

Alexandria Journal of Managerial Research & Information Systems

مجلة اسكندرية للبحوث الادارية ونظم المعلومات

Print ISSN: 2974-4318 online ISSN: 2974-4326



The Impact of World Innovation Index on Firms' Financial Performance in Egypt

Yasmin Ismail Abd Al Hammed Taha

Arab Academy for Science Technology and Maritime Transport

Graduate School of Business, Egypt

Email: Yasmin.ismail@aast.edu

Doaa El-Diftar

Arab Academy for Science Technology and Maritime Transport

Collage of management and technology

Email: doaaeldiftar@aast.edu

Abstract

This paper seeks to examine the impact of World Innovation Index (hereinafter, WII) pillars on financial performance of firms in Egypt. Using a sample of 17 largest Egyptian companies listed on the Egyptian Stock Exchange from different industries, food and beverage, steel, constructions pharmaceutical from year 2018 to 2022. The WII is represented by institutional environment, human capital, infrastructure, market and business sophistications, technology and knowledge and creative output. Return on Assets (ROA), cash conversion cycle (CCC), debt ratio, and Total asset turnover (TATO) are used as a proxy for Firm Financial Performance. Using statistical analysis, correlation matrix and multiple linear regressions as method of estimation, the results provide evidence that there is significant relationship between WII pillars and firm financial performance measures by (financial ratios). Also using survey to find out the answer for importance questions. This study provides many recommendations to enhance firm's financial performance in Egypt by using the innovative techniques and activities to maintain the firms' competitive advantage and raise profitability.

Keywords: World Innovation Index (WII), Firm Financial Performance, Pillars, profitability, Egypt.

1- Introduction

Financial specialists, researchers, the general public, and corporate management have all expressed a great deal of interest in, and concern about, the financial performance of businesses. However, identifying the most successful companies has always been a challenge for many because a company may be highly profitable while also experiencing severe liquidity issues. It is possible to evaluate a company's financial success in terms of profitability, leverage, liquidity, and asset turnover. The best way to evaluate a firm's performance and the factors that affect its financial performance are still up for debate across a variety of disciplines (Liargovas & Skandalis, 2008). A number of indicators can be used to assess a company's financial profile because no single factor can capture all facets of its success more accurately. Performance, according to Iswatia, & Anshoria (2007), is a result of an organization's capacity to acquire and manage resources in a variety of ways to create competitive advantage. Financial performance places a focus on elements directly relevant to financial reports. By allowing the mobilization and deployment of financial resources to finance long-term productive investments, innovation plays a crucial role in the economy. For Egypt, to reaching a healthy and profitable performance it had to be supported by innovation as it considered to be one of most important requirements for belter performance for any business firms. New products and services by employing new approaches will enhance firms' financial performance (Obunike & Udu, 2019). Following The WII is regarded as a standard for creative methods and activity among nations, to support Egyptian financial innovation, reaching healthy and profitable financial performance, building connections between investors and innovators and reaching an economic growth.

1-1. Objectives

This paper aims at examining the impacts of WII on the financial performance for the Egyptian firms.

2- Literature review

2-1. Pillars of WII

The World Intellectual property organization (WIPO) 2011 started to co-publish an annual report with Cornell University and INSEAD about the examination of various aspects of innovation, this report is called the WII report which is a benchmark index measuring the country innovative competitiveness (Huarng and Yu, 2022). The first launch of the WII project was by INSEAD in 2007 at this time it was determining the approaches to reach the richness of innovation in society and avoiding the normal innovation way. The factors or pillars that are inside WII are measured on a worldwide scale to drive the economic growth for developing and developed countries (WIPO, 2021).in 2012 WII included worldwide economics. The WII relies on two main indices. The GII relies on two sub-indices: The Innovation Input Sub Index and the Innovation Output Sub-Index and the overall index which is the one that those two sub-indices are under it. each one of the two indices has its pillars (GII 2012).

The seven pillars of WII are institutions(I), human capital and research (HC&R), infrastructure (Info), market sophistication (MS), business sophistication (BS), knowledge and technology outputs (K&TO), and creative outputs (CO).there are five pillars under the innovation input sub-index which are institutions, human capital and research, infrastructure, market sophistication and business sophistication and the remaining two pillars are under the innovation output index which knowledge and technology output and creative output.

