealth and comfort in Europe region has increased as well as the standard of living.

Policy makers and the government need to embrace the persistent nature of globalization as the best strategy for regional growth. Any region that remains non-globalized may lack growth in the long run because

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interdependence and integration of regions expand economic opportunities. Future researchers are encouraged to investigate the regions that are not within the context of this study to understand globalization effects on such regions.

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### **MANAGEMENT FOR INTEGRATED SUSTAINABILITY - GSI: A MANAGEMENT TECHNOLOGY FOR THE PERENNITY AND SUCCESS OF ORGANIZATIONS**

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#### **Abstract**

The article has as objective to analyze the model of the Administration for Sustainability Integrated as an administration technology that favors the perennity and the success of the organizations. It was investigated the problem "how the Administration for Integrated Sustainability, while administration technology, based on the Theory of Entrepreneurship, impacts on the perennity and success of organizations?" The organizational context suggests a reflection about how much is relevant that the private, public or society of mixed economy organizations, of any activity branch and size, can keep on perennial and with organizational success, accomplishing its economic and social function aligned to its mission. In the research method, data of secondary sources were extracted. In the field, the universe of 1.700 industrial companies, 15.112 of service delivery companies, 17 hospitals and 03 universities, with stratified random samples and for accessibility. In the data collection the technique was the questionnaire. The data received statistical treatment, with descriptive analysis, variance analysis, correlation tests and regression. Among the results, in the analysis of the literature, the rate of Entrepreneurs in Initial Apprenticeship of Brazil grew in the world ranking in 2014, 2015 and 2019, and the Rate of Entrepreneurs Established grew also in 2014 and 2015, but it lowered in 2019. The field research in the industrial organizations suggests that the Administration for Integrated Sustainability, as an administration technology, impacts favorably in the perennity of micro and small companies. In public organizations, on the other hand, it requires a systemic view of the macro environment, although transparency, suitability and ethics predominate in actions, favoring organizations that seek organizational excellence, being relevant to society. Among the theoretical and methodological contributions, the model of the Administration for Integrated Sustainability, based on the Theory of Entrepreneurship, enlarges the field of options of application of the administration technologies in the social organizations and in the academy.

**Keywords:** Administration for Integrated Sustainability. Entrepreneurship. Technology. Perennity. Social organization.

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### **1. Introduction**

The themes technology, innovation, administration and sustainability are in the agenda of discussions of the organizations. The search of turning the Micro and Small Companies – MSCs and perennial and maintainable public organizations, presupposes to develop in the apparatus of the administrative administration and to portray partnerships to conjugate the offer of their products and services, with excellence and favorable reflexes to the economical development of an area, state and/or country, still excelling, the professional ethics. The State, as agent regulator, has legitimate function of performance.

To analyze the available technologies, among them, the one of professional administration for the organizations, with investigations in the Technological Administrative dimensions; Political Institutional; and Economical Social of the model of the Administration for Integrated Sustainability - AIS (Polary, 2012, 2014), besides making possible the discovery of other slopes that favor the organizational effectiveness and the academy, it is, also, one of the viable options for the rational use of the technological contribution for the perennity and excellence of the organizations.

Debates in the national and international forums, in the academy and in the organizations on the administration technologies, suggest punctual actions with the use of the technological contribution (machines and equipments, systems and work methods) and of maintainable professional administration, that investigates the entrepreneurs' performance, private managers and publics to give swift answers to the society through the effectiveness of the organizations.

The article has as objective to analyze the model of the Administration for Sustainability Integrated as an administration technology that favors the perennity and the success of the organizations. A problem requests that the researcher is involved in the reality of the situation to be explained; the research subjects represent what the investigator wants to explain and they can indicate, among the variables, relationships of associations (TRIVIÑOS, 2009); and the hypothesis foresees a relationship between two terms (QUIVY; CAMPENHOUDT, 1995). The problem is: "how the Administration for Integrated Sustainability, while administration technology, based on the Theory of Entrepreneurship, impacts in the perennity and success of the organizations?" The hypothesis is: the administration technologies, among them, the one of Administration for Integrated Sustainability - AIS, impact favorably in the perennity of MSCs and of the public organizations of the samples, favoring the society.

Among the research subjects in the present research there are: Which relationship could be



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established among the physical system, base of data, machines and equipments with perennity of industrial MSCs and of service delivery companies? How does the application of the Administration for Integrated Sustainability model in MSCs and public organizations, as a management technology, reflects on their results and on society?

The development was based on two academic strands: in the first, it consisted of the search for the literature in order to theoretical basis that sustains the relevance of the theme; and second, the practical action performance of the administration technologies in researches in MSCs and in the public organizations.

Research method: the approach methods, procedures and techniques (MARCONI; LAKATOS, 2007, p. 140). In the literature, extracted data of the secondary sources for analysis of appropriate theories to the lines of researches Technologies of Administration, of the Doctorate degree in Administration FGV/EBAPE; and Administration and Management, from the Research Group “Administration, Management and State-AGE” CNPq (POLARY, 2015).

Approach method: theories and research on management technologies, management of MSCs, public management, and entrepreneurship in economic and managerial approaches, which underpinned the AIS Model (POLARY, 2012, 2014).

In the field research: in the universe, the data of 2012 were of industrial MSCs of Maranhao (FIEMA, 2006), in 170 municipal districts; the data of 2015, in the public hospitals and public universities of São Luís-MA (POLARY; SILVA, 2015); and the one of 2016, in industrial MSCs and of service delivery companies of São Luís, according to tables 1 to 3. They were extracted samples of the random type stratified in 2012, and for accessibility in 2015 and 2016, with representative average, considering the participation of each economical category in GDP of Maranhao, according to tables 4 and 5 and frame 1.

Collects and analysis of the data: the technique used was the questionnaire. The measurement scales (Malhotra, 2006) and Ulrich, Smallwood and Sweetman (2009) were used as a basis. The data received statistical treatment: exploratory analysis, Test of Levene of Homogeneity of the Variances, ANOVA, Test of Correlation, Regression and Multiple Correlation.

Analysis categories: they guarantee the rigidity of the research (Vieira, 2004), which were: size of industries - micro and small companies - MSCs; importance of the variables of the model of the Administration for Integrated Sustainability - AIS for the administration, success and perennity of MSCs, and for the organizational excellence of the public organizations of the sample.

Limitations of the method: the universe of MSCs and public organizations of Brazil and Maranhao, with 217 municipal districts (IBGE, 2009), was delimited to industrial MSCs of Maranhao, service delivery companies MSCs and public organizations of São Luís; little literature and empiric work about this theme that

allowed a deepened study of the theory (POPPER, 1975). Aware of the limitations, we considered the appropriate method to sustain the research and the analysis of the data with consistence.

## **2. Revision of Literature**

The article analyzed in the literature the impact of the administration technologies in the perennity of the Micro and and Small Companies - MSCs, and in the results of public organizations, among them, the Administration for Integrated Sustainability - AIS, based on Entrepreneurship, as an alternative of professional administration for the organizations (POLARY, 2012, 2014, 2019); (POLARY; SILVA, 2015).

The administration maintainable professional seal the manager's knowledge as one of the relevant resources for the perennity and success of the organizations. Gazzoni et al. (2009) reiterate the importance of the professional administration for the small business and their challenges before the changes that happen in the world. The knowledge started to be the most important resource.

Technology means the group of knowledge portions - so much "practical" (problems and concrete devices), as "theoretical" (but practically applicable) of know-how, methods, procedures, success experiences and failure and, also, of course, physical devices and equipments (DOSI, 2006). For Kim (2005), it is the group of physical processes that transform inputs in products as for the knowledge and abilities that structure the activities that will promote such transformation.

The technological competence refers to the abilities of the company to accomplish innovative activities in products, processes and organization of the production, organizational systems, equipments and engineering of stored projects, not just in the people's minds (abilities, experience, formal qualifications), but, also, in its organizational system, routines and procedures (BELL; PAVITT, 1995; FIGUEIREDO, 2003).

The technological capacity in organizational level is the group of resources that can be tangible, codified or intangible, tacit, codable and non-codable; incorporate in several dimensions of the organization: administration techniques and production, organizational routines, organizational structures, values and norms (PENROSE, 1959; NELSON, WINTER, 2005; TEECE, PISANO, 1994; FIGUEIREDO, 2004).

The Administration as Social Sciences has moved on in three relevant aspects: Intellectual Capital; Administration of the Knowledge; and Digital Focus of the Administration - use of digital tools for the managers to work with the challenges of the organizational learning to improve the organizational efficiency. Oliveira et al. (2009) describe the intellectual capital as strategic resource of the organizations and decisive factor to the administration processes. Studies for decision of "investments in IT" in MSCs, Oliveira, Silva, Gouveia Neto, Porto and Zaidan (2014) describe that they are still scarce.

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Considering that the Technological Capacity is incorporated in several dimensions of the organization, among them, the administration techniques, the Administration and the Professional Administration are emphasized as some of the technological capacities in organizational level. In the Maintainable Public Administration - MPA (Polary, 2016), one of the reasons of a good preparation, is to improve the way the organizations are administered, therefore when this is well done, they develop consistence, growth and prosperity, and when they are badly administered, they recede and, very often, they die.

Another relevant aspect is " how to be prepared for a career ", considering: the pre-disposition (self motivation), found by the qualification, understanding personal-professional and self-discipline (the degree in itself, can or not to be worth); the choice of a prepared academy for a preparation with the defined quality parameters for Ministry of Education and job market; to know, to understand, to dominate, to criticize and to apply the administrative theory in the academy and in the organizations, reconciling theory and organizational practice.

### **3. Theoretical model**

The Administration for Integrated Sustainability - AIS is an alternative model of Professional Administration for the Administration, that demands from the manager professional personal understanding to administer with Orientation Enterprising-OE and Integrative View - IV, before their variables, components and dimensions, to favor the administration, the success and the perennity of the company (POLARY, 2012).

The model of AIS is based on the Theory of Entrepreneurship in the approaches: managerial (McClelland, developed in the years of 1970), subsequent to the Theories of the Organizations and of Administration, in the perspective of the strategies of the companies, and manners of strategic administration (Lumpkin; Dess, 1996); and the economical (Schumpeter, 1934), introduced in the Social sciences by the economical theory. The model AIS, in its academic usefulness and practical performance, was applied in the research of field of industrial MSCs of Maranhao (Polary, 2012), described in the frame 2.

With the results of the research in industrial MSCs in 2012, among the recommendations for future investigations, it is suggested to enlarge the discussion in the academic community to make possible the progress of the concepts and theories of Professional Administration for the teaching of the Administration in the academy and application in the business field. In 2014, the model of AIS was adapted, adapting the variables of the Technological, Political Administrative dimensions Institutional, and Economical Social, for application in the public administration in the three powers: Legislative, Executive and Judiciary; and levels:

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Union, States and Municipal districts. The model adapted AIS, in its academic usefulness and practical performance, was applied in hospitals and public universities in São Luís (Polary, 2014), described in the frame 3.

The Theory of Entrepreneurship, that was the basis to the model of the Administration for Integrated Sustainability - AIS, has its importance for the economy of the countries. The teaching of the entrepreneurship began in the United States in 1947, in the School of Administration of Harvard (KATZ, 2003). For Schumpeter (1934), it is a process of "creative destruction". For Dornelas (2008), entrepreneur is the one who detects an opportunity and creates a business, assuming calculated risks. For Baggio and Baggio (2014), the entrepreneur has initiative to open a business and passion for what he does.

In its utility potential, in an analysis of the world and Brazilian panorama of entrepreneurship, data of Global Entrepreneurship Monitor - GEM Brazil (Greco, 2008, 2010), showed that the Rate of Entrepreneurs in Initial Apprenticeship - REA of Brazil in 2008 occupied the 13rd position in the world ranking. From 2014 to 2015, Brazil passed from the 13rd to the 8th place of the 31 countries of savings impelled by the efficiency, with REA of 17,2% in 2014 and 21,0% in 2015, the highest one of the group, overcoming the countries of BRICs, the United States and Germany (GEM, 2016).

As for the development levels, the highest rates of REA concentrate on the group of countries impelled by factors and the lowest ones of countries for the innovation. The GEM (2016, p. 18) presents distinctive aspects, emphasizing the importance of their results for the formulation of politics and support programs to the creation and development of new enterprises.

As for the entrepreneurship in the apprenticeships initial and established (GEM, 2019), it is observed that, in 2019, the Rate of Entrepreneurship in Initial Apprenticeship - REA (being developed or new ones), overcame the Rate of Established Entrepreneurship - REE. It is also verified the largest difference rates of the two apprenticeships (7,1 percentile points), tends reached REA its largest mark (23,3%) in 2019. Rate of Established Entrepreneurship (REE) lowered (16,2%), returning to the values obtained in 2016 (16,9%) and 2017 (16.5%), and that in 2018, was of 20,2%, according to graphic 1.

In the combination of indicators (GEM, 2016), it classifies the countries in three groups: impelled them by factors - predominance of activities with strong dependence of the work and natural resources; for the efficiency - advancement of industrialization and gains in scale, with predominance of capital-intensive organizations, as Brazil; and for the innovation - intensive enterprises in knowledge, expansion and modernization of the section of services, according to figure 1.

Among the variables of the component of Technology, of the Technological Administrative dimension, of the model of the Administration for Integrated Sustainability - AIS (Polary, 2012), there is the

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technological support (machines and equipments; systems and work methods). the technological capacity in organizational level, Lall (1992), Bell and Pavitt (1995) and Figueiredo (2003) describe that it is stored, accumulated, in at least 04 components, as described in the figure 2.

In the component of physical "system, base of data, software, machines and equipments" of the organizational technological capacity, defined as specific "knowledge to the organization", described in the figure 2, there are convergent items of the variable technological supports of the model of AIS (POLARY, 2012). In its academic usefulness and practical performance, they were verified in the researches accomplished in industrial MSCs of Maranhao and in the hospitals and public universities of São Luís, the interference of the variable in its component; the interference of the component in its dimension; and the interference of the dimension in the model of AIS, in which the results are described in the following section.

### **4. Empiric Session**

For the analysis of the average of the data of the research in industrial MSCs of the sample (Polary, 2012), the Social and Political Technological, Economical Administrative dimensions Institutional were the ones that presented larger averages, followed by the administration components and technology; economical and social indicators; and politics and strategies (same averages), followed by their respective variables, according to frame 4.

When referring to the analysis of the 12 variables of the model AIS, among the predominant 06 in MSCs, "Managerial competences and abilities of the partners who administrate - Professional Administration (AIS)", it is what influences more positively on the Administration, Success and Perennity of MCs, with average of 8,99 (table 6), and in the Feet with average 8,95 (table 7).

For the results of the Regression and multiple Correlation of the 06 variables that more influences positively on the Administration, Success and Perennity of MCs (Independent - table 6) and of the most important 06 for the success of MCs in the perennity phase (Dependent - table 8) of the AIS Model, it was verified that the variable "Do viability studies: technique, economical and financial" (frame 4), presented substantial positive correlation, according to the regression equation  $Y = \text{the} + b_1x_1 + b_2x_2 + \dots + b_6x_6$ . F of Regression = 12.2673.  $p < 0.0001$ . Coefficient of multiple determination ( $R^2_{xy}$ ) = 0.4612 and coefficient of multiple correlation ( $R_{xy}$ ) = 0.679.

**Conclusion:** F is significant for  $p < 0.0001$ , at least one of the Independent variables (Peditoras) influences the Dependent variable; The determination coefficient means that 46.12% of the variation of Y can be explained by the model, the remaining ones (53.88%) they are inexplicable and are due to the other factors or at random; the variable that has the smallest value of p is the variable to **Do viability studies: technique,**

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**economical and financial**, therefore it is what better explains the variation of Y.

Yet in PEs, it was verified by the results of the Regression and multiple Correlation of the 06 variables that most influences positively on the Administration, Success and Perennity (Independent - table 7) and of the most important 06 for the success in the perennity phase (Dependent - table 09)", that the variable "Skilled industrial labor" (frame 4), it presented substantial positive correlation, according to the regression equation  $Y = a + b_1x_1 + b_2x_2 + \dots + b_6x_6$ . F of Regression = 4.0576.  $p = 0.0038$ . Coefficient of multiple determination ( $R^2_{xy}$ ) = 0.4173 and coefficient of multiple correlation ( $R_{xy}$ ) = 0.6460.

Conclusion: F is significant for  $p < 0.0001$ , at least one of the Independent variables (Peditoras) influences the Dependent variable; the determination coefficient means that 41.73% of the variation of Y can be explained by the model, the remaining ones (58.27%) are inexplicable and are due to the other factors or at random; the variable that has the smallest value of p is the variable Hand of qualified industrial work, therefore it is what better explains the variation of Y.

The results of that research show through the tests, the correlation of all AIS Model variables (frame 2), applied in MCs and SBs of the samples (Polary, 2012), what demonstrated the effectiveness of the model, in the managers' vision, as for the administration, success, perennity of MSCs. Those results are convergent with the studies and researches of Ilda (1984) and Souza (2009), and they suggest the continuity of application of the AIS Model in public and private organizations. The AIS Model adapted for the public organizations (Polary, 2014), was applied in hospitals and public universities (Polary; Silva, 2015), among the results, they stood out.

It is verified by the analysis of the data of the table 10, that the variable "relevance for the society" was the one with the highest average (9,125), and the variable "Training of Resources: intern and external", obtained medium minor (7,250). It is verified how important are those public organizations for the society, because they offer essential services for the citizens in the areas of health and education.

In other research on the Technologies of the Contemporary Administration, among them, AIS (Polary et al., 2016), in Micro companies - MCs and Small sized companies - SCs in the industrial sections and of service delivered in São Luís-MA, it was verified: as for the relevance of the variables of the model AIS, the highest average in MCs was "Preservation of the environment" (8,18); and in SCs was "Location of the business" (8,68).

As for the variables of technologies of the AIS model presents in MCs and SCs that more they contribute to the perennity, it prevailed "Products and services", with averages of 8,75 and 8,36; and as for the importance that is the managers have "knowledge and experiences in the area they work and the relevance to look for their development" to act in MCs and SCs", the results showed averages of 8,27 in MCs, and of 9,06



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in SCs.

As for the time of existence in the market, 64% of MCs are in the interval from 1 to 4 years; 9% among 5 to 8 years; 18% among 9 to 12; and 9% above 12 years; in SCs, 25% up to 4 years; 19% between 5 and 8 years; 6% among 9 to 12 years; and 50% have more than 12 years. It is verified that in MCs, only 9% are above 12 years, in other words, with larger perennity rate. The SCs present larger perennity rate with 50% with more than 12 years.

### **5. Conclusion**

For the analyses of the literature on Entrepreneurship, data of GEM Brazil 2008 to 2019, is verified that the Rate of Entrepreneurs in Initial Apprenticeship - REA of Brazil (being developed or new ones), grew in the world ranking, passing of the 13rd position in 2008, for the 8th place among the 31 impelled countries by efficiency, with REA of 17,2% in 2014 and 21,0% in 2015 and 23,3% in 2019. The Rate of Established Entrepreneurs - REE, in 2019, lowered for 16,2% compared to 2014 (17,5%), 2015 (18,9%), and 2018 (20,2%).

In the results of the field research in industrial MSCs in 2012, two relevant conclusions:

The Administration of the Micro and Small Companies - MSCs, when applied in the Model of the Administration for Integrated Sustainability - AIS, favors his/her perennity.

The perennity of industrial MSCs of the sample impacts positively in the Industrial Development of the State of Maranhao.

In the conclusions of the research in the hospitals and public universities in 2015, the predominant importance of the variables "relevance is verified for the society"; "competences and managerial abilities of the Managers, Professional Administration - AIS"; efficiency "level and effectiveness of the results"; "legality, control and transparency"; and "partnerships: Political-institutional; Public-private and Civil Society" for the excellence of results in the public organizations.

In the conclusions of the research in 2016 of application of the AIS Model, as one of the technologies of Administration, it prevailed in MCs the variable "preservation of the environment", and in SCs, "location of the business". As for the technologies of the AIS Model presents in the MCs and SCs that contribute the most to the perennity, it prevailed for both, "products and services."

The conclusions responded to the problem, to the research subjects and confirmed of the hypothesis, having reached the objectives, being relevant for the academy.

The article calls the attention, not only for the technological contribution in itself (machines and



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equipments, systems and work methods) as relevant for the success of the organizations, but it suggests an awakening for the administration technologies, as the Administration for Integrated Sustainability - AIS, applied in MSCs in 2012, 2016 and in hospitals and public universities in 2015.

It can be concluded that, to strengthen MSCs and public organizations, creating applicable favorable conditions of Professional Administration in the Federal, State and Municipal spheres, possibilities of advancing results in productivity terms with efficiency, quality in the public service delivery and satisfaction of the society are suggested. The local development takes to the regional and national development, creating possibilities of organizational competitiveness in the globalized market.

The expectation is that those results can contribute to future researches in the field of the technologies of Administration, and that they enlarge the debates in the academy, in the organizations and other social actors. It still suggested the continuity of application of the Model of the Administration for Integrated Sustainability - AIS, based on the Theory of Entrepreneurship, in private and public organizations. It is a technology of the administration and one of the viable ways for the perennity and the organizational success.

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### TABLES

Table 1 - Population for stratification, according to municipalities by size of industries.

Nº	Counties	MICRO	SMALL	TOTAL
		Quantity	Quantity	
01	Alcântara	01	-	01
02	Bacabal	36	09	45
03	Balsas	59	21	80
04	Caxias	17	20	37
05	Cajapió	04	-	04
06	Imperatriz	192	97	289
07	Lago da Pedra	16	03	19
08	Paço do Lumiar	04	01	05
09	Raposa	02	-	02
10	Rosário	08	08	16
11	São João dos Patos	11	-	11
12	São José de Ribamar	21	09	30
13	São Luís	739	380	1119
14	Timon	32	10	42
	Total	1142	558	1700

Source: Adapted from FIEMA (2006)

Table 2 – The universe of Public Hospitals and Public Universities of São Luís-MA

#### Public Hospitals and Public Universities in São Luís-MA

Publics Hospitals	IES Publics
1. Djalma Marques Socorrão I Hospital	1. Federal University of Maranhao - UFMA
2. Socorrão II Hospital	2. State University of Maranhao - UEMA
3. Universitário Presidente Dutra Hospital	
4. Aquiles Lisboa Hospital	
5. Aparelho Locomotor Sarah Hospital	
6. Tarquínio Lopes Filho General Hospital	
7. Child Hospital Nursery	
8. Nina Rodrigues Hospital	
9. Dr. Juvêncio Mattos Children Hospital	
10. Pam Filipinho Hospital	
11. Pam Diamante Hospital	
12. Dr. Adelson Sousa Lopes Hospital	
13. Getúlio Vargas Hospital	
14. Pró-Saúde Associação Beneficente e Ass. Social	
15. Aldenora Belo Hospital	
16. Women Hospital	
Total .....1.....19	

Source: [www.google.com.br/hospitaispublicosdesaoluis](http://www.google.com.br/hospitaispublicosdesaoluis), with author updates

[www.google.com.br/universidadespublicasdesaoluis](http://www.google.com.br/universidadespublicasdesaoluis)

Table 3 - Population of MCs and SCs active for stratification in São Luís-MA by size.

Nº	Counties	Company Size	
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		Microcompany-MC	Small Business Company-SC	TOTAL
		Quantity	Quantity	
01	São Luís	14.183	929	15.112

Source: JUCEMA (2016).

Table 4 - Significant samples stratified industries, according to municipalities by size of industries.

