



## Article

# Foresight Readiness Assessment for Saudi Organizations

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## Abstract

*Foresight has been used by organization as a strategy to support decision makers in situations that involve long lead times, such as long-term labor market planning, education and training for skills development and anticipation. The objective of this paper is to assess the readiness of Saudi organizations to adopt and practice foresight methods in their strategies to achieve the strategic goals set in the National Vision 2030. Following a literature review on foresight studies worldwide, a survey questionnaire was designed, tested and administered online to organizations in government, private and academic institutions. The responses from 221 respondents will be analyzed and discussed in the paper. The results show a relatively high degree of readiness of Saudi organizations to adopt foresight methods as means to achieve their strategic objective and to be ready for future scenarios that will be dictated by the technological transformations brought by the new trend of Industry 4.0 and the economic and social transformations planned in the 2030 vision.*

## Keywords

Foresight, Readiness, Skills and Competencies, Industry 4.0, 2030 Vision, Saudi Arabia

## Introduction

In the era of accelerated change, disruptive technologies and immerging uncertainties are affecting business environment and national policies. There is an increasing need of processing and interpreting information coming from different data sources. In these situations, foresight research and methods implementation at the organizational and national levels come into prominence to foresight future scenarios and anticipate targeted horizons. Andersen and Rasmussen (2014), defined foresight as a “systematic, future-oriented, analytical and interactive process that partly contributes to shared visions concerning long-term developments within science, technology, business and society and partly facilitates the alignment of relevant stakeholder groupings around desirable developments through relevant strategies, decisions and actions”. Foresight activities support decision makers in situations and areas that involve long lead times, such as long-term labor market planning, education and training for skills development and anticipation. At the strategic level, foresight investigations have been traditionally used as a policy tool for priority setting in identifying key strategies to be implemented, key areas of national priorities to be achieved and how to make investments in an efficient and effective manner towards the achievements of organizational or national goals (Vinnari & Tapio, 2013).

A substantial increase of interest in foresight studies around the world has been registered during the last three decades. The biggest number of studies reported in countries like Japan, United States, United Kingdom, Finland, Denmark, France, Germany and Russia, which have large and longer foresight programs national wide (Bakhshi, Downing, Osborne, & Schneider, 2017; Rohrbeck & Kum, 2018; Rhisiart, Störmer, & Daheim, 2017; Rhisiart, 2018; Gokhberg & Sokolov, 2017). Few foresight studies were reported from developed countries like Brazil, Columbia and Iran. Only, very limited studies were published in Arab countries like the MENA region, mainly in the Kingdom of Saudi Arabia and the UAE (Al-Shahri, 2018; Algshami, 2017).

Saudi organizations in both public and private sectors are operating within a national momentum driven by the

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2030 Saudi vision. The strategic goals set to achieve the vision are three folds: (a) Diversification of the economic sectors and efficient localization of industries (such as military, mining, renewable energy, and logistics services), (b) Vibrant Society (through cultural transformations) and (c) Building an ambitious nation. To achieve these strategic goals, the government has launched 13 vision realization programs (VRPs) together with national strategies for industry and quality. The realization of the vision requires economic and social transformations associated with the fourth industrial revolution (Industry 4.0) technological drivers. In this national context, it is of particular importance to foresight the skills, competencies and the jobs landscape required by the kingdom to achieve its strategic goals.

The main objective of this paper is to assess the readiness of Saudi organizations to adopt and practice foresight methods in their strategies to achieve the strategic goals set in the National Vision 2030. Essentially, it attempts to answer the fundamental research question: “*What is the degree of readiness of Saudi organizations to adopt foresight as a strategy to achieve the 2030 Saudi vision goals?*” It is expected that the results of the study would support Saudi leaders and decision-makers for priority-settings and identifying key strategies and investments in human capital development through education, training, research and innovation.

## Literature Review

### The concept of foresight

The concept of foresight has been considered in various studies worldwide. Foresight is basically about the study of change. It is also the act to look and think about the future (Panizzon & Barcellos, 2019). Foresight is generally considered as an area of practice used when we are dealing with high degree of uncertainty surrounding changes to the relevant future context of organizations or countries. It is mainly based on three established approaches: technology forecasting, futures studies and technology assessment (Andersen & Rasmussen, 2014). Early definitions on foresight was reported by Slaughter (1995), who defined foresight as: “a universal human capacity which allows people to think ahead, consider, model, create and respond to future eventualities. Founded on the rich and inclusive environment of the human brain-mind system which, crudely put, has sufficiently complex neural ‘wiring’ to support an extended mode of perception whose main functions are proactive and facilitating”. Foresight was then seen as a process that targets to broaden the boundaries of our perception about a targeted future in four ways:

- By assessing the implications of present actions and decisions through consequent assessment.
- Early warning and guidance through the systematic detection and avoidance of problems before their occurrence.
- By considering the present implications of possible future events through pro-active strategy formulation.
- By envisioning aspects of future scenarios and desired futures.

This conceptual definition came in fact after the pioneering research work in futures studies performed by Dator (1979), Masini (1983, 2006), and Galtung (1984). Based on these studies, it can be argued that the foresight as an approach attempts to be systematic, logical, participatory, and planning oriented. Andersen and Rasmussen (2014) defined the concept of foresight as follows:

*Technology Forecasting*: “... the probabilistic assessment of future technology transfer, which here denotes the entire range and effectuation of impact in technological as well as non-technological (economic, social, military, political, etc.) terms”.