Table 1:

| World Innovation Index (WII) | | | | | | | | | | |
|---|----------------------------------|-------------------------------|------------------------|----------------------------|--|-----------------------------|--|--|--|--|
| Innovation efficiency index (overall index) | | | | | | | | | | |
| | Innovation output sub index | | | | | | | | | |
| Institutions | Human capital and research | Infrastructure | Market sophistications | Business sophistication | Knowledge and technology output | Creative outputs | | | | |
| -Political environment | -Education | -ICT | -Credit | -Knowledge workers | -Knowledge creation | -Creative intangibles | | | | |
| -Regulatory environment | -Research and development | -General infrastructure | -Investment | -Innovation linkages | -Knowledge impact | -Creative goods and service | | | | |
| -Business environment | | -Ecological sustainability | -Trade competition | -Knowledge absorption | -Knowledge diffusion | -Online creativity | | | | |

Sources: The Global Innovation Index 2012

WII claims that for Egypt the rankings for Egypt during the last three years are shown in the table below. It should be noted that data accessibility and modifications to the GII model framework affect year-to-year comparisons of the GII rankings. The range of Egypt's GII 2021 ranking within the statistical confidence interval is 85–96. this ranking is an indicator that Egypt better performance in innovation output than input.

Table 2: Ranking for Egypt (2019 to 2021)

| | 2021 | 2021 | 2019 |
|-------------------|------|------|------|
| WII | 94 | 96 | 92 |
| Innovation input | 102 | 104 | 106 |
| Innovation output | 86 | 82 | 74 |

Sources: Global innovation index (Egypt)

2-2. Firm's financial performance

Financial performance is one of the most crucial requirements for the development and expansion of every business. A lot of businesses fail over the years because of poor financial performance. The way a company can make money by using its resources can be defined as its financial performance. It served as a gauge of the company's general financial health (Lee & Poku, 2022). Financial ratios, according to Mcleany & Atrill (2005), are used to quickly analyses a company's financial health by highlighting areas of strong and weak performance. This information is important for organizations since it evaluates their financial health. Additionally, it provides them with comprehensive understandings of their income, spending, to make wise business decisions, consider assets, obligations, and cash flow. Financial performance analysis examines how money is raised and spent using several measures, including the profitability ratio, liquidity, earning-per-share ratio, and asset management. The competence of the business to manage and control its resources is reflected in its financial success (IAI, 2016).

The first signal is **profitability**, which is one of the most significant goals that businesses of all types and sizes strive to attain. Profitability is regarded as a sign of a company's strength and demonstrates its capacity to compete with other organizations. Profitability is regarded as one of the most crucial metrics that directly influences how well a firm performs (Zeitun & Tian, 2007). The profitability ratios ROE (Return on Equity) and ROA (Return on Assets) are two examples. Firm financial permeance has a wide range of measurements. ROA (Return on Assets) is used for assessing a firm's financial performance (Būmane, 2018). The management will be able to assess the financial performance and operational performance of the usage of all companyowned resources thanks to this measure, which gives an overview of the company's capacity to generate results from the financial resources it has invested. It is used to calculate the profit made for every dollar invested in assets. Siddik et al. (2017), using return on assets to measure

profitability and firm performance and using the earning per share ratio affects both the share price and the profitability of the company. It can be found by dividing net profit after deducting dividends by the number of outstanding common shares (Sha, 2017). Stock returns (EPS) and business profitability are related (Erdogan et al., 2015).

Liquidity is the ability of an organization to pay short-term liabilities, measured by cash conversion cycle. The cash conversion cycle is a formative measure that includes three components: inventory conversion days, accounts receivable collection days, and accounts payable payment days (Qazi et al., 2011). The current ratio is also used to measure liquidity of firms, defined as the speed at which assets are converted into cash. In other words, the current ratio measures how well an organization's current assets balance its current liabilities. The ratio's magnitude will show how the organization is doing with its cash flow (Durrah, 2016). Nobanee et al. (2011) provide a novel approach to evaluating liquidity that considers the cash conversion cycle (CCC), that indicates the cash conversion cycle is affecting firm's profitability.

Due to the trade-off between liquidity and profitability, there is a negative correlation between a firm's liquidity level and profitability. There is a negative correlation between liquidity and financial performance (Binti, 2010). Another measurement that is used for measuring firm financial performance is **Debt ratio**, which is used to measure leverage and to know firm's debt comparing to its owned assets. According to Pham and Nguyen (2020), debt financing has a significant negative influence on profitability. **Asset management** is another metric for evaluating financial performance. This ratio, according to Stephen et al. (2010), gives managers insight into how well they are utilizing firm assets to drive sales. Theatrically, a high total asset turnover (TATO) partially suggests some potential corporate advancements connected to growing sales, gaining market share, and ultimately, enhancing financial performance. an

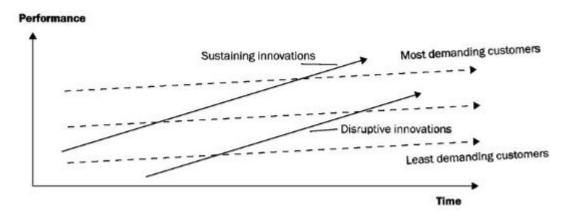
empirical analysis of conducted study about the variables influencing the financial performance of listed agricultural firms. According to research findings, there is a strong correlation between a firm's total asset turnover and its financial performance ratio (Wu and Zhu, 2010). Analysts conclude that a company's operating efficiency increases when asset utilization efficiency rises.

2-3. Innovation and firms' financial performance

Innovation is a key factor in businesses' improved performance and economic growth, as well as in countries' prosperity. There are many theories to improve the positive relation between innovation and business performance, which means this will affect in a good way in different areas in business in finance, marketing, and R&D department. According to the investigations of the relation between the innovation and financial performance, there is a direct effects of innovation strategy on the financial performance (Nybakk and Jenssen, 2012).it has been proven that there is a positive relationship between innovation output and financial performance if there are low financial constraints (Hai, B., Yin, X. and Xiong, 2022).

According to the disruptive innovation idea, a market may become competitive if new entrants use novel technologies to provide more readily available and reasonably priced goods and services (Christensen, 2013). According to the disruptive innovation idea, the development of new or unexplored value networks may negatively affect current markets and clients as well as pose a challenge to well-known organizations (Anagnostopoulos, 2018). Due to their innovative alternatives that improve the quality and effectiveness of the financial services offered and concentrate on consumers' needs, fintech firms have the potential to lead to such a disruptive development, according to consumer and disruptive innovation theories (Ferrari, 2016).by Appling concept of disruptive innovation, it can be applied not only on product performance but

also on education as other researchers do. The higher the innovative capabilities that used the better the financial performance over the time.



The Impact of Sustaining and Disruptive Technological Change (C. M. Christensen, 1997)

Companies pursue these "sustaining innovations" at the higher levels of their markets because historically, doing so has been successful for them: by charging the highest prices to the most affluent and demanding customers at the top of the market, companies will generate the highest profitability by using sustaining and disruptive technical advancements interact with consumer demand for product enhancements and how they change over time.

2-4. The pillars of WII and firms' financial performance

Institutions and firms' financial performance

According to WII, institutions make up the first pillar of the input innovation sub-index. Institutions can be measured or identified by the political, economic, and governmental environments. Risks of various taxes, currency devaluation, inflation, repatriation, expropriation, confiscation, campaigns against foreign goods, laws requiring labor benefits, kidnapping, terrorism, and civil wars are some of the political environment's characteristics (Griffen, 2005). Governmental initiatives including regulatory, legal, and political changes can have a negative

impact on business profits and function as obstacles to international investment. Wars, revolutions, terrorism, strikes, extortion, and kidnappings are all commonplace. (Andoh, 2007)

All these dangers have the potential to lead to violence against employees and property of businesses. Additional scenarios include externally imposed limits on imports or exports as well as externally induced financial restraints. Innovativeness is encouraged by appropriate institutional contexts. Small firms and entrepreneurs are more likely to investigate prospects in an environment with favorable political conditions. The faith of the populace in their political system fosters innovation at the same time (Okrah and Hajduk-Stelmachowicz 2020). political, governmental, and regulatory environments negatively impact a firm's success (Mark and Nwaiwu, 2015). Political and regulatory environment according to Mark and Nwaiwu (2015) is measured through stability of the political environment and no terrorism. Through access to markets and joint ventures that, without proper management, could seem too hazardous, corporations can access new revenue streams with the help of effective management of the political, commercial, and regulatory environment.

On the contrary there are studies that provide empirical evidence on the positive relation between environmental performance and firms performance. According to Oba et al., (2012) found that as the environmental quality increases reflecting environmental policies will affect firms' financial performance. This study was on different Nigerian firms.

Table 3: political environment and its impact on firm

| Type of political environment | Impact on firms |
|---|---|
| Civil wars | Distraction of property, lower productivity and increase of security cost |
| Kidnapping, terrorist threats and other forms of violence | Disrupted production, lower productivity and increase managerial cost |
| Confiscation and exportation | Loss of future profits, loss of assets and loss of sales |

Sources: Copyright © IAARR, 2015: www.afrrevjo.net Indexed African Journals Online: www.ajol.info

Human capital, research, and firms' financial performance

Employee knowledge and skill levels are influenced by investments in human capital and research, and this in turn influences how well a firm performs, particularly financially. Financial literacy will consequently drop, claims that developing high-quality human resources includes more than just training people with job-relevant knowledge and skills; additional efforts should be made to develop people with the will, capacity, and desire to learn throughout their life (Kartadinata, 1997). According to Bushan and Yajulu (2013), people's understanding of financial literacy is significantly influenced by their level of education, gender, income, type of job or position, and workplace environment. Businesses that adopt innovative strategies are acquiring a sizable market share, making sizable profits, and getting a competitive edge in the marketplace by reducing manufacturing costs through R&D (pramod, 2012). An earlier study carried out in Istanbul found a significant correlation between R&D spending and financial performance (Erdogana, 2019).

Infrastructure and firms' financial performance

A strong and well-established physical and technological infrastructure is crucial for fostering corporate innovation. In accordance with Pan et al (2021). Infrastructure and information and

communication technology (ICT) are crucial for fostering innovation and enhancing organizational effectiveness and efficiency. In recent years, ICT has failed to increase the efficiency of financial processes within conventional systems. A supportive technological environment encourages technological innovation, which then aids in the economic development of nations (Sassi, S., and Goaied, M. A, 2013). Additionally, Jabbouri et al. (2016) discovered a favorable and significant correlation between Iraq's technological infrastructure and its success in terms of innovation. correspondent to Azhgaliyeva et al. (2021), that shows that there is a significant impact of infrastructure on firm financial performance, the results indicate the relation between infrastructure and firm performance is n negative relationship at which this study was developed on different central Asian regional economic corporation program countries and using different variables for measuring the infrastructure as Internet access via broadband. Furthermore, according to Sarjono et al. (2021), that investigate this relationship and measuring firm financial performance by using return on assets and other measurement at which the conclusion of this study results is that there is a significant negative impact of infrastructure on return on assets (ROA).

Market, business sophistications and firms' financial performance

The market sophistication is known as credit, investment, and trade competition, according to WII. Because they immediately affect investment profitability, investment decisions are the most crucial ones. The main driving force behind the study is the assertion that trade credit is a significant source of capital for commercial firms and consequently influences company performance (Cao et al., 2022). Trade credit is a crucial source of short-term finance, particularly in developing economies (Hill et al., 2017). Hasan and Alam (2022). Additionally, it also makes up a sizeable portion of all assets in businesses located in developed countries (Astvansh and

Jindal, 2021). Business sophistication in the form of Knowledge employees, Innovation linkages, and Knowledge Absorption make up the final pillar from input innovations sub-indices. According to Razavi et al. (2012) and Dima et al. (2018), the quality of business networks, strategies, and operations is referred to as business sophistication, which means as quality of business operations and strategies increase, the business sophistications increase which will reflect on firm financial performance would be better as that quality of its world is enhanced. Businesses can get a competitive edge in innovation in the current era of globalization by investing in a more skilled staff and managing this knowledge (Hassan & Raziq, 2019).

Knowledge, technology and Creative output and firms' financial performance

Ansoff suggested in 1988 that companies must constantly launch new items to preserve market value and guarantee business existence. This suggests that the company must be more innovative when launching the new items to get a competitive advantage. Outstanding performance is influenced by a vital strategic supply known as creative capability or knowledge generation. (Smith, Collins and K. D. Clark, 2005). the financial Making new products or services that comply with the latest financial trends, for instance, might be a creative output. Fintech is a term that combines the key operations that define the financial services sector, such as loans, payments, and money transfers, with Internet-based technology like artificial intelligence, cloud computing, and block chain. (Gomber et al., 2017).

2-5. Hypotheses

- **H1**. Institutions (political, business, and regulatory environment) have significant impact on firms' financial performance.
- **H2**. Human capital and knowledge have a significant impact on firms' financial performance.
- **H3.** Infrastructure has a significant impact on a firm's financial performance.

- **H4.** Market sophistication has a significant impact on the firm's financial performance.
- **H5.** Business sophistications have a significant impact on a firm's financial performance.
- **H6.** Technology and knowledge output has a significant impact on the firm's financial performance.
- **H7.** Creative output has a significant impact on a firm's financial performance.

3- Data, Variables and Estimation Methods

The study's methodology was quantitative research. Analytical research has been used to analyze phenomena, while descriptive research has been used to gather detailed information. The main sources of data are annual reports of world intellectual probability organization (WIPO), also using financial statement and ratios from reliable sites (the Egyptian stock exchange (EGX) and Investing.com) annually over 5 years from period 2018 to 2022.

Also using a secondary data, a survey that had been made about different aspects of innovation or aspects in business and how it affects performance, which was a stratified random survey sample of 3000 firms are chosen to reflect the area's industry and size mix and the data was collected via "Egyptian National Innovation Survey (ENIS), 2015" with a coverage of innovation activities of the period 2012 - 2014. Sampling frames were obtained from economic census 2013 that has been made by Central Agency for Public Mobilization and Statistics (CAPMAS), show that the overall enterprise in Egypt totaled of 2.4 million covered 80 different economical activities. (Mohamed Ramadan, 2015).

3-1. Sample

The sampling procedure was on the largest 17 listed companies in Egyptian stock exchange in different industries including Food, Basic Resources, and building material.

3-2. Data

Data was presented using descriptive statistics involving calculating mean, median, standard deviation, minimum and maximum value for each variable; data was also analyzed using SPSS. Also, in this research Correlation matrix analysis is used to know the relationship between variables as it can be positive or negative relationship and regression analysis were adopted to identify the relationship between the variables, which defines relation between dependent variable and two or more independent variables. Multiple regression model to evaluate the significance of each predictor to the association as well as the strength of the relationship between an outcome (the dependent variable) and the many predictor variables, frequently with the effect of other predictors statistically excluded.

4- Results and Discussion

A Survey had done by the Egyptian National Innovation Survey in 2015

The survey conducted by the Egyptian National Innovation Survey in 2015, one of the research findings, shows that there is a relationship between innovation and source of information as there are 4 categories: 1) Internal sources: within the company or enterprise group, 2) Market sources: clients, equipment suppliers, and rivals, 3) Institutional sources: universities, research institutions, and 4) Other sources: conferences, journals of science, and associations. The companies should state if each source was of low, medium, or high value to their innovation for each source. The findings showed that internal factors like human capital and employee

knowledge are the most significant factors that influence a firm's performance. This point can show how innovation, whether it comes from input or output, will have an impact on firm performance.

The poll also covered many forms of innovation. Innovation includes a variety of actions, such as the purchase of tools, software, and technology, training, internal and external R&D spending, and the acquisition of other outside information. Some tasks, including training and acquiring additional outside expertise, are excluded from research and development. New machinery, equipment, and infrastructure are the most significant innovation activities that impact businesses, and as R&D spending rises, business innovation performance will as well. The final topic that was covered was how a lack of innovative partners, which can be either the government or regulatory and political environment (institutions), can have a detrimental impact on innovative institutions. Table (a) in the appendix reports the descriptive statistics of the variables.

Multiple regression model

The model follows the regression equation.

$$y_{it} = \alpha + \sum_{t=1}^{n} \beta_i X_{it} + \varepsilon_i$$

The dependent variables include CCC, ROA, Debt to assets ratio, Total Asset Turnover. The independent variables are pillars of World Innovation Index including Institutions, Human capital and research, Infrastructure, Market sophistication, Business sophistication, Knowledge and technology outputs, Creative outputs; where *i* is firm 1 to 17 and t is a time period from 2018 to 2022. The Weighted Least Square is used for the statistical estimation due to the limited number of observations. Total Assets is used for the estimation of the weights.

Model 1 shows the effect of pillars of World Innovation Index on firms' liquidity (Cash Conversion Cycle, CCC)

Model 2 shows the effect of pillars of World Innovation Index on firms' profitability (ROA)

Model 3 shows the effect of pillars of World Innovation Index on firms' debt financing (debt/Total assets ratio).

Model 4 shows the effect of pillars of World Innovation Index on firms' Asset Management (Total Asset Turnover)

Table 4:

| Independents | Model 1 Cash Conversion Cycle, CCC | Model 2: ROA | Model 3: debt/Total assets ratio | Model 4: Total Asset Turnover | |
|--------------------|------------------------------------|-----------------------|--|----------------------------------|--|
| Institutions | 7.890 (3.641)*** | -0.0087 (-2.312)** | -0.0019 (-0.370) | -0.0331 (-1.372) | |
| Human capital and | -0.267 | -0.00007 | -0.0018 | -0.011 | |
| research | (-0.105) | (-0.0167) | (-0.304) | (-0.4137) | |
| Infrastructure | -5.269 | -0.0091 | -0.0003 | -0.028 | |
| minastructure | (-2.628)*** | (-2.733)*** | (-0.066) | (-1.32) | |
| Creative outputs | -1.3446 | -0.0024 | -0.0019 | -0.0042 | |
| Creative outputs | (-1.558) | (-1.075) | (-0.9556) | (-0.4482) | |
| Industry Effect | Yes | Yes | Yes | Yes | |
| Constant | -268.28 | 2.2151 | 0.895 | 8.996 | |
| Constant | (-0.4987) | $(2.431)^{**}$ | (0.6956) | (1.5466) | |
| Observations | 85 | 85 | 85 | 85 | |
| Number of ID | 17 | 17 | 17 | 17 | |
| Durbin-Watson stat | 1.3781 | 1.3962 | 1.02215 | 0.8281 | |
| F-statistic | 11.614*** | 8.1477*** | 18.570*** | 2.2425** | |
| \overline{R}^2 | 0.4693 | 0.3732 | 0.5941 | 0.0938 | |

Note: Market sophistication, Business sophistication and Knowledge and technology outputs are excluded from the analysis automatically due to extremely low correlation.

Discussion

When measuring the impact of innovation on firm financial performance, it was found that there are mainly two pillars of innovation who had a significant impact of firm's performance which are the institutions and infrastructure at which institutions are significant positive relationship with cash conversion cycle that is supported by the findings of Oba et al., (2012).

On other hand when using return on assets as financial measurement, the relation between institutions and return on assets become significant negative relationship, which reflecting as the regulations and polices instability increases, the firm's financial performance towards profitability will decrease and it became less flexible to changes and polices that is occurred due to regulatory environment. This finding is supported by Griffen (2005) and Mark and Nwaiwu (2015).

Also, the results show that there is a significant negative relationship between infrastructure and firm financial performance whether it's measured by cash conversion cycle and return on assets. This result is supported by Azhgaliyeva et al. (2021) and Sarjono et al. (2021). This indicates infrastructure affecting firms' success and profitability at which when this infrastructure is developed and successfully used it will affect financial performance for the firm which may causes risk and can be costly on firm to adapt this feature which will lead to lowering firm performance. The creative output according to the results has no impact on the firm's financial performance. Other pillars are not included as they are low correlated.

5- Conclusion

This paper shows the effect of innovation on financial performance on listed firms in Egyptian stock exchange, whether by increasing R&D expenditure or using new technologies to produce new product or using human capital as a source for innovation by using their political and legal environment (external environment), infrastructure which will affects significantly on financial performance, which means attracting more customers and produce trendy product that will reflect in the firm's financial statements and financial ratios that had been using for calculating financial performance as cash conversion cycle (CCC), return on assets (ROA), debt ratio and total asset turnover (TATO). Based on research findings, each financial ratio had different

relation with each one of 7 pillars of WII (independent variable). Cash conversion cycle and ROA which are indicating significant results with firms' financial performance and used for reflecting firm's ability to make profits from their assets usage, has negative effect with institutions (regulatory and political environment) and infrastructure, which means this independent variables also has negative impact of firm financial performance. At the end all business in different industries are taking their competitive adage from the creative and innovative output, as applying this study on companies listed in Egyptian stock exchange this means Egyptian firms can apply the concept of seven pillars of WII, as they taking their rank according to WIPO but it can take a step forward in innovation either input as institutions regulatory, external environment and governmental policies And should minimize frequent changes in government policies and initiatives, while also ensuring the durability of democratic institutions and political integration. These are required to provide a stable political environment free of violence to promote corporate growth and development and also the infrastructure as internet broadband. For the innovative output as creativity in technology that used and product, so by following these two innovative sub-indices, it can achieve higher total innovation index which will influence firms' financial performance to profitability and revenues.

References

Andoh, C. H. (2007). Competing effectively: environmental scanning, competitive strategy, and organizational performance in small manufacturing firms. Journal of Small Business Management, 38(1), 27-47.

Astvansh, V. and Jindal, N., (2022). Differential effects of received trade credit and provided trade credit on firm value. Production and Operations Management, 31(2), pp.781-798.

Azhgaliyeva, D., Mishra, R., & Yoshino, N. (2021). Infrastructure and Firm Performance in CAREC Countries: Cross-Sectional Evidence at the Firm Level. Asian Development Bank Institute, 1265. https://www.adb.org/sites/default/files/publication/705211/adbi-wp1265.pdf

Binti, M., & Binti, M. S. (2010). Working capital management: The effect of market valuation and profitability in Malaysia. International Journal of Business and Management, Vol 5, No 11, pp 140-147 (ISSN:1833-/8119 online)

Būmane, I. (2018). The methodology of the statement of comprehensive income and its impact on profitability: the case of Latvia. Entrepreneurship and Sustainability Issues, 6(1), 77–86. https://doi.org/10.9770/jesi.2018.6.1

Cao, Z., Chen, S.X. and Lee, E., (2022). Does business strategy influence inter firm financing? Evidence from trade credit. Journal of Business Research, 141, pp.495-511.

Christensen, C. (1997). The Innovator's Dilemma. Cambridge, MA: Harvard Business School Press.

Dima, A. M., Begu, L., Vasilescu, M. D., & Maassen, M. A. (2018). The relationship between the knowledge economy and global competitiveness in the European Union. Sustainability (switzerland), 10(6), 1706.

Durrah, O., Abdul Rahman, A. A., Jamil, S. A., & Ghafeer, N. A, (2016). Exploring the Relationship between Liquidity Ratios and Indicators of Financial Performance: An Analytical Study on Food Industrial Companies Listed in Amman Bursa. International Journal of Economics and Financial Issues, 6(2), 435–441.

Eljelly, A.M. (2004) Liquidity-Profitability Tradeoff: An Empirical Investigation in an Emerging Market. International Journal of Commerce and Management, 14, 48-61.

Erdogan, E.O., Erdogan, M. and Ömürbek, V., (2015). Evaluating the Effects of Various Financial Ratios on Company Financial Performance: Application in Borsa Istanbul. Business and Economics Research Journal, 6(1), pp. 35-42.

Griffin, R.W. (2005). International business. New York: Mc Graw-Hill Inc.

Hai, B., Yin, X., Xiong, J. et al, (2022). Could more innovation output bring better financial performance? The role of financial constraints. Finance Innov 8, 6.

Hasan, M.M. and Alam, N., (2022). Asset redeploy ability and trade credit. International Review of Financial Analysis, 80, p.102024.

Hassan, N., & Raziq, A. (2019). Effects of knowledge management practices on innovation in SMEs. Management ScienceLetters, 9(7), 997–1008.

Hill, M.D., Kelly, G.W., Preve, L.A. and Sarria-Allende, V., (2017). Trade credit or financial credit? An international study of the choice and its influences. Emerging Markets Finance and Trade, 53(10), pp.2318-2332.

Huarng, Kun-Huang & Yu, Tiffany Hui-Kuang, (2022). Analysis of Global Innovation Index by structural qualitative association, Technological Forecasting and Social Change, Elsevier, vol. 182(C).

Iswatia, S. and Anshoria, M., (2007), November. The influence of intellectual capital to financial performance at insurance companies in Jakarta Stock Exchange (JSE). In Proceedings of the 13th Asia Pacific Management Conference, Melbourne, Australia (pp. 1393-1399).

Jabbouri, N. I., Siron, R., Zahari, I., & Khalid, M. (2016). Impact of information technology infrastructure on innovation performance: An empirical study on private universities in Iraq. Procedia Economics and Finance, 39(November 2015),861–869.

Kariyawasam, H. N. (2019). Analysing the impact of financial ratios on a company's financial performance. International Journal of Management Excellence, 13(1), 1898–1903. https://doi.org/10.17722/ijme.v13i1.1093

Kartadinata, S. (1997). Education for the development of quality human resources entering the 21st century. Paper presented at the Paper in the Purwokerto Educational Convention.

Lee, J., & Poku, R. A. (2022). Factors Affecting Financial Performance of Firms Listed on the Ghana Stock Exchange. International Journal of Academic Research in Accounting Finance and Management Sciences, 12(3), 309–329.

Mahmut Erdogana, Adilya, 2019. A Panel Study of the Impact of R&D on Financial Performance: Evidence from an Emerging Market. Procedia Computer Science 158 (2019) 541–545.

Manirath Wongsim and Jing Gao, (2005). Exploring Information Quality in Accounting Information Systems Adoption. School of Computer and Information Science, Vol. 2011 (2011), Article ID 683574, 12 pages.

Mark, Nwaiwu, (2015), Impact of Political Environment on Business Performance of Multinational Companies in Nigeria, An International Multidisciplinary Journal, Ethiopia Vol. 9(3), Serial No. 38

Md. Nur Alam Siddik, (2017). Impacts of Capital Structure on Performance of Banks in a Developing Economy: Evidence from Bangladesh. Int. J. Financial Stud. 2017, 5(2).

Mohamed Ramadan A. Rezk2, H. H. Ibrahim3, Amr Radwan4, Manuela Tvaronavičienė5, Leonardo Piccinetti6, (2015). Innovation Magnitude of Manufacturing Industry in Egypt with particular Focus on SMEs. Academy of Scientific Research and Technology (ASRT).

Nazir, A., Azam, M. and Khalid, M.U. (2021), "Debt financing and firm performance: empirical evidence from the Pakistan Stock Exchange", Asian Journal of Accounting Research, Vol. 6 No. 3, pp. 324-334.

Nobanee, H., Abdullatif, M., & AlHajjar, M. (2011). Cash conversion cycle and firm's performance of Japanese firms. Asian Review of Accounting, 19(2), 147-156.

Obunike, C.F. and Udu, A.A., (2018). Technological innovativeness and growth: a study of small-scale manufacturing firms in Lagos State. Economics of Development, 17(4), pp.1-15.

Oroszi Terry, (2020). disruptive innovation theory. Published by Journal of Service Science and Management, Vol.13 No.3.

Oba, V. C., Fodio, M. I., & Soje, B. (2012). The Value Relevance of Environmental Responsibility Information Disclosure in Nigeria. Acta Universitatis Danubius. Œconomica, 8(6), 100-113.

Pan, X., Guo, S., Li, M., & Song, J. (2021). The effect of technology infrastructure investment on technological innovation. A study based on the spatial Durbin model. Tec novation, 107(April), 102315.

Panagiotis Liargovas & Konstantinos Skandalis, (2008). Factors Affecting Firms' Financial Performance: The Case of Greece, Working Papers 0012, University of Peloponnese, Department of Economics.

Pham, H.S.T., Nguyen, D.T. (2020), Debt financing and firm performance: The moderating role of board independence. Journal of General Management, 45(3), 141-151.

Pramod, K. N., Krishnan, N., & Puja, P. (2012). R&D intensity and market valuation of firm: a study of R&D incurring manufacturing firms in India.

Qazi, H. A., Shah, S. M. A., Abbas, Z., & Nadeem, T. (2011). Impact of working capital on firms profitability. African Journal of Business Management, 5(27), 11005-11010.