Nº	Counties	MICRO Quantity	SMALL Quantity	TOTAL
01	Alcântara	01	-	01
02	Bacabal	03	02	05
03	Balsas	06	02	08
04	Caxias	02	02	04
05	Cajapió	01	-	01
06	Imperatriz	16	08	24
07	Lago da Pedra	03	02	05
08	Paço do Lumiar	02	01	03
09	Raposa	01	-	01
10	Rosário	02	01	03
11	São João dos Patos	01	-	01
12	São José de Ribamar	02	01	03
13	São Luís	51	22	73
14	Timon	02	-	02
	Total	93	41	134

Source: Adapted from FIEMA (2006)

Table 5 - Accessibility samples of MCs and SCs active for stratification in São Luís-MA

Nº	Counties	Company Size		TOTAL
		Microcompany-MC	Small Business Company-SC	
		Quantity	Quantity	
01	São Luís	22	16	38

Source: JUCEMA (2016).

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**Table 6 - The 06 variables of the AIS Model that most positively influence the Management, Success and Perennial of the industrial MCs of the State of Maranhao, in the view of the managers.**

Variables	n	%	Average	Minimum	Maximum	DP
1. Management skills and abilities of the managing partners and others who administer or advise the business - Professional Management (AIS), based on Entrepreneurship.....	92	98.92	8.99	1	10	1.5442
2. Technological support (machinery and equipment, systems and working methods).....	90	96.77	8.86	1	10	1.5107
3. Make feasibility study: technical, economic and financial.....	88	94.62	8.83	3	10	1.5773
4. Qualified industrial labor force.....	92	98.92	8.63	1	10	2.1315
5. Level of industrial efficiency.....	92	98.92	8.62	4	10	1.4207
6. Preservation of the local environment of the Industry.....	90	96.77	8.58	1	10	2.1093

Source: Polary (2012).

**Table 7 - The 06 variables of the AIS model that most positively influence the Management, Success and Perennial of the industrial SBs of Maranhao.**

Variables	n	%	Average	Minimum	Maximum	DP
1. Management skills and abilities of the managing partners and others who administer or advise the business - Professional Management (AIS), based on Entrepreneurship.....	41	100.00	8.95	7	10	1.0476
2. Technological support (machinery and equipment, systems and working methods).....	41	100.00	8.80	7	10	0.9992
3. Qualified industrial labor force.....	41	100.00	8.61	5	10	1.4980
4. Level of industrial efficiency.....	40	97.56	8.58	6	10	1.1068
5. Location of the Small Business.....	41	100.00	8.56	4	10	1.4841
6. Preservation of the local environment of the Industry.....	41	100.00	8.44	1	19	2.7023

Source: Polary (2012).

**Table 8 - The 06 most important variables for the success of the industrial MCs of Maranhao in the perennial phase.**

Variables	n	%	Average	Minimum	Maximum	DP
1. To reinvest in Microenterprises to better serve their workforce, their clientele and fulfill their economic and social function in order to remain successful in the market, in the view of the managers.....	90	96.77	9.38	6	10	0.9189
2. Prioritize the qualification of industrial labor and maintain the required levels of efficiency and productivity of the sector.....	93	100.00	9.25	1	10	1.4192
3. Prioritize the technical and professional development of the partners and of others who administer or advise the company.....	93	100.00	9.22	3	10	1.3092
4. Preservation of the local environment of industry....	92	98.92	8.88	3	10	1.5956
5. Use the Industrial Development Plan - IDP 2020.....	84	90.32	7.24	1	10	2.8523
6. Public policies of the Federal, State and Municipal Governments, attractive investments and microenterprise partnerships with Government and private company.....	91	97.85	6.77	1	10	3.0553

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Source: Polary (2012).

**Table 9 - The 06 most important variables for the success of the industrial SBs of Maranhao in the perennial phase.**

Variables	n	%	Average	Minimum	Maximum	DP
1. Prioritize the qualification of industrial labor and maintain the required levels of efficiency and productivity of the sector.....	41	100.00	9.20	5	10	1.1878
2. Reinvesting in Small Businesses (SBs), to better serve the workforce, the clientele and fulfill its economic and social function in order to remain successful in the market.....	41	100.00	9.10	4	10	1.2001
3. Prioritize the technical and professional development of the partners and of others who administer or advise the company the SBs.....	41	100.00	9.07	6	10	1.2528
4. Preservation of the environment.....	41	100.00	8.56	4	10	1.5008
5. Use the Development Plan Industrial - DPI 2020....	40	97.56	8.20	4	10	1.7127
6. Public Policies of Federal, State and Municipal Governments, attractive investments and partnership with Small Businesses with Government and private companies.....	41	100.00	7.51	2	10	2.0140

Source: Polary (2012).

**Table 10 - Variables that most favorably influence the organizational excellence of the institutions surveyed**

Variables	Average	Minimum	Maximum	DP
Managerial competencies and skills of managers, Professional Management - AIS.....	9,000	7	10	1,195229
Feasibility Study: technical, political, social and financial.....	7,625	7	8	0,517549
Technology and innovation.....	7,375	6	10	1,407886
Level of efficiency and effectiveness of results.....	8,625	8	10	0,744024
Public Policies of the Federal, State and Municipal Government.....	7,375	5	10	1,505941
Legality, control and transparency.....	8,625	6	10	1,59799
Partnerships: Political-Institutional; Public-Private and Civil Society..	8,625	6	10	1,407886
Institutional and managerial public development.....	8,375	6	10	1,30247
Qualification, performance and results of civil servants.....	8,000	6	10	1,511858
Resource Training: internal and external.....	7,250	6	8	1,035098
Environmental Sustainability.....	7,875	5	10	1,642081
Relevance to Society.....	9,125	8	10	0,991031

Source: Polary and Silva (2015).



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### FRAMES

Frame 1 - GDP 14 municipalities of the sample of 134 MSCs researched in the Industrial Sector-MA

GDP	Nº	Counties	Current Price GDP	%
	1	Alcântara	R\$65.418.000,00	0,17%
	2	Bacabal	R\$505.600.000,00	1,27%
	3	Balsas	R\$1.120.221.000,00	2,82%
	4	Cajapió	R\$22.781.000,00	0,06%
	5	Caxias	R\$825.527.000,00	2,08%
	6	Imperatriz	R\$2.000.735.000,00	5,03%
	7	Lago da Pedra	R\$152.435.000,00	0,38%
	8	Paço do Lumiar	R\$291.564.000,00	0,73%
	9	Raposa	R\$100.920.000,00	0,25%
	10	Rosário	R\$134.819.000,00	0,34%
	11	São João dos Patos	R\$89.164.000,00	0,22%
	12	São José de Ribamar	R\$473.407.000,00	1,19%
	13	São Luís	R\$ 15.337.347.000,00	38,58%
	14	Timon	R\$715.427.000,00	1,81%
		TOTAL GDP (municipalities participating in the research)	R\$ 21.835.365.000,00	54,93%
		TOTAL GDP (municipalities not participating in the research)	R\$ 17.918.346.000,00	45,07%
		GDP Maranhao	R\$ 39.753.711.000,00	100%

Source:  
of the

municipalities of Maranhao – 2009 (IBGE - 2012).