*Futures studies*: “... to discover or invent, examine and evaluate, and propose possible, probable, and preferable futures”.

*Foresight*: “... a systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process aimed at enabling present-day decisions and mobilizing joint actions”.

### Foresight as a strategic practice in modern organizations

Pioneering research work reported by foresight experts such as Inayatullah, Dator and Miller showed that foresight and futures studies should be considered as a hypothesis towards a desired horizon and targeted future scenarios

that governments and societies aim to achieve in the long term and take the necessary plans for its achievement. (Inayatullah, 2013).

Among early adopters of foresight as a strategic activity in government and business organizations was Japan, which since the 1970s regularly carried out large Delphi-based technological foresight projects with a 30-year time horizon and with the participation of thousands of experts. Technologically advanced countries like Germany, South Korea, France and the United Kingdom have had national foresight programs since the early 1990s. Other EU countries such as Portugal, Cyprus and Denmark, launched their foresight programs in 2000. Other emerging economies in Latin America such as Brazil, Venezuela and Chile have carried out various national foresight projects (Andersen & Rasmussen, 2014; Bakhshi et al., 2017; Rohrbeck & Kum, 2018; Rhisiart et al., 2017; Rhisiart, 2018; Gokhberg & Sokolov, 2017; Hideg, 2007).

In a comprehensive investigation, Rhisiart et al. (2017) from the Centre for Research in Futures and Innovation (CRI-FI) at South Wales University in UK, conducted a foresight study on the 2030 Future of Work scenarios across the United Kingdom. The research showed the importance of foresight studies at the strategic level for government in policymaking and human capital development. It permitted to identify important factors in generating policy-related impact from foresight work, including effective communication strategies, engagement with relevant stakeholders, creating partnerships and alignment with the policy-making agenda and strategic national visions. Potential disruptions of work and skills were identified and future scenarios for jobs landscape were determined.

In a similar investigation, Bakhshi et al. (2017) investigated Future Skills: Employment in 2030, across Europe, and used a novel and innovative method to map out how employment is to change in accordance with disruptive Industry 4.0 technologies. These technologies which include the internet of things (IoT), automation, augmented reality, autonomous robot and big data analytics all affect the foresight projects in organizations (McKinsey Global Institute, 2017).

Deming and Kahn (2018) used foresight methods to anticipate skills and future job requirements based on big data analytics of job postings in professional networks. Shrotriya, Dhir and Sushil (2018), presented a study on an innovation driven ecosystem for quality skill development in India, with the purpose to investigate and analyze the challenges of quality skills development in complex and large economies like India. The study permitted to develop innovative processes of improving employability and determine the right skills for future. A series of Reports have been issued by the Organization for Economic Co-operation and Development (OECD, 2012, 2016a, 2016b), and devoted to the future skills and competencies that educational and training institutions in developing countries should focus on to achieve sustainable development to its better quality of life.

The published research stressed on the importance of the cultural, economic, political, social and organizational contexts in foresight projects. These parameters should be taken in consideration when running a foresight project at a national level. All researchers agreed that there is no "one size fits all" foresight approach that can be universally adapted. It is rather a country's context specific, where there are a number of factors and circumstances that influence the successful implementation of foresight within a specific country. Identifying the readiness of organizations to adopt foresight is a milestone in the successful application of foresight project at the national level. When discussing the foresight activity in organizations, Inayatullah (2015), noticed that in order to conduct effective and successful foresight projects at national level, it is very important to consider the foresight project as a continuous learning experience, in such a way to searching and identifying emerging social issues, and disruptive technological events and patterns, that could provide insights and indicators of dramatic shifts in both the economy and the society. Such issues are well dictated on Saudi organizations within the momentum of the ambitious 2030 Saudi vision led by the country leadership with the deep economic and social transformations. As stated by Inayatullah (2015, 2013) such issues can help government and organizations prepare for the emergent future and desired and targeted scenarios and horizons.

Though the strategic importance of foresight and futures studies, only very limited studies were reported in Arab countries and the MENA region in the published literature. The studies reported mainly in the Kingdom of Saudi Arabia and the UAE (Al-Otaibi, 2018; Al-Shahri, 2018; Alghami, 2017; Riyadh Chamber, 2019), concerned foresights of future skills and jobs in these countries. It is expected that the present study contribute to bridge the gap in the literature and contribute to assess the readiness of Saudi organizations to adopt foresight within the perspective of the national strategic vision.

## Research Methodology

The present exploratory study is dedicated to measure the level of readiness of Saudi organizations towards the implementation of foresight as a strategy to achieve the goals of the national Saudi vision 2030. The perceptions of both management and operational employees towards this issue are measured and analyzed. Based on the review of the technical literature on foresight implementation in different regions of the world, a survey questionnaire is designed, tested and administered online to Saudi organizations. The main objective is to report on the views and experiences of management and staff members regarding foresight implementation as means to achieve the objectives of the 2030 Saudi vision. The survey development has undergone design phases and pre-tests which have resulted in eliminating, reclassifying and rephrasing some of the questionnaire elements. The main parts of the survey that will be discussed in this paper are:

Part 1- Demographic characteristics: to identify respondents' characteristics such as position in the organization, educational level, age, gender, professional experience, organization's size, business sector of the organization, regional location in the kingdom, existence of a foresight manager and a quality manager at the organization, ISO certification status of the organization, national quality award participation, and the development of a strategic plan in line with the 2030 vision.

Part 2- Saudi Organizations readiness to implement foresight: For measuring the respondents' degree of agreement about the organizations readiness to implement foresight and future studies.

The survey uses the Lickert five-point scale for measuring the degree of foresight readiness and implementation levels in the respondent's organization. Cronbach's alpha coefficient is used to measure the internal consistency of the survey elements of the same group. Responses are analyzed using statistical methods and the results are presented and discussed.

The survey questionnaire has been distributed to major Saudi organizations from government and the private sector during March 2020. The survey sent through the network of students and graduates of the Executive Master program in quality engineering and management, who are from leadership of Saudi organizations from different regions of the kingdom. Networks of professional associations such as the Saudi Quality Council and the Saudi Council for Engineers were used to disseminate the survey to participants. Of about 300 questionnaires sent, 221 questionnaires were received, which means a response rate of 73.67 percent. More details about the research survey instrument and the research methodology can be found in Al-Homaid (2020a, 2020b).

## Results and Discussion

### Analysis of the validity of the results

In survey studies, internal consistency is a common concern before data analysis is performed. Internal consistency is measured by calculating Cronbach's alpha coefficient. This measures internal consistency among a group of items, and reflects the homogeneity of the scale. A value of Cronbach's alpha greater than 0.7 indicates homogeneity and consistency of the survey element. In the present study, the Cronbach coefficients of the survey elements are shown in The Cronbach's alpha for the readiness part of the survey was 0.921, indicating the reliability of the scales in yielding valid results for the purpose of the present study.

### Respondents profile

Table 1 summarizes the respondents profile characteristics. A careful examination of this Table shows that respondents to the questionnaire are about 47.51 percent from top management (9.05 percent CEOs, 16.29 percent Middle management and 22.17 percent managers) and 14.93 percent from leading Saudi higher education institutions. 67.6 percent are PhD and MSc holders with 41.6 percent are more than 40 years old and with extensive professional experience since 79.2 percent of the respondents have more than 5years' experience in the organization. 27.6 percent of participants were female, which give an indication of the transformation undergoing in Saudi Arabia within the 2030 Vision. These statistics provide confidence about the study results since the respondents turn out to be closely related to the decision making process (Organization management and academic staff), with relevant professional experience in the business sector of the organization and the national and international contexts. All

these factors are important in foresight projects which usually would require some knowledge and expertise in the business field of the organization (Vinnari & Tapio, 2013; Andersen & Rasmussen, 2014; Rohrbeck & Kum, 2018).

**Table 1:** Demographic Characteristics of the Survey Respondents

<b>Respondents Characteristics</b>	<b>Frequency</b>	<b>Percentage Frequency</b>
<b>Position</b>		
Top Management (CEO, or Business Owner)	20	9.05
Middle Management (HR, Quality Manager, etc.)	36	16.29
Executive Management (Supervisors)	49	22.17
Academician or Researcher	33	14.93
Employee	28	12.67
Other	55	24.89
<b>Education</b>		
PhD	42	19.00
MSc	62	28.05
BSc	99	44.80
Diploma	14	6.33
High School	4	1.81
<b>Age</b>		
21-30 years	36	16.29
31-40 years	82	37.10
41-50 years	66	29.86
Over 50 years	37	16.74
<b>Gender</b>		
Male	160	72.40
Female	61	27.60
<b>Professional Experience</b>		
Less than 1 year	8	3.62
From 1 to 5 years	38	17.19
From 6 to 10 years	34	15.38
From 11 to 20 years	61	27.60
More than 20 years	80	36.20

Table 2 and fig. 1 and 2, summarize the characteristics of the sampled organizations. The organizations were ranked as either large organizations (43.89 percent) or small and medium organizations (56.11 percent). The government organizations represent 54.75 percent of the participant and the private represent 18.55 percent. The business activities were distributed between education and training with 26.24 percent, Military with 9.95 percent, industrial sector with 7.69 percent, services with 7.27 percent, and healthcare with 10.86 percent. The study was carried out national wide, where all the 13 administrative regions participated. The big majority of participants (88.69 percent) came from the main cities of the kingdom (Riyadh, Makkah, Madinah, Dammam, Gassim and Hail) where most of businesses and government departments operate.

**Table 2:** Respondents Organizations Characteristics

<b>Respondents Information</b>	<b>Frequency</b>	<b>Percentage Frequency</b>
<b>Size of the Organization</b>		
Large Organization	96	43.89
Medium Organization	74	33.48
Small Organization	51	23.08
<b>Organization Business Sector</b>		
Government	121	54.75
Private	41	18.55
Industrial Sector	17	7.69
Service Sector	16	7.24
Military	22	9.95
Education and Training	58	26.24
Health care	24	10.86
Non-Profit Organization	8	3.62

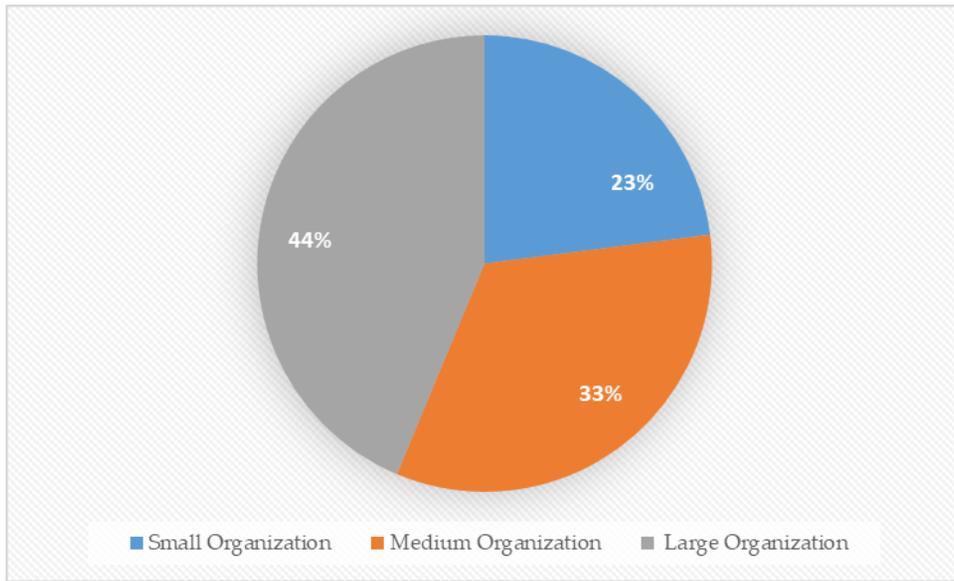


Fig. 1: Respondents` by Organization Size

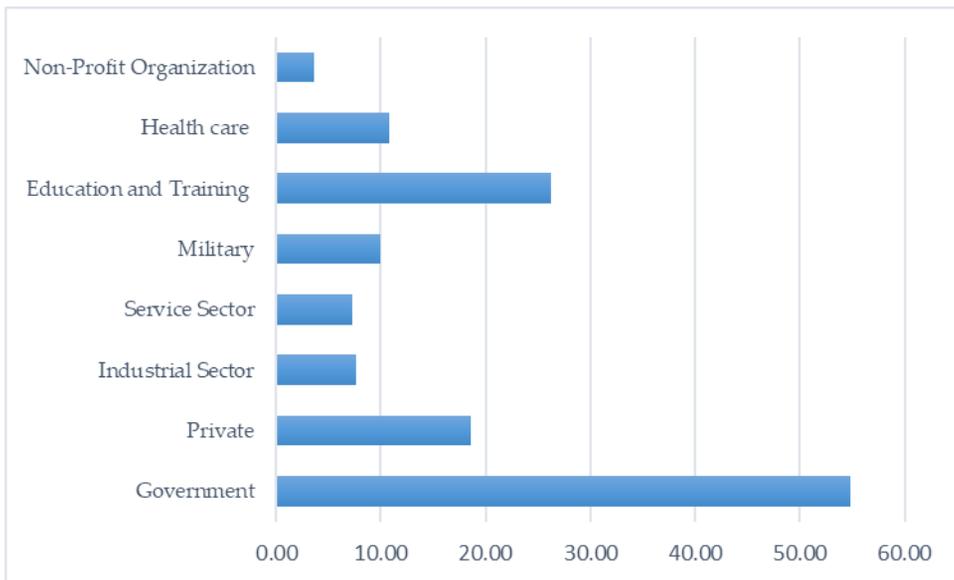


Fig. 2: Respondents` by Organization Business Sector

**Degree of readiness of Saudi organizations to adopt foresight**

According to Al-Shahri (2018), foresight activities in organizations are mainly a top-down process. In this study, the leadership perception towards foresight and the practical measures taken for successful implementation (organizational structure for foresight, training and education, establishment of foresight experts networks) have been examined. To measure the level of Saudi Organizations readiness to adopt foresight, eleven constructs have been used in the survey. Table 3 and Fig. 3 show the statistics of the foresight readiness level measured for the 221 respondents. On the Likert scale (1: strongly disagree - 5: strongly agree), the overall average level of 3.39, a standard deviation of 0.82, and a mode of 4, would indicate a relatively high level of readiness of the organizations towards the adoption of foresight, with a high percentage of organizations which have already established a foresight department or assigned a responsible for future studies as mentioned earlier in section (4.2) (37.10 percent).

The highest averages were related to general concepts about foresight “Successful foresight identifies and exploits new future opportunities by leveraging the expertise of experts, decision makers, and business owners”, “The objective of foresight is to identify the alternatives of a targeted future”, “Foresight starts from individuals (Leadership and experts) and should be implemented through systematic processes in the organization”. These would indicate that the awareness level is relatively high at the organizational level, and the leadership is aware to a certain extent about foresight importance to achieve the strategic goals of the 2030 Saudi Vision, and to cope with transformations dictated by the fourth industrial revolution (Industry 4.0) technologies. The lowest average levels were registered for the constructs that measure the organizational structure demonstrated by the lack for clear strategy to attract competent people in foresight methods and approaches (employees and experts) (Q9 and Q10), and the lack of training programs to the organization employees on foresight (Q8). These observations can be read from Fig. 3, which represents the box-plot of the readiness level to foresight adoption measured by the 11 constructs.

The high readiness level of the organizations to adopt foresight as a strategic management approach and future priority setting in Saudi organizations still suffer from some barriers as stated by top management leadership from the participants in the study.

- “Though major government departments have already established Vision realization offices, which are somehow similar to foresight department, there are still some organizational and cultural barriers that humper the successful implementation of foresight in Saudi organizations”. Top Management from a defense agency.
- “A significant enabler to successful implementation of foresight in organizations is the development of foresight and futures literacy, as an organizational capability building. Foresight methods used to identify future scenarios without the receptivity of futures oriented and literate employees can result in failures to implement foresight studies and the achievement of the national Vision goals”, a top executive leadership from a governmental department in Healthcare declared.
- “Lack of training on how to conduct successfully foresight and future studies in the context of the Saudi Vision 2030 along with failure to establish national and international foresight experts networks are among what leadership should take into consideration while working on future plans and scenarios that are aligned with the 2030 vision”. A University professor from a leading Saudi University noticed.

**Table 3:** Statistical values for the degrees of Readiness of Saudi Organizations to adopt Foresight

Element / Question	Average	Std Dev	Mode	Rank	Percentage Agreement
1-The leadership is aware about foresight and future studies.	3.15	1.08	4	7	42.53
2-The objective of foresight is to identify the alternatives of a targeted future.	3.82	0.90	4	2	73.30
3-The organization's leadership is concerned about foresight to achieve the goals of the 2030 Saudi Vision.	3.61	1.07	4	3	65.16
4-The organization's leadership is concerned about foresight to cope with transformations created by Industry 4.0.	3.52	1.11	4	5	57.92
5-The organization's has a department or a responsible for foresight.	3.04	1.12	3	11	37.10
6-The organization developed a strategy to build human capital capabilities required by the 2030 Saudi vision and the Industry 4.0 technologies.	3.33	1.12	4	6	52.49
7-The organization provides training to its leadership and employees in areas of foresight.	3.15	1.21	4	8	45.70
8-The organization developed a strategy to attract competencies in the areas of foresight and future studies.	3.10	1.17	3	10	39.82

9-There is a clear policy developed by the organization to create a network of foresight experts.	3.10	1.14	4	9	41.18
10-Foresight starts from individuals (Leadership and experts) and should be implemented through systematic processes in the organization.	3.57	1.09	4	4	62.90
11-Successful foresight identifies and exploits new future opportunities by leveraging the expertise of experts, decision makers, and business owners.	3.85	1.13	4	1	73.76

Scale: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly Agree

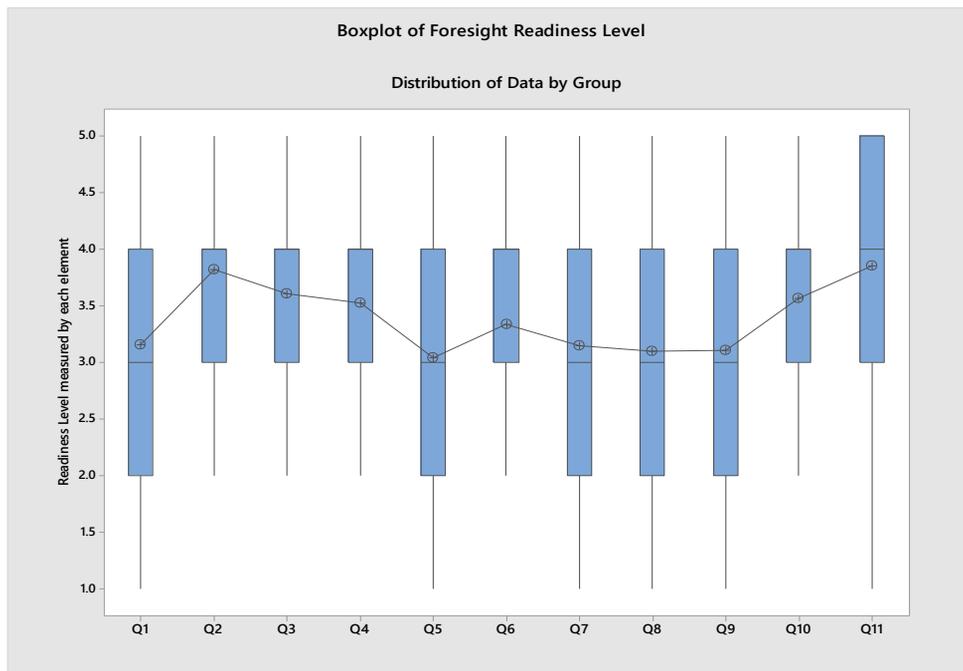


Fig. 3: Box Plot of Foresight Readiness Level measured for Saudi Organizations

### Quality as an enabler to adopt foresight in Saudi organizations

For the last three decades, quality systems and organizational excellence models such as the Malcolm Baldrige Award (MBNQA) and the European Foundation for Quality Model (EFQM) have been widely used by organizations to achieve and sustain excellent performance through a systematic and holistic approach to managing the organization. In its new perspective, excellence can be used proactively as a modern management method for building the future and sustaining governments and organizations performance. Through a set of fundamental principles and guiding criteria, excellence helps organizations and governments to preserve the interest of society, and to build a happy future for communities and providing them with the conditions to thrive, prosper and enjoy high-quality of life standards (Zairi, 2019). The new excellence approach stimulates governments to build their future plans and goals continuously without stopping at the point of achievement or satisfaction of successful implementation to ensure the economic, social and environmental long-term sustainability. Government entities should implement excellence models to develop their future anticipation capabilities through using future foresight tools to identify continues future trends and global directions. This helps the government entity be able to predict, analyze and respond to the global and future changes to create its future readiness through continuous redefinition of existing business models supported by new and advanced technology driven by digital disruption of Industry 4.0. Excellence has been used to help organizations realize ambitious visions and strategic objectives. Vision Realization

through foresight projects is an essential criteria that excellence models address (Zairi, 2019). Future readiness and preparedness can be considered as a powerful predictor for becoming an outperformer in the industry, for attaining superior profitability, for gaining superior excellence (Rohrbeck & Kum, 2018).

Saudi organizations either in public or in private implement quality management systems (ISO 9001:2015) and organizational excellence model (King Abdul-Aziz Quality Award - KAQA) to achieve performance excellence in line with their strategic goals and objectives. This is mainly driven by the momentum of the 2030 Saudi vision and the government’s official approval of the national strategy for quality early 2019. In the present study, we are interested to investigate whether the implementation of such quality systems and organizational excellence model would give an indication of the organization’s readiness to adopt foresight for future opportunities and targeted horizon.

Table 4, which summarizes the results that measure these aspects, shows that while 84.16 percent of the organizations have a quality manager, only 53.85 percent of them have undergone the process of ISO certification to their management systems (QMS, EMS, etc.), and a 20.36 percent of them implemented the national quality award criteria in their businesses. A relatively high percentage of 78.28 of the surveyed organizations have a strategic plan in line with the 2030 Saudi vision. These statistics give an indication of the level of readiness towards the adoption and implementation of quality management systems and organizational excellence models, which constitute an organizational enablers and catalysts for foresight implementation, from the author’s point of view. The percentage of organizations that had established a position of foresight in their organizational chart was 37.10 percent and those who performed foresight projects previously were as low as 24.89 percent. These percentages would give a clear indication of a relatively high level of readiness of Saudi organizations towards adopting foresight as a strategy to achieve their goals.

**Table 4:** Frequencies related to Quality Management Systems and Foresight Activity in organizations

Construct	Yes		No		Not sure	
	Count	Fr (%)	Count	Fr (%)	Count	Fr (%)
The organization has a department or a person responsible for quality.	186	84.16	22	9.95	13	5.88
The organization has an ISO certified management system.	119	53.85	59	26.70	43	19.46
The organization has participated previously in National King Abdul-Aziz Quality award.	45	20.36	85	38.46	91	41.18
The organization has a strategic plan in line with the 2030 Saudi Vision.	173	78.28	22	9.95	26	11.76
Do you support the decision to establish foresight departments or centers in Saudi organizations?	194	87.78	7	3.17	20	9.05
The organization has a department or a person responsible for foresight.	82	37.10	76	34.39	63	28.51
Did your organization performed a foresight study previously?	55	24.89	77	34.84	89	40.27

Tabulated statistics and Chi-Square tests were used to determine if there are associations between organizations characteristics (size, Quality Management Systems, and KAQA model implementation) and the existence of foresight department in the organization. This will be dealt with in the next section.

The statistics in Table (5) show that organizations, which have already established a foresight department, are equally distributed with the size of the organization. Chi-Square tests show no indication that a specific organization type (size) invested in foresight though the national momentum driven by the Saudi 2030 vision. From the survey data, the Pearson chi-square statistic is 0.267 (with a p-value of 0.992) and the likelihood chi-square statistic is 0.267 (which also gives a p-value of 0.992 > 0.05). So, with an alpha significance level of 0.05, we can conclude that there is no significant association between the two variable (Organization Size, Foresight department). If we consider that organizations with a foresight department or having performed previous foresight study would be an indicator of readiness to foresight, it can be concluded that organization size is not a predictor to foresight since no significant association was obtained.

Similarly, when running the Chi-Square tests between the strategic plan (2030) and foresight department, the p-

Value of 0.083 was obtained indicating that no association is significant between the two variables (Strategic Plan (2030) vs Foresight department). Also, no significant association between Organization business activity and foresight department, was found with the Pearson chi-square statistic is 22.655 (with a p-value of 0.066) and the likelihood chi-square statistic is 23.136 (which also gives a p-value of 0.058 > 0.05).

**Table 5:** Tabulated Statistics: Organization Size vs Foresight Department

Organization Size		Foresight Department			
		Yes	No	I do not know	All
Large Organization	Count	36	31	29	96
	Fr(%)	35.62	32.58	27.80	43.44
Medium Organization	Count	27	26	20	73
	Fr(%)	27.09	24.77	21.14	33.03
Small Organization	Count	19	18	15	52
	Fr(%)	19.29	17.65	15.06	23.53
All Organizations	Count	82	75	64	221
	Fr(%)	37.10	33.93	28.96	

The statistics in Table (6) show the organizations, which have already established a foresight department with the implementation of the national excellence model (King Abdul-Aziz quality award, KAQA). The Chi-square test performed for the association between the national organizational excellence model (KAQA), and foresight department and activity, with the Pearson chi-square statistic is 46.655 (with a p-value of 0.000) and the likelihood chi-square statistic is 47.362 (which also gives a p-value of 0.000<0.05). So, with an alpha significance level of 0.05, we can conclude that there is a significant association between the two variables the implementation of the KAQA model and foresight activity in the organization. This would lead us to deduce that excellence model implementation in Saudi organizations would be an enabler for successful foresight implementation. Such an early deduction should be verified using ANOVA test when discussing the foresight readiness level in the next section.

**Table 6:** Tabulated Statistics: KAQA Implementation vs Foresight Department

KAQA Implementation		Foresight Department			
		Yes	No	Not sure	All
Yes	Count	22	12	11	45
	Fr(%)	16.70	15.27	13.03	
No	Count	25	49	10	84
	Fr(%)	31.17	28.51	24.33	
Not sure	Count	35	14	43	92
	Fr(%)	34.14	31.22	26.64	
ALL	Count	82	75	64	221
	Fr(%)	37.10	33.93	28.96	

**ANOVA analysis for hypothesis testing**

One-way analysis of variance (ANOVA) was used to determine whether there are any statistically significant differences between the foresight readiness means of the organizations` characteristics. Hypotheses were tested on the readiness of the Saudi organizations towards adopting foresight as a strategic option to achieve the objectives of the national Vision 2030.

A general null hypothesis was formulated as follows:

**H0:** *There is no significant statistical difference in contribution to foresight readiness level between Saudi organizations.*

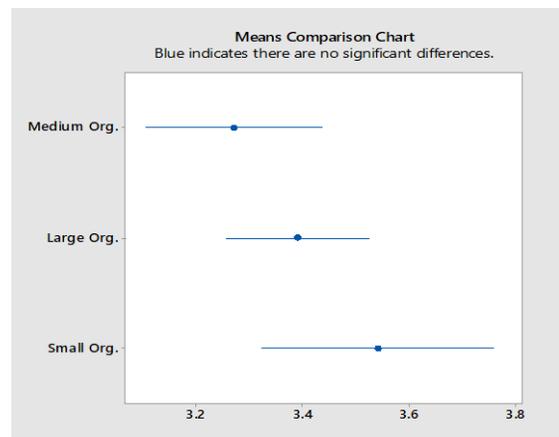
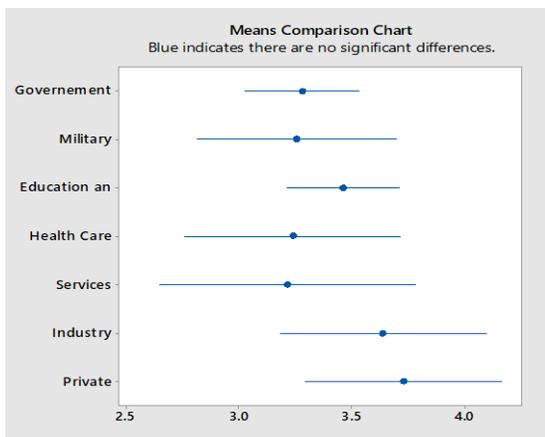
The tested characteristics include (a) the organization`s business activity, (b) its size, (c) implementation of quality systems (QMS, KAQA), (d) having an organization`s strategic plan inline with the 2030 national vision, and (e) already established a foresight department. Hypothesis tests were performed at the 0.05 significance level.

**Organization business activity**

The One-way ANOVA test was performed to see if there is a statistically significant difference between the means of readiness to foresight with the organization business activity. The p value obtained ( $p=0.313>0.05$ ) would confirm that there are no significant difference in the foresight readiness means for the Saudi organizations whatever the business activity is. The early observation concerning the general readiness level holds for all Saudi organizations and no particular business sector can be considered different than the others. Here, it has to be mentioned that the Non-profit organizations were excluded from the analysis due to the small sample size (only 8 participants). Fig. (4.a) compares the readiness average obtained for different Saudi organizations where no significant difference was obtained for the readiness average level.

**Size of the organization**

The ANOVA test performed for organization size shows that the p value  $p=0.253>0.05$ , indicates clearly that there is not enough evidence that the readiness averages level differ between the Saudi organizations with different sizes (Small, Medium and Large) (Fig. 4.b).



**Organization business activity**

( $p=0.313>0.05$ ) (\*)

(\*) No Statistical difference between the means at the 0.05 Significant Level

(\*\*) Statistical difference between the means at the 0.05 Significant Level

**(b) Organization Size**

( $p=0.253>0.05$ ) (\*)

**Fig. 4:** Foresight Readiness Level of Saudi Organizations based on their business activity and Size (CI=95%)

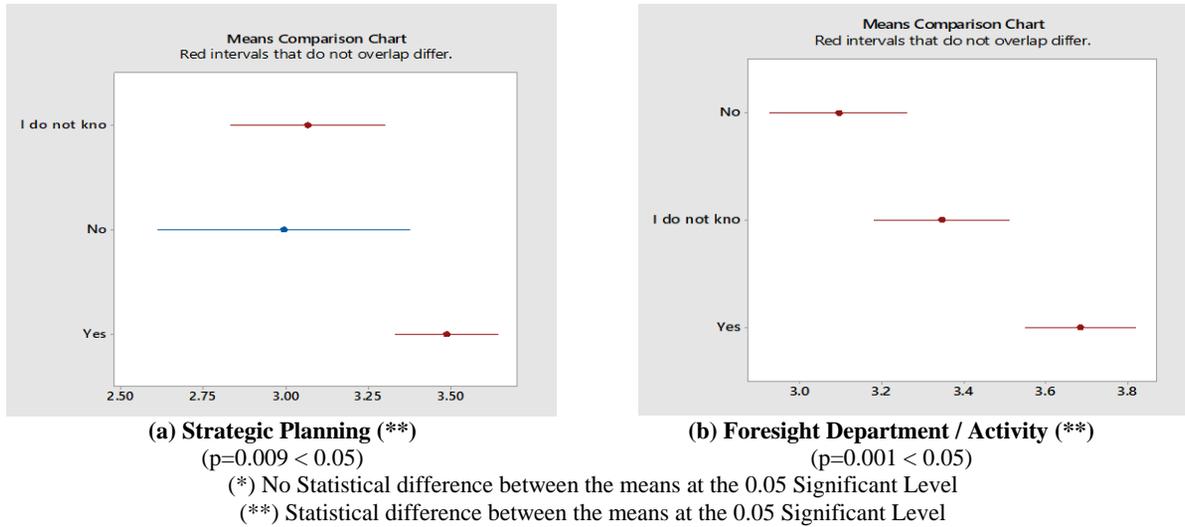
**Implementation of quality systems**

The ANOVA test for the readiness level for the organizations based on their implementation to quality systems, gives a p value ( $p=0.151>0.05$ ) indicating that there is no significant statistical between the foresight readiness average between the organizations adopting quality systems or not. It can be deduced that quality systems may not be enablers for foresight implementation in organizations. Similarly, for the excellence model (KAQA) implementation, the ANOVA test performed gave a p value ( $p=0.196>0.05$ ), indicating that there is no significant statistical difference between the foresight readiness between organizations adopting or not the national excellence model (KAQA).

**Strategic planning**

The ANOVA test performed with the variable being the organization already established a strategic plan in line with the 2030 national vision, gives a p value ( $p=0.009<0.05$ ). This indicate clearly that there are difference among the means at the 0.05 level of significance. It can be concluded that adopting strategic planning in organizations would be an enabler to foresight implementation. Similar results were found when testing the independent variable, related

to the establishment of foresight department or activity at the organization, where the p value obtained was ( $p=0.001 < 0.05$ ) indicating clearly that there is enough evidence that the readiness level differ between organizations which have already established a foresight department or unite and the other which have not. These observations confirm the findings reported by Jones (2017), Shrotriya et al. (2018) and Rohrbeck and Kum (2018), when investigating foresight and its impact on organizations performance and skills and competencies anticipation in the digital era.



**Fig. 5:** Foresight Readiness Level of Saudi Organizations based on Adopting Strategic Planning and establishing foresight department (CI=95%)

**Conclusions**

Measuring and identifying foresight readiness status is fundamental to the successful adoption and embracing of foresight projects in organizations. The present research investigates the degree of readiness of Saudi organizations to implement foresight projects as means to anticipate the skills and competencies required to achieve the 2030 national vision. The exploratory survey study was conducted to report on the perceptions of management and operational employees of Saudi organizations in both public and private sectors towards the degree of readiness to adopt foresight. Based on the statistical analysis of the 221 survey responses, significant shortfalls have been uncovered in the implementation of foresight in Saudi organizations.

Results from the respondents reveal that, although respondents have different understandings of what foresight is, there is a general agreement on its importance for Saudi organizations to achieve the national vision 2030. A majority (87.4 percent) of Saudi organizations feel the importance and the necessity to establish foresight departments in their organizations, a good percentage of them (37.10%) have already established a department for foresight in their organizational chart, while a percentage of 24.89% have performed a foresight study previously. It is believed that this level of readiness of Saudi organizations which is believed to be at an international level. However, very limited studies from Saudi Arabia and the MENA region are available in the open literature which can support this finding. It is therefore recommended that further investigation using more elaborated foresight maturity models such Grim`s model (2009) will be needed to explore accurately foresight performance of Saudi organizations.

The statistical analysis showed that the degree of Saudi Organizations readiness to adopt foresight in their strategies is rather at an international standard. However, low averages obtained for constructs that measure the organizational culture, such as lack for clear strategy to attract competent people in foresight (employees and experts), associated with a lack of training programs to the organization employees on foresight and foresight methods. Among the parameters tested, it was found that establishing a foresight department in the organization is significantly associated with the foresight readiness level. This would stress on the importance of implementing

foresight in the organization structure through the establishment of foresight department within the organization. It is to be stressed here that major government efforts are being made to coordinate futures projects across Saudi organizations in a similar way as the Performance and Innovation Unit (UK) and the Federal Foresight Network in the US. Although such implementation of future studies still in its early stages, a considerable number of policy makers understand that future thinking and foresight is an essential part of decision making within the perspective of the Saudi Vision 2030. (Bell, 2002; Inayatullah, 2012).

Saudi organizations need to focus on the eight recommendations for successful foresight projects pointed out by Andersen and Rasmussen (2014); these are:

1. Focus on clearly identified client: both government and the society needs and expectations.
2. Clear link between foresight and actual policy agenda, i.e the Saudi vision 2030.
3. Direct links to senior policy and decision makers.
4. Public-private partnerships, through research in the area of foresight and futures studies. Funded research project such as the actual one should be further encouraged.
5. Develop and employ foresight methods and skills. Foresight activity should be encouraged within government and private organizations. The vision realizations offices set in major government and economic organizations within the framework of the Saudi vision 2030 can play a vital role in pursuing foresight activities and projects.
6. Clear communication strategy and governance of the process.
7. Integration of all stakeholders into the foresight project.
8. Take advantages provided by national or regional academic institutions and training capacity in universities, research centers and business organizations.

## Acknowledgements

The authors acknowledge and extend their appreciation to the Deputy for Research and Innovation, Ministry of Education in Saudi Arabia for funding the present research work through the project number SS-116 under the Social Sciences Initiative. The authors thank the editor and the anonymous reviewers for their constructive comments, which contributed to the improvement of the final manuscript quality.

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