Sarjono, E., Titisari, K. H., & Pawenang, S. (2021). Effects of infrastructure development, inflation and economic growth to Performance Company (ROA, Tobin's Q, PBV): Study on Registered Infrastructure support Companies in IDX period 2014-2019. Journal of Economics and Business, 4(3). https://doi.org/10.31014/aior.1992.04.03.382Sassi, S. and Goaied, M., (2013). Financial development, ICT diffusion and economic growth: Lessons from MENA region. Telecommunications Policy, 37(4-5), pp.252-261.

Sha, T.L., (2017). Effects of Price Earnings Ratio, Earnings Per Share, Book to Market Ratio and Gross Domestic Product on Stock Prices of Property and Real Estate Companies in Indonesia Stock Exchange. International Journal of Economic Perspectives, 11(1), pp. 1743-1754.

Smith, K. G., C. J. Collins and K. D. Clark (2005). 'Existing knowledge, knowledge creation capability, and the rate of new product introduction in high-technology firms', Academy of Management Journal, 48, pp. 346–357

Stephen, A.R., Randolph, W.W. and Bradford, D.J. (2010), Fundamentals of Corporate Finance, McGraw-Hill, New York, NY

WIPO (2021). Global Innovation Index 2021. Tracking Innovation through the COVID-19 Crisis. Geneva: World Intellectual Property Organization.

Wu, J. and Zhu, M. (2010), "Empirical analysis of rural influencing factors on listed agribusiness financial performance", Agricultural Economics and Management, Vol. 3, pp. 22-27

Yuliana, V. (2013). Analysis of the influence of financial and non-financial variables on initial returns and returns after the IPO. Management Analysis Journal, 2(2), 1-14.

Zeitun, R. and Tian, G.G, (2007). Capital Structure and Firm Performance: Evidence from Jordan. Australia Accounting Business and Finance Journal, 1, 148-168.

Appendix (A)

| | ccc | ROA | Debt to assets ratio | Total Asset Turnover | Institutions | Human capital and research | Infrastructure | Market sophistication | Business sophistication | Knowledge and technology outputs | Creative outputs | Food | Basic Resources | Basio Resources | building material |
|-----------------------|--------|--------|-------------------------------|----------------------------|--------------|-------------------------------------|----------------|--------------------------|----------------------------|---|---------------------|-------|--------------------|--------------------|----------------------|
| Mean | 145.08 | 0.0735 | 0.5305 | 0.8984 | 115.6 | 93 | 93.6 | 97.8 | 109 | 68.8 | 93.4 | 0.411 | 0.05882 | 0.23529 | 0.2941 |
| Standard Error | 36.833 | 0.0114 | 0.0205 | 0.0630 | 0.342261 | 0.3450 | 0.328053 | 0.769663 | 0.679636 | 0.59920 | 0.8412 | 0.053 | 0.02567 | 0.04628 | 0.0497 |
| Median | 74.320 | 0.0659 | 0.5502 | 0.8907 | 115 | 93 | 93 | 97 | 106 | 66 | 89 | 0 | 0 | 0 | 0 |
| Mode | #N/A | #N/A | #N/A | #N/A | 120 | 89 | 90 | 104 | 103 | 66 | 89 | 0 | 0 | 0 | 0 |
| Standard Deviation | 339.58 | 0.1054 | 0.1891 | 0.5810 | 3.155494 | 3.1810 | 3.024503 | 7.095941 | 6.265932 | 5.52440 | 7.7554 | 0.495 | 0.23669 | 0.4267 | 0.4583 |
| Sample Variance | 1319. | 0.011 | 0.035 | 0.3376 | 9.957143 | 10.119 | 9.147619 | 50.35238 | 39.2619 | 30.51905 | 60.147 | 0.245 | 0.05602 | 0.18207 | 0.2100 |
| Kurtosis | 58.57 | 0.641 | -0.02 | 0.2526 | -1.21941 | -1.679 | -0.44768 | -0.93275 | -1.81713 | -0.3967 | -1.63 | -1.91 | 12.8773 | -0.39542 | -1.181 |
| Skewness | 7.110 | 0.445 | -0.219 | 0.6852 | -0.01741 | 0 | 0.798257 | -0.49867 | 0.333617 | 1.076267 | 0.279 | 0.36 | 3.8177 | 1.2706 | 0.9200 |
| Range | 3035. | 0.557 | 0.901 | 2.7349 | 9 | 8 | 9 | 20 | 14 | 15 | 20 | 1 | 1 | 1 | 1 |
| Minimum | -62.2 | -0.17 | 0.073 | 0.022 | 111 | 89 | 90 | 86 | 103 | 64 | 84 | 0 | 0 | 0 | 0 |
| Maximum | 2973. | 0.385 | 0.974 | 2.75772 | 120 | 97 | 99 | 106 | 117 | 79 | 104 | 1 | 1 | 1 | 1 |
| Sum | 1232.1 | 6.2522 | 45.097 | 76.371 | 9826 | 7905 | 7956 | 8313 | 9265 | 5848 | 7939 | 35 | 5 | 20 | 25 |
| Count | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |