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The Impact of Innovation on Firm Performance: A Systematic Review

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A systematic review for thirty-three research studies published between (2010-2020) were reviewed, critically assessed, and analysed to stand for the main innovation elements that impact firm performance. After applying a set of assessment criteria, various elements were elicited from the shortlisted studies and it ended up with a variety of innovation factors that influence firm performance. Thus, the study came up with a number of key findings such as the most frequent factors that have been used by scholars to study the innovation phenomenon and how such factors influence organisational performance. Such elicited factors have been classified in different ways to answer a set of predetermined study questions.

Keywords: *Systematic Review, innovation, firm performance.*

Introduction

In todays' economics, innovation is the basis of economic development, and has a remarkable impact on economic growth (Prifti & Alimehmeti, 2017). Innovation has become an indispensable component of firm strategies that help entering new markets, increase the existing market share, and seek positive reputation in customers' perception to gain competitive advantage (Al Kurdi, Alshurideh, & Al afaishata, 2020; Hayajneh et al., 2021; Kurdi, Alshurideh, & Alnaser, 2020). Further; innovation provides the firm with a strategic orientation to conquer problems, while motivated to accomplish a sustainable competitive advantage (Drucker, 1985; Hitt et al., 2001; Kuratko et al., 2005). Currently, a large number of firms are spending enormous amounts on research and development (AlShurideh, Alsharari, & Al Kurdi, 2019; Assad & Alshurideh, 2020a; Ghannajeh et al., 2015; Syed, Riaz, & Waheed, 2016). Motivated by the increasing global competition and the continuous changes in the challenging market, many industries have started

to grasp the significance of innovation, and change their production methods and systems in order to uplift and sustain their competitive advantage (Gunday et al., 2011; Alshurideh, 2019; Abu Zayyad et al., 2020). To enhance competitiveness, the possible solution is to improve and reinforce innovation in both products and services (Alshurideh, 2014; Ashurideh, 2010; Audretsch, 2002; Kurdi, 2016; Love & Roper, 2015). Innovation is not only restricted to products and processes; however, it's related to marketing and organisation (Gunday et al., 2011; Alshurideh et al., 2020; Alzoubi et al., 2020). Schumpeter (1934) has identified the types of innovation into "new products, new methods of production, new sources of supply, the exploitation of new markets, and new ways to organize business". Particularly over the last two decades, innovation has become the hottest issue, and attractive area of study for researchers trying to define, categorise, and examine its performance effects, especially due to its practical relevance (Gunday et al., 2011).

Research Questions

As this debatable topic is widely common in the globe, there must be enough researches done to better knowledge sharing practices to encourage firms to become innovative. Some of the recent studies showing that results are not very conclusive as they have been affected by the financial crisis (Psomas, Kafetzopoulos, & Gotzamani, 2018; Wang, 2018; Assad & Alshurideh, 2020). Some authors such as Yuan et al. (2010) proposed conducting future research to authenticate previous research findings. Therefore, this study is planned due to the limited empirical studies in this area and the lack of conclusive results, as they have been affected by the financial crises (Psomas et al., 2018; Wang, 2018; AlShurideh et al., 2019; Assad & Alshurideh, 2020b). More precisely, the researchers are going to focus on the following research questions to answer which are:

Research Question 1: What are the key research purposes of the examined articles?
Research Question 2: What are the key research methods of the examined articles?
Research Question 3: What are the participating countries in the context of the examined articles?
Research Question 4: What are the contexts of the examined studies?
Research Question 5: What is the publication year of the examined articles?

Research Objectives

The objective of the conducted systematic review is to collect a number of research studies to critically analyse them using systematic review methods to answer the research questions. Furthermore, the conducted systematic review will give a holistic picture about the topic, purpose, findings, and limitations. Moreover, it will shed the light on the countries, which implemented this research; what are the achieved results; and where are the weakness and strengths areas to focus

on for further enhancement and improvement. Additionally, it will critically find out the factors that have a positive or negative effect on firm performance, through calculating the frequency of each factor.

Research Importance

For firms to survive in the challenging marketplace, they must gain and sustain a competitive advantage, which will improve and enhance both quality and innovativeness (Feng et al., 2006; Hung, 2007; Irani et al., 2004). Some studies suggest that firms which are involved in evolving innovative practices will effectively compete with other firms, have higher market share, ROI, and overall gain the firm's success (Al-Gasaymeh, Kasem, & Alshurideh, 2015; Al-Jarrah et al., 2012; Allocca & Kessler, 2006). Therefore, the main aim of the research is to conduct a systematic review to critically analyse studies that examine the relationship of innovation and firm performance, due to the limited empirical studies on this area, and lack of a conclusive result as they have been affected by the financial crisis (Jarrah, Al-Zu'bi, Jaara, & Alshurideh, 2012; Al-Gasaymeh et al., 2015; Al- Psomas et al., 2018; Wang, 2018).

The following section discusses the literature review that is related to innovation and firm performance, and the association between them.

Literature Review

Innovation

Currently, innovation becