

Assessing Readiness for the Fourth Industrial Revolution: A Comparison of GCC and BRICS Countries

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This study assesses and evaluates the readiness of the Gulf Cooperation Council (GCC) nations as compared to Brazil, Russia, India, China, and South Africa (BRICS) for the Fourth Industrial Revolution. The study used 53 indicators of four factors to assess the ability of target groups. The four factors are environment, readiness, usage, and impact. GCC countries have better preparation for the fourth industrial revolution than the BRICS countries. The difference between the two groups was significant concerning political and business environments, and about the ICT usage by individual, business, and government. However, no significant difference found between the GCC and BRICS countries with the readiness and impact. On the relationship among the factors, findings of the study supported the stated three hypotheses and confirmed that about 56% variation in the ICT usage by individual, business, and the government is explained by a variation in a political and business environment. Similarly, about 48% of the variation in economic and social impact is explained by a variation in political and business environments. Likewise, about 70% of the variation in economic and social impact is explained by a variation of ICT usage by individual, business, and government.

Keywords: *assessment, BRICS, digital transformation, the fourth industrial revolution, GCC*

Introduction

The world is witnessing technological, digital, and biological innovations that will dramatically change the way we live differently from what we know today (Venkatesh, Singhal, & Mathew, 2017). The impacts of this change can be anything we never imagined or experienced before. This phenomenon is known today as the Fourth Industrial Revolution (Sae-Lim & Jermstittiparsert,

2019). For the First Industrial Revolution, we used water and steam power to improve productivity and performance, while electricity was the main key player for the Second Industrial Revolution, and electronics and information technology was the force behind the Third Industrial Revolution (Schwab, 2015). As pointed by Schwab (2015), the Fourth Industrial Revolution is growing and changing almost every industry in every country, including the Gulf Cooperation Council (GCC) and Brazil, Russia, India, China, and South Africa (BRICS) countries.

In May 1981, the leaders of six gulf countries; Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates; signed an agreement in Abu Dhabi for establishing the Gulf Cooperation Council (GCC). Among the basic objectives of the council are to formulate similar regulations in economic and financial affairs, education and culture, social and health affairs. Besides, the council aimed to stimulate scientific and technological progress in the fields of industry, mining, agriculture, water, and animal resources (GCC Secretariat General, 2019). Certainly, these objectives have played important roles in contributing to the growth and development of GCC countries.

Since its establishment, the cooperation among the members' countries has realized important achievements in many fields, including power and energy, telecommunication and communication, business and trade, agriculture and transportation (GCC Secretariat General., 2019). The latest GDP report published by the GCC Secretariat placed the group at the 13th position in the world with an estimated \$1.4 trillion. However, the group took the leading position in trade surplus balance (\$470 billion), in crude oil production (16.23 million barrels per day), and the second position in natural gas reserve (41838 Billion cubic meters) (GCC Secretariat General, 2013). These achievements are needed in reaching successful readiness for the fourth industrial revolution.

Unlike the GCC group, the BRICS group was founded in 2006 by five countries of different geographical locations but with similar emerging economies. Brazil from the Americas, Russia from Europe, India, and China from Asia, and South Africa from Africa. The group started with the first four countries (BRIC) and South Africa joined the group in 2010. Since 2009, the BRICS countries have been holding the annual meeting at different locations. The most recent summit was hosted by Brazil in November 2019 (BRICS information portal, 2018).

BRICS nations have estimated foreign reserves of \$4 trillion and posing new challenges to the world order dominated by the Western nations. The five nations account for over 40% of the world's population, one-fourth of the world's GDP, and since 2009, they represent 55% of global economic growth. The BRICS have raced onward in the face of the financial downturn and are poised to take a larger share of the global economy in the coming years (Marquand, 2011; Mminele, 2016; Murphy, 2013).

BRICS have been successful in reaching common agreement on financial and economic issues such as the creation of BRICS Interbank Cooperation Mechanism and the establishment of the

BRICS Exchange Alliance. In 2014, the members signed an Agreement on the New Development Bank and the Treaty for the Establishment of a BRICS Contingent Reserve Arrangement (“BRICS information portal,” 2018).

This study assesses and evaluates the readiness of the GCC and BRICS nations for the fourth industrial revolution. The two groups are very similar in terms of the rapid growth of ICT infrastructures and usage, rapid economic growth, and impacts on the global economy. Therefore, the two blocks have been the target of many studies (Akarli, 2007; Gackstatter et al., 2014; Sultan, 2016; Niblock, Niblock, Sun, & Galindo, 2016).

Factors and Indicators of Study

As listed in Table 1, the four factors of the study are environment, readiness, usage, and impact (Baller, Dutta, & Lanvin, 2016). The environmental factor is based on two important indicators, (1) political and regulatory environment, and (2) business and innovation environment. The first indicator collected data about laws and regulations, intellectual property protection, software, and contracts. On the other hand, the second indicator collected data about the availability of the latest technology and venture capital, tax rate, the number of days or procedures to start a business, local competition, and education. As pointed by Akarli (2007), the GCC countries have all the opportunities to grow and compete with the leading G-7 economies provided that the overall growth environment improves across the region. Similarly, the BRICS countries are expected to replace the West through consistent and coordinated efforts (Sultan, 2016) and be innovative to the current global framework (Petroni, 2019).

The readiness factor consists of three indicators, (1) infrastructure, (2) affordability, and (3) skills. Infrastructure collected data about electricity, a mobile network, and the internet. Similarly, the second indicator collected data about mobile and fixed-line tariffs and competition between the Internet and telephony. The third indicator collected data about the quality of education, the enrolment rate, and literacy rate. As reported by El-Katiri (2018), since 2009 GCC countries have an infrastructure that interlinks their national power grid. This infrastructure support power stability, increase efficiency and decrease electricity cost, and promote regional integration and cooperation. Similarly, Rodionova et al. (2017) believe that cooperation in energy sectors among the BRICS countries will positively affect the transition of these countries to a more high-tech level of development, and continuing shift toward service- and consumption-led growth.

Like readiness, the usage factor is based on three indicators, (1) individual usage, (2) business usage, and (3) government usage. Items of Individual usage collected data about mobile subscriptions, individual use of the Internet and social network, households’ personal computers, and Internet access. On the other hand, items for business usage collected data related to firm-level technology absorption, the capacity of innovation, ICT use for business, and staff training. Similarly, the items for government usage focused on the importance of ICT to the government vision, government online services, and government success in promoting ICT. Previous studies

have confirmed the relationship between ICT development and ICT access and use (Kaba & Said, 2012), the support of government for ICT, and the usage of ICT by government sectors (Kaba & Said, 2014).

Our fourth and final factor, impact, has two indicators, (1) economic impact, and (2) social impact. The first indicator collected data about the impact of ICT on business and organizational models, ICT applications, and knowledge-intensive jobs. Similarly, items for social impact collected data about the impact of ICTs on access to basic services, Internet access in schools, ICT use, and government efficiency, and e-participation. Many studies have confirmed the impact of ICT on business and society (Alshubiri et al., 2019; Venkatesh, Saxena, Said, & Al-Tamimi, 2018; Singhal, Mathew, 2017; Kumar Sharma, 2014).

Table 1: Factors and Indicators

No.	Factors	Indicator	Not of Item
1	Environment	The political and regulatory environment	9
		Business and innovation environment	9
2	Readiness	Infrastructure	4
		Affordability	3
		Skills	4
3	Usage	Individual Usage	7
		Business Usage	6
		Government Usage	3
4	Impact	Economic impact	4
		Social impact	4

Source: The Global Information Technology Report 2016

Research Method

The main objective of this study is to investigate the readiness of the GCC and BRICS countries for the fourth industrial revolution. The investigation is based on the data reported in the latest edition of The Global Information Technology Report (GITR) published by the World Economic Forum in partnership with ISEAD- the Business School for the World (Baller et al., 2016). The study attempts to test and verify the following seven hypotheses. The first four hypotheses assume significant differences between GCC countries and BRICS countries concerning political and business environments; infrastructures, affordability, and skills; individual, business, and government usages; economic and social impacts.