Frame 2 - The AIS model. Integrates 03 dimensions, 05 components and 12 variables

MODEL	DIMENSIONS	COMPONENTS	VARIABLES
AIS	Administrative Technological	Management	Skills and Management Skills - Professional Management-AIS, based on Entrepreneurship.
			Feasibility studies: technical, economic and financial.
		Technology	Technological support (machinery and equipment, systems and working methods).
			Industrial efficiency level.
	Political Institutional	Policies	Public Policies of the Federal, State and Municipal Government.
			Legal, tax and labor aspects.
		Strategies	Local Strategies and Political Institutional Partnerships, Industrial Segment and Civil Society.
			Industrial Development Plan - IDP-2020.
	Economic Social	Economic and Social Indicators	Qualified industrial labor force.
			Investment attractiveness: internal, external and local government.
			Preservation of the local environment of industry.
			Business Location.

Source: Polary (2012).

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Frame 3 - AIS model adapted for Public Administration. Integrates 03 dimensions, 05 components and 12 variables

MODEL	DIMENSIONS	COMPONENTS	VARIABLES
	Administrative Technological	Management	Managerial Competencies and Skills - Professional Management (AIS).
			Feasibility studies: technical, political, social and financial.
		Technology	Technological support: technology and innovation; work processes and methods; equipment.
			Level of efficiency and effectiveness of results.
	Political Institutional	Policies	Public Policies of the Federal, State and Municipal Government.
			Legality, control and transparency.
		Strategies	Partnerships: Institutional Politician, Public-Private and Civil Society.
			Institutional and Managerial Public Development.
	Economic Social	Economic and Social Indicators	Qualification, performance and results of civil servants.
			Fundraising: internal and external.
			Environmental Sustainability.
			Relevance to society.

Source: Polary (2014).

Frame 4 - The AIS Model: averages and percentages of Dimensions, Components and Variables that positively influence the Management, Success and Perennity of Maranhao's industrial MSCs, in the view of managers.

		AVERAGE					VARIABLES		
	Administrative Technological			Management			Managerial skills and abilities of the partners who manager and those who administer or advise the business - Professional		

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								nal Manage ment (AIS), based on Entrepren eurship.... ..... ... Do feasibilit y studies: technical, economic and financial ..... ..... .....		
				Technology				Technolo gical support (machine ry and equipmen t; systems and working methods). ..... ..... ..... Industrial efficienc y level..... ..		
				Policies				Public Policies of the Federal, State and Municipa l Governm ent... ..... ..... Legal, tax and labor aspects.... ..		
	Political Institutional			Strategies				Local Strategies and Institutio nal Political Partnersh ips, Industrial Segment and Civil Society... .... Industrial Develop ment		

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Source: Polary (2012).

Independent Variables (Peddler)	Partial regression coefficient	t	P
Constant (Intercept)	1.4039(a)	-	-
Skills and managerial skills of the managing partners and others who administer or advise the business - Professional Management (AIS), based on Entrepreneurship	0.0234(b1)	0.2571	0.7977
Technological support (machinery and equipment, systems and working methods)	0.2817(b2)	2.9741	0.0038
<b>Conduct feasibility studies: technical, economic and financial</b>	<b>0.3615(b3)</b>	<b>3.6469</b>	<b>0.0004</b>
Qualified industrial labor force	-0.0444(b4)	-0.7225	0.4719
Level of industrial efficiency	0.2301(b5)	2.3558	0.0207
Preservation of the local environment of industry	0.0414(b6)	0.5946	0.5536

Source: Polary (2012).

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Frame 6 - Multiple linear regression among the variables that most positively influence the Management, Success and Perennity (Independent) and Reinvest in the SBs to better serve their workforce, the clientele and fulfill their economic and social function to remain successful in the market (Dependent) in the industrial SBs of Maranhao.

Independent Variables (Peddler)	Partial regression coefficient	T	p
Constant (Intercept)	1.9189(a)	-	-
Competencies and management skills of the managing partners and others who administer or advise the business allied to Professional Management (AIS) and Entrepreneurship.	0.2420(b1)	1.4464	0.1571
Technological support (machinery and equipment, systems and working methods)	-0.2618(b2)	-1.3601	0.1827
<b>Qualified industrial labor force</b>	<b>0.3233(b3)</b>	<b>2.7789</b>	<b>0.0088</b>
Level of industrial efficiency	0.3970(b4)	2.1712	0.0369
Location of the Small Business	<b>0.0773(b5)</b>	<b>0.6751</b>	<b>0.5042</b>
Preservation of the local environment of industry	0.0550(b6)	0.7674	0.4481

Source: Polary (2012).

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### FIGURES

Figure 1 – Classification of countries participating in GEM 2016 according to their economic characteristics <sup>1</sup>-2016

CONTINENT	FACTOR DRIVEN COUNTRIES (6)	EFFICIENCY DRIVEN COUNTRIES (32)	INNOVATION DRIVEN COUNTRIES (27)
África	Burkina Faso, Camarões	África do Sul, Egito, Marrocos	
Ásia & Oceania	Casaquistão <sup>2</sup> , Índia, Irã <sup>2</sup>	Arábia Saudita <sup>3</sup> , China, Indonésia, Jordânia, Líbano <sup>3</sup> , Malásia <sup>3</sup> , Tailândia, Turquia <sup>3</sup>	Austrália, Catar, Coréia, Emirados Árabes Unidos, Hong Kong, Israel, Taiwan
América Latina & Caribe		Argentina <sup>3</sup> , Brasil, Chile <sup>3</sup> , Colômbia, Equador, Guatemala, México <sup>3</sup> , Panamá <sup>3</sup> , Peru, Uruguai <sup>3</sup>	
Europa	Rússia <sup>2</sup>	Bulgária, Croácia <sup>3</sup> , Eslováquia <sup>3</sup> , Geórgia, Hungria <sup>3</sup> , Letônia <sup>3</sup> , Macedônia, Polônia <sup>3</sup>	Alemanha, Áustria, Chipre, Eslovênia, Espanha, Estónia, França, Finlândia, Grécia, Holanda, Irlanda, Itália, Luxemburgo, Portugal, Reino Unido, Suécia, Suíça
América do Norte		Belize, El Salvador, Jamaica	Canadá, Estados Unidos, Porto Rico

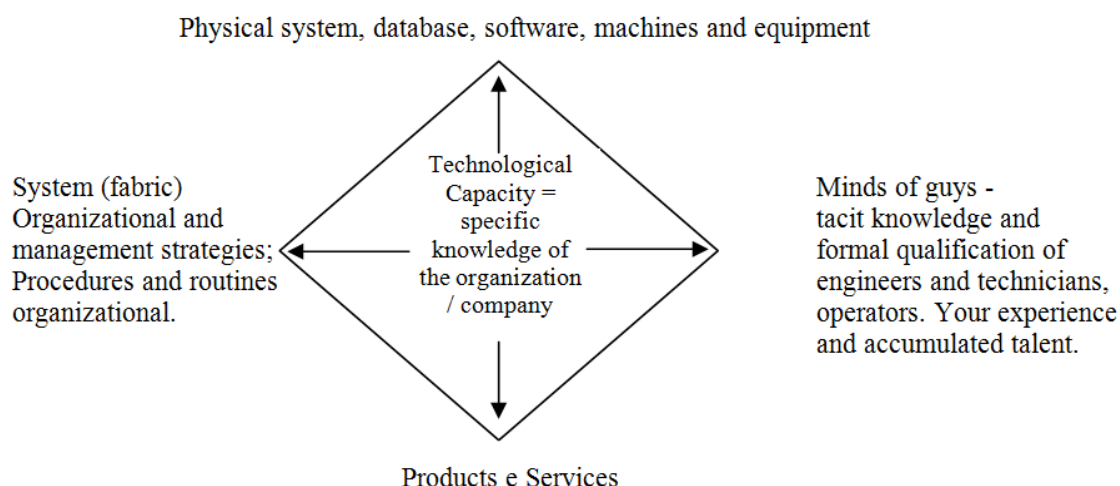
Source: GEM 2016

<sup>1</sup> This classification is based on the Global Competitiveness Report - Publication of the World Economic Forum that identifies three phases of economic development, considering PIB per capita and the share of exports related to primary goods.

<sup>2</sup> In transition for efficiency-driven economies.

<sup>3</sup> In transition for economies driven by innovation.

Figure 2: Visualization of the technological trajectory of developing economy companies



Source: Lall (1992), Bell e Pavitt (1995), Figueiredo (2003).

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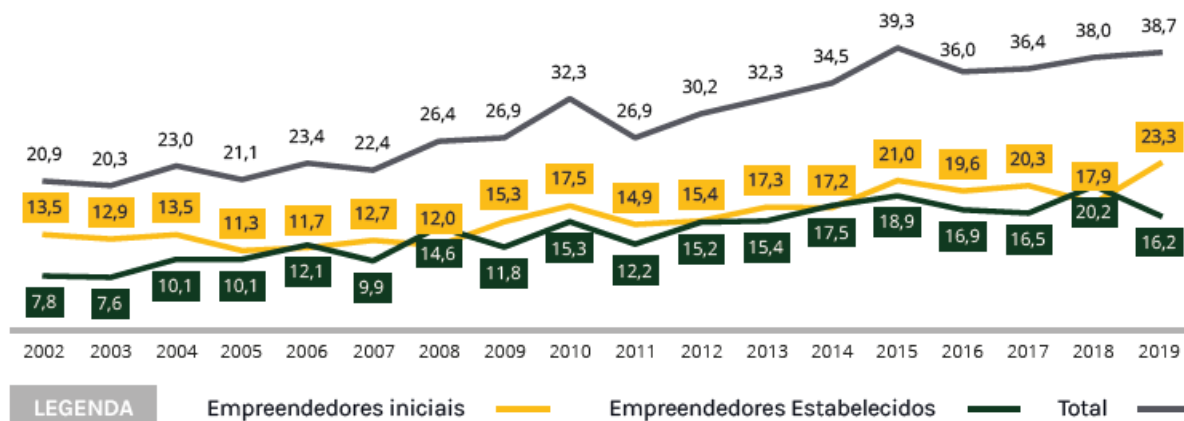
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### GRAPHIC

Graphic 1 - Rates<sup>1</sup> (%) second stage of entrepreneurship REA, REE, RTE - Brazil - 2002:2019



Source: GEM Brazil 2019

<sup>1</sup> Percentage of the population aged 18 to 64 years.



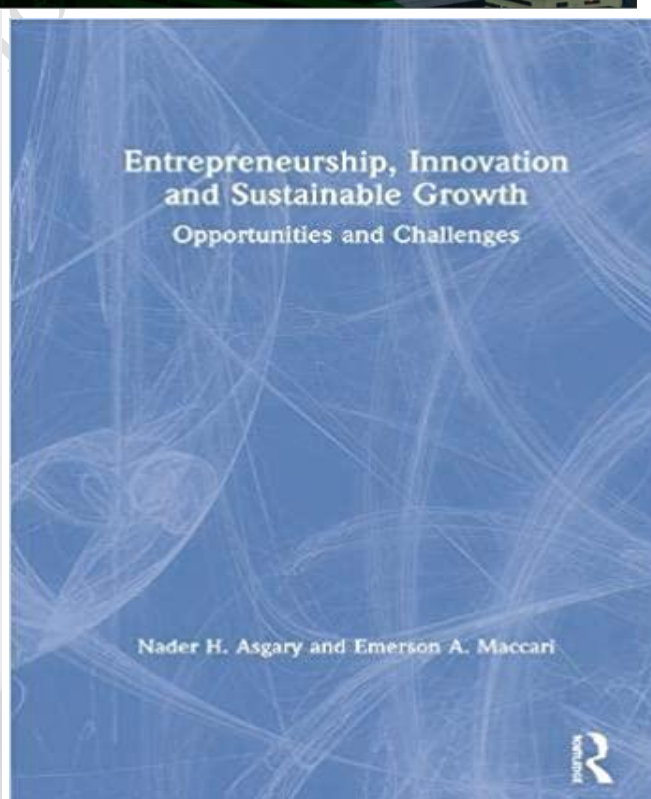
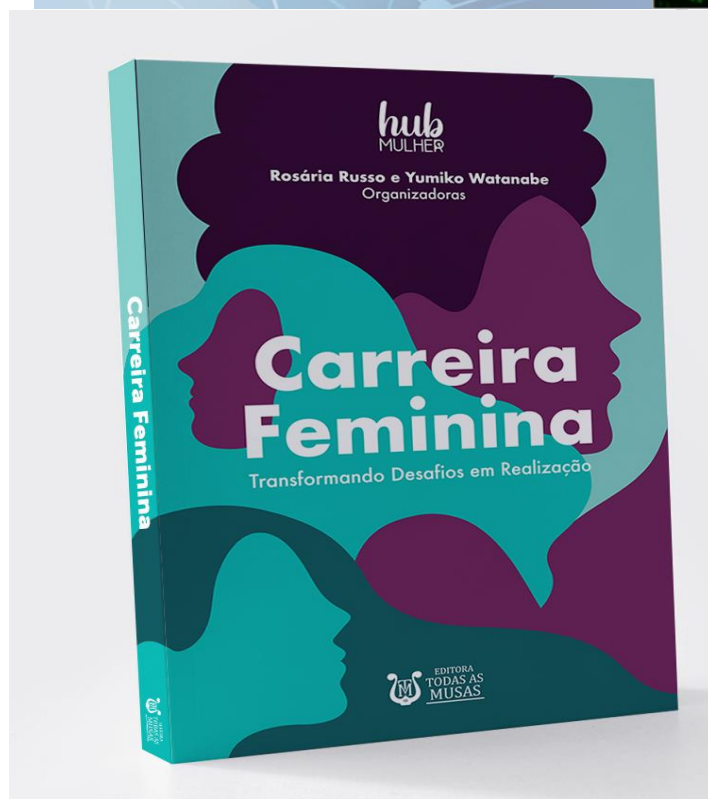
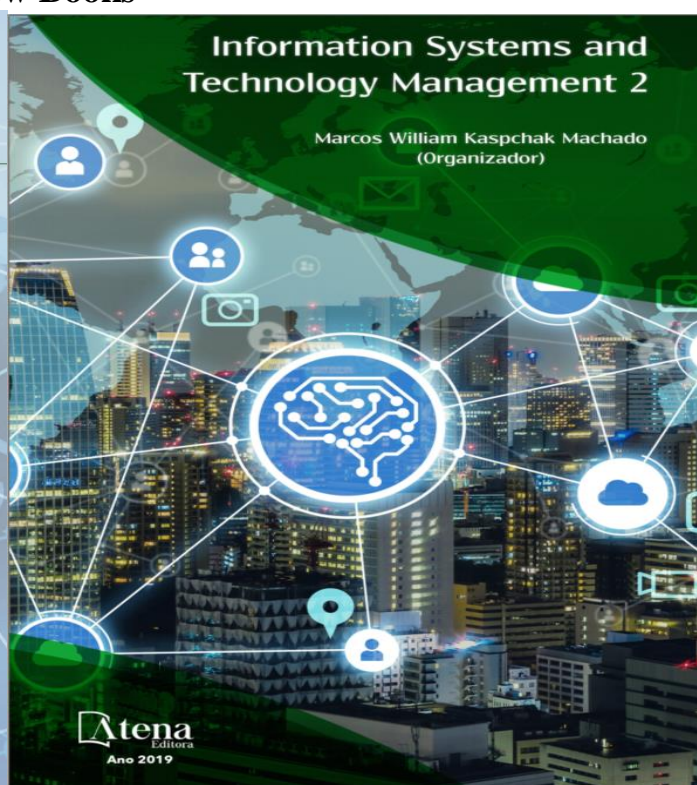
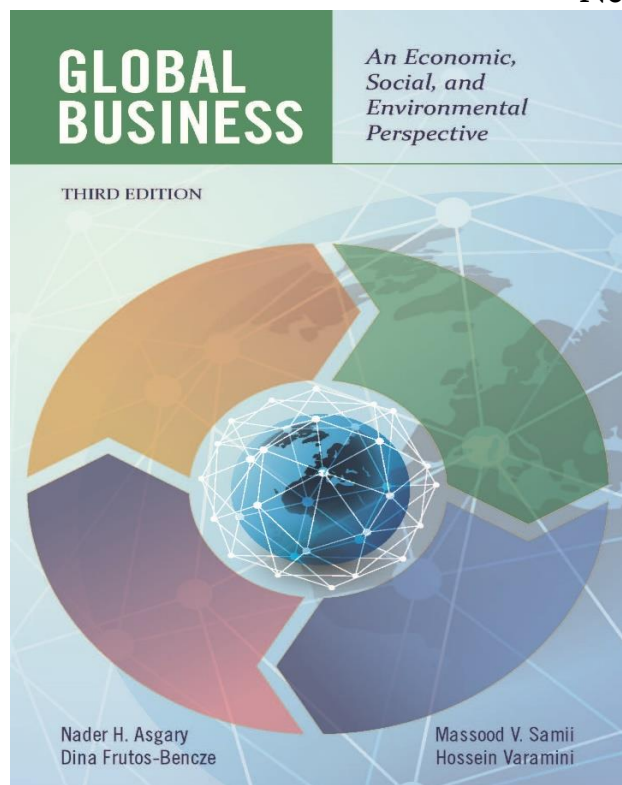
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*Notes*

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