1. There is a significant difference between the GCC and BRICS countries on political and business environments as a factor of readiness for the fourth industrial revolution
2. There is a significant difference between the GCC and BRICS countries on infrastructures, affordability, and skills as a factor of readiness for the fourth industrial revolution
3. There is a significant difference between the GCC and BRICS countries on the individual, business, and government usages as a factor of readiness for the fourth industrial revolution
4. There is a significant difference between the GCC and BRICS countries on economic and social impacts as a factor of readiness for the fourth industrial revolution.

The remaining three hypotheses propose a relationship between the four factors, i.e. environment, readiness, usage, and impact based on the GITR report (Baller et al., 2016).

5. The political and business environment has a positive impact on the individual, business, and government usage
6. The political and business environment has a positive effect on economic and social impact
7. Individual, business and government usage has a positive effect on economic and social impact.

As mentioned earlier, the target population of the study is the GCC countries and BRICS countries. The first group, the GCC countries, consists of six nations, namely Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE. The second group, the BRICS countries, consists of five nations, namely Brazil, Russia, India, China, and South Africa.

The study uses 53 indicators of the four factors adopted from GITR to assess countries' ability to capitalize on the digital revolution and their preparedness to benefit from the emerging Fourth Industrial Revolution. The achieved values of the four factors for each member country were recorded and coded in the Statistical Package for the Social Sciences (SPSS) version 25. This was followed by using statistical tests such as t-test, correlation matrix, and regression to verify and validate the hypotheses. The following section presents data analysis and the findings of the study.

Data Analysis and Findings

This section discusses the findings of the study on factors indicating the readiness of the GCC countries as compared to BRICS countries for the fourth industrial revolution. The section explains the rank and value achieved by each member country with political and business environments; infrastructures, affordability, and skills; individual, business, and government usages; as well as social and economic impact. It also presents findings of differences between the two groups concerning the four factors and identifies the nature of the relationship between the four factors leading to the fourth industrial revolution.

Ranks of GCC and BRICS Countries

Table 2 illustrates the ranks and values achieved by the GCC and BRICS countries with the four factors. At the individual country level, Qatar occupied the leading position on the environmental factor (Rank = 15, Value = 5.3) for both GCC and BRICS countries, while South Africa tops BRICS countries (Rank = 33, Value = 4.7). On the other hand, Brazil receives the lowest position (Rank = 118, Value = 3.4) for both the GCC and BRICS countries, while Kuwait appeared on the lowest position (Rank = 68, Value = 4.0) in the GCC group. At the group level, the GCC group outperformed the BRICS group on the environmental factor by recording a total of 28.20 value scores against 19.70 for BRICS countries.

For the second factor, the Kingdom of Bahrain outperformed the eleven countries by achieving 26 ranks in the world and 5.8 value on the readiness factor. However, the Russian Federation tops BRICS countries by recording rank 32 and 5.5 value on the same factor. On other hand, India receives the lowest position (Rank = 88, Value = 4.4) for both GCC and BRICS countries, while Oman appeared on the lowest position (Rank = 70, Value = 4.8) in the GCC group. At the group level, the GCC countries recorded better results on this factor than that of BRICS countries by achieving a total of 30.90 value scores compared to 24.50 for BRICS countries.

The analysis of ranks and values on the third factor, usage, shows that UAE tops the list of the eleven countries (Rank = 13, Value = 5.6), while Brazil tops the BRICS countries (Rank = 67, Value = 4.0) on the same factor. On other hand, again India receives the lowest position (Rank = 103, Value = 3.3) for both the GCC and BRICS countries, while Kuwait appeared on the lowest position (Rank = 68, Value = 4.0) in the GCC group. At the group level, the GCC countries took the leading position by recording a 30.20 value score against 19.70 for BRICS countries.

Again, for the fourth factor, UAE outperformed the eleven countries by achieving 18 ranks in the world and 5.2 value on the economic and social impact measurement. However, the People Republic of China tops BRICS countries by recording a global rank of 39 and 5.5 values on the same factor. On the other hand, South Africa appeared on the bottom of the list (Rank = 93, Value = 3.4) for both the GCC and BRICS countries, however, Kuwait for the third times appeared on the lowest position (Rank = 90, Value = 3.4) in the GCC group. Nevertheless, by looking at the total of value scores for the groups, GCC countries outperformed the BRICS countries with 26 value score against 18.80 for BRICS countries.

Table 2: Rank of the GCC and BRICS Countries

Group	Country	Environment		Readiness		Usage		Impact	
		Rank	Value	Rank	Value	Rank	Value	Rank	Value
GCC	Bahrain	35	4.6	26	5.8	24	5.3	32	4.5
	Kuwait	68	4.0	51	5.2	47	4.3	90	3.4
	Oman	52	4.2	70	4.8	36	4.5	66	3.7
	Qatar	15	5.3	54	5.1	19	5.4	27	4.9
	Saudi Arabia	28	4.9	60	5.0	29	5.1	38	4.3
	UAE	19	5.2	56	5.0	13	5.6	18	5.2
	Total :		28.20	Total :	30.90	Total :	30.20	Total :	26.0
BRICS	Brazil	118	3.4	55	5.1	67	4.0	79	3.5
	Russia	67	4.0	32	5.5	40	4.5	41	4.1
	India	99	3.7	88	4.4	103	3.3	73	3.6
	China	83	3.9	75	4.7	51	4.1	39	4.2
	South Africa	33	4.7	69	4.8	75	3.8	93	3.4
	Total :		19.70	Total :	24.50	Total :	19.70	Total :	18.80

Figure 1 illustrates compared GCC and BRICS scores with readiness, usage, environment, and impact.

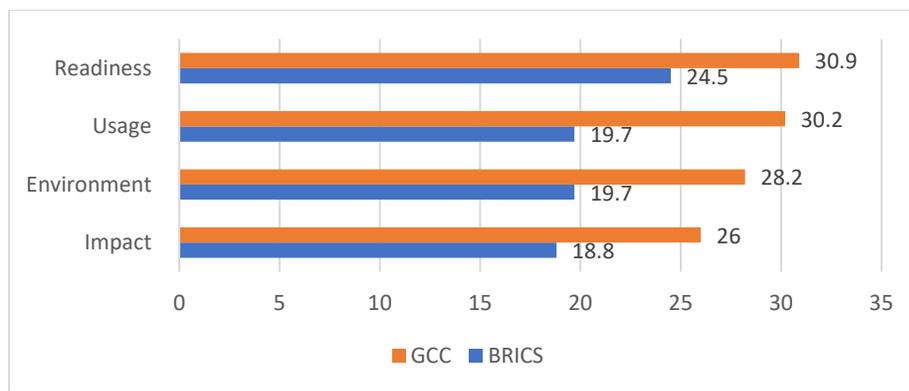


Figure 1: Value Score comparison of the GCC and BRICS countries

Differences between the GCC and BRICS Countries

This paper identified the differences between the GCC and BRICS countries by analyzing and examining the values of mean scores and Standard Deviation (SD) of the four factors. As illustrated in Table 3, the findings of the study show that the GCC countries have better political and business environments (Mean = 4.7000, SD = 0.52915) than the BRICS countries (Mean = 3.94, SD = 0.48270). Also, the independent t-test results indicate that the difference between the two groups is significant (t value = -2.466, p-value = 0.036). The result confirms the first hypothesis of the study that assumed significant differences between the GCC and BRICS countries on political and business environments as a factor of readiness for the fourth industrial revolution.

Similarly, the GCC countries appeared to have stronger and better infrastructures, reasonable affordability, and needed skills for the fourth industrial revolution (Mean = 5.1500, SD = 0.34496) than that of BRICS countries (Mean = 4.9000, SD = 0.41833). However, the results of the independent t-test reveal that this difference between the groups is not significant (t value = -1.088, p-value = 0.305). The finding rejects the second hypothesis of the study that proposed significant differences between GCC and BRICS countries on infrastructures, affordability, and skills as a factor of readiness for the fourth industrial revolution. The findings suggest that both GCC and BRICS countries have similar infrastructures, affordability, and skills for the fourth industrial revolution.

Likewise, individual usage, business usage, and government usage of the GCC countries (Mean = 5.0333, SD = 0.52026) outperformed that of the BRICS countries (Mean = 3.9400, SD = 0.43932). Moreover, the analysis of the independent t-test shows that the difference between the two groups on this factor is significant (t value = -3.716, p-value = 0.005). The finding supports the third hypothesis of the study that assumed significant differences between the GCC and BRICS countries on an individual, business, and government usages as a factor of readiness for the fourth industrial revolution.

Again, on the fourth factor, i.e. social and economic impact, the GCC countries recorded better performance (Mean = 4.3333, SD = 0.68896) as compared to BRICS countries (Mean = 3.7600, SD = 0.36469). Nevertheless, the analysis of the independent t-test indicates that the difference is not significant between the two groups (t value -1.666, p-value = 0.130). The findings reject the stated hypothesis four and indicate that both GCC and BRICS countries have a similar social and economic situation.

There is a significant difference between the GCC and BRICS countries on economic and social impacts as a factor of readiness for the fourth industrial revolution

Table 3: Group mean scores in relation to the factors

Factor	Group	Mean	SD	t-value	p-value
Environments	GCC	4.7000	0.52915	-2.466	0.036*
	BRICS	3.9400	0.48270		
Readiness	GCC	5.1500	0.34496	-1.088	0.305
	BRICS	4.9000	0.41833		
Usages	GCC	5.0333	0.52026	-3.716	0.005*
	BRICS	3.9400	0.43932		
Impacts	GCC	4.3333	0.68896	-1.666	0.130
	BRICS	3.7600	0.36469		

** SD = Standard Deviation. *The mean difference is significant at 0.05 levels.

Identifying relationship among factors

Another important objective of this study is to find out the nature of the relationship between the four factors. For this purpose, we applied the correlation matrix to identify the existence of the relationship between the four factors. As illustrated in Table 4, the analysis of correlation indicates a significant relationship between political and business environments and individual, business, and government usages ($r = 0.780$), political and business environments and social and economic impact ($r = 0.731$), between individual, business, and government usage and social and economic impact ($r = 0.855$). On the other hand, no significant relationship found between political and business environments and readiness of infrastructures, affordability, and skills ($r = 0.183$), between readiness and usage ($r = 0.51$), and between readiness and impact ($r = 0.297$).

Table 4: Correlation Matrix

Factor	1	2	3	4
1. Environment	1			
2. Readiness	0.183	1		
3. Usage	0.780**	0.571	1	
4. Impact	0.731*	0.297	0.855**	1

** . Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Relationship between Environment and Usage

Further statistical analyses are conducted to determine the nature of the relationship among factors. Hypothesis five assumes the impact of political and business environments on an individual, business, and government usages. Accordingly, we performed a regression analysis to determine

such a relationship. Table 5 confirms a positive relationship between the two factors (F Value = 13.986, P-Value = 0.005). The adjusted R-square is 0.565 (Table 6), indicating that about 56% of the variation in the individual, business, and government usage is explained by variations in political and business environments. The other remaining 44% variation is related to factors not listed in the model. Moreover, the visual impression illustrated in Figure 2 shows the strength of the association between the two factors. These results confirm hypothesis five and indicate that the political and business environments are a good predictor for the individual, business, and government usages.

Table 5: ANOVA Table of Environment on Usage

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.277	1	3.277	13.986	0.005 ^b
	Residual	2.109	9	.234		
	Total	5.385	10			

a. Dependent Variable: Usage b. Predictors: (Constant), Environment

Table 6: Summary of Model

Model	R	R Square	Adjusted R Square	Std. An error of the Estimate
1	0.780 ^a	0.608	0.565	0.48404

a. Dependent Variable: Usage b. Predictors: (Constant), Environment

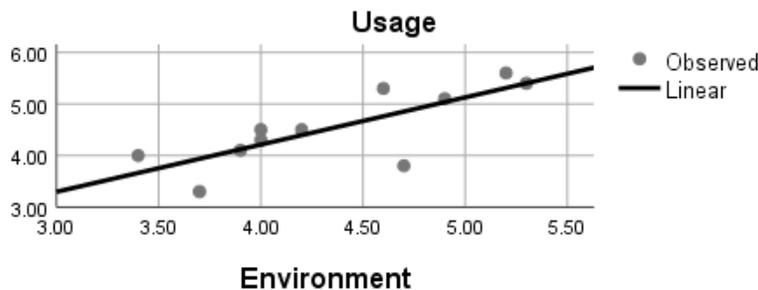


Figure 2: Relationship between Environment and Usage

Relationship between Environment and Impact

The sixth hypothesis of the study assumes that political and business environments determine social and economic impact. To verify and validate this statement we used a simple linear regression analysis to determine the effect of independent variable, environment, on the dependent

variable, which is the social and economic impact. Table 7 confirms a positive relationship between the two variables (F Value = 10.312, P-Value = 0.011). The adjusted R-square is 0.482 (Table 8), indicating that about 48% of the variation in social and economic impacts is explained by variation in political and business environments. The remaining 52% variation is related to other factors not listed in the model. Also, Figure 3 illustrates the strength of the association between the environment and impact. The findings support the proposed hypothesis and confirm that political and business environments can predict economic and social impacts.

Table 7: ANOVA Table of Environment on Impact

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.030	1	2.030	10.312	.011 ^b
	Residual	1.772	9	.197		
	Total	3.802	10			
a. Dependent Variable: Impact b. Predictors: (Constant), Environment						

Table 8: Summary of Model

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	0.731 ^a	0.534	0.482	0.44369

a. Predictors: (Constant), Environment b. Dependent Variable: Impact

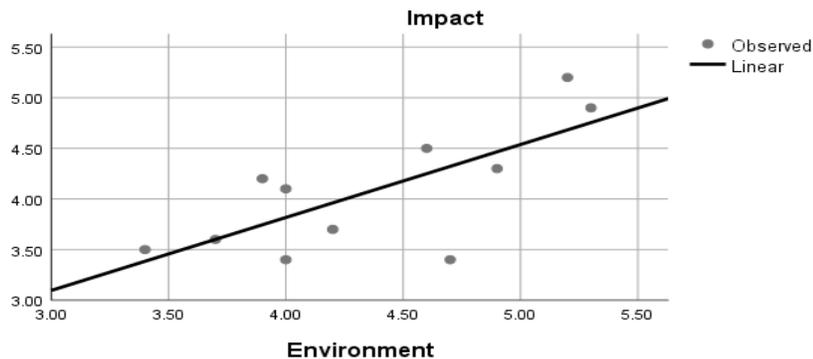


Figure 3: Linear Relationship between Environment and Impact

Relationship between Usage and Impact

The seventh hypothesis of the study states that ICT usage by Individual, business, and government determine economic and social impact. A simple linear regression was used to verify and validate the above hypothesis. Table 9 confirms a positive relationship between the two variables (F Value = 24.561, P-Value = 0.001). The adjusted R-square is 0.702 (Table 10), which shows that about 70% of the variation in economic and social impacts is explained by variation in an individual, business, and government usage. The remaining 30% variation is linked to other factors not mentioned in the model. Similarly, Figure 4 illustrates the strength of the association between usage and impact. The findings support the stated hypothesis and confirm that individual, business, and government usages are a good predictor of economic and social impacts.

Table 9: ANOVA Table of Usage on Impact

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.782	1	2.782	24.561	.001 ^b
	Residual	1.020	9	.113		
	Total	3.802	10			

a. Dependent Variable: Impact b. Predictors: (Constant), Usage

Table 10: Summary of Model

Model	R	R Square	Adjusted R Square	Std. An error of the Estimate
1	0.855 ^a	0.732	0.702	0.33657

a. Predictors: (Constant), Usage b. Dependent Variable: Impact

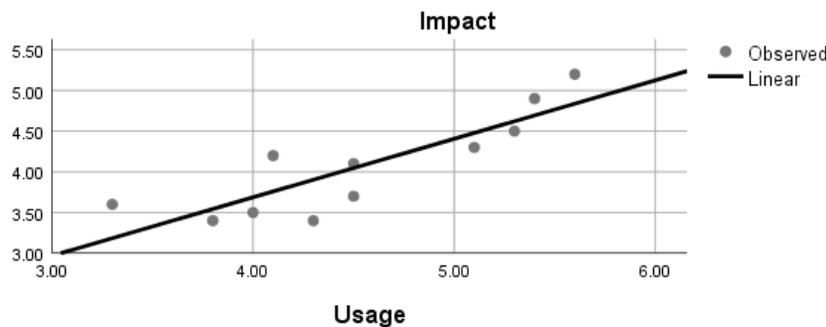


Figure 4: Linear Relationship between Usage and Impact

Discussion

This study uses the values of the four factors and 53 indicators to assess and compare the readiness of the GCC and BRICS countries for the fourth industrial revolution. The study tested and verified four hypotheses that assumed differences between the GCC and BRICS countries concerning the environment, readiness, usage, and impact. The results of the study show that the GCC countries have better political and business environments than the BRICS countries. The results of the independent t-test indicate that the difference between the two groups is significant and support the first hypothesis (see Table 11).

Moreover, as illustrated in Table 2, Qatar, Bahrain, and UAE dominated the leading positions in all the four factors for both GCC and BRICS groups. Qatar's performance was outstanding for the environmental factor. This achievement is reflected in the country's political and regulatory environment, business, and innovation. It is also a sign of improvement for Qatar about its laws and regulations, the availability of the latest technology, education, and business procedures. Unlike Qatar, Brazil's achievement was the lowest of the eleven countries on the environmental factor. Although this result does not mean that Brazil did not make any progress on this factor, however, it needs more effort to compete with other countries, especially BRICS countries, to improve its political and business environments.

Based on the findings of the study, the GCC countries appeared to have stronger and better infrastructures, reasonable affordability, and needed skills for the fourth industrial revolution than that of BRICS countries (Alshubiri., Ahsan Jamil, Elheddad, 2019). However, although the difference between the groups is not significant (Table 11), it is interesting to note that Bahrain took the leading position among the eleven countries on the readiness factor. This achievement by Bahrain indicates important progress in the electricity, mobile network, and Internet telephony services. Similarly, it is also a sign of improvement for mobile and fixed-line tariffs, quality of education, and literacy rate. On the other hand, India receives the lowest position for both the GCC and BRICS countries. Ranked 88 at the global level with 4.4 value score, India should be more competitive with other GCC and BRICS countries to improve its ICT infrastructure, ICT affordability, and needed skills for the population. Although the task is very challenging, it is possible (see Table 1).

The results of the study show the GCC countries outperformed BRICS countries with the usage of ICT by the individual, business sectors, and government sectors. Findings are in line with similar results reported by Kaba and Said (2012, 2014). According to the findings, the difference between the two groups in this factor is significant. However, no significant difference found between the two groups concerning the economic and social impact. Again, it is interesting to know that, UAE took the leading positions in ICT usage and ICT impact on the economy and society for both the



GCC and BRICS groups. This achievement is a reflection of UAE vision to improve ICT usage among the population. The ICT usage progress can be observed from the number of mobile subscriptions, individual use of the Internet and social network, households' personal computers, and Internet access (Holland, 2019).

On the other hand, two BRICS countries, India and South Africa recorded the lowest achievements on ICT usage and ICT impact on economy and society respectively. India's achievement was very low, as compared to the other ten countries, with the individual usage of ICT, ICT usage by business companies, and government usage of ICT. Similarly, South Africa's performance was less competitive for the ICT impact on the economy and society (see Table 1). These two countries should make strong and effective strategies to improve their achievements in the ICT usage among the population, business sectors, and government sectors. They should also do the same to enhance ICT impact on the economy and society (BRICS information portal, 2018).

On the relationship among the factors, the findings of the study revealed a significant relationship between environment and usage, between environments and impact, and between usage and impact. Further investigation about these relationships confirms how environmental factors can predict ICT usage as well as economic and social impact. Also, ICT usage is found to be a good predictor of economic and social impact. These results support the last three hypotheses proposed in this study (Table 11). We believe that, because of these positive relationships, the GCC countries outperformed BRICS countries, not on environmental factors, but also the ICT usage, Economic and Social impact. The findings also prove to be clear evidence of strong interaction among the four factors in preparing countries to be ready for the fourth industrial revolution.

The findings of the study shed light on the readiness of the GCC and BRICS countries for the fourth industrial revolution. The results of the study identify similarities and differences among the members' countries with the factors leading to the Fourth Industrial Revolutions. Also, the study explores the relationship between the factors and determine the impact of independent factors on the dependent factors.

Table 11: Results of Tested Hypotheses

No.	Hypothesis	Finding
1.	There is a significant difference between the GCC and BRICS countries on political and business environments as a factor of readiness for the fourth industrial revolution	Supporting
2.	There is a significant difference between the GCC and BRICS countries on infrastructures, affordability, and skills as a factor of readiness for the fourth industrial revolution	Not supporting
3.	There is a significant difference between the GCC and BRICS countries on the individual, business, and government usages as a factor of readiness for the fourth industrial revolution	Supporting
4.	There is a significant difference between the GCC and BRICS countries on economic and social impacts as a factor of readiness for the fourth industrial revolution	Not supporting
5.	Political and business environments have a positive impact on the individual, business, and government usage	Supporting
6.	Political and business environments have a positive effect on economic and social impact	Supporting
7.	Individual, business and government usages have a positive effect on economic and social impact.	Supporting

Conclusion

The fourth industrial revolution is real and moving faster than we can imagine. With this in mind, GCC countries appeared to be in the right direction than the BRICS countries. BRICS group, although with two powerful economic countries, Russia and China, failed to take the leading position in all the four factors measuring readiness for the fourth industrial revolution. None of the BRICS countries was ranked among the first twenty countries at the global level of the four factors, while at least one GCC country appeared among the first twenty nations at the global level (Baller et al., 2016). Therefore, BRICS countries should have a clear strategic plan to be more competitive in improving their readiness for the fourth industrial revolution. Similarly, the GCC countries, particularly the top leading countries, should improve their ranking to be among the top ten nations on the readiness for the fourth industrial revolution. Future research may investigate the relationship between the measurable indicators of the effect of the fourth industrial revolution and economic growth (Sae-Lim & Jermsittiparsert, 2019).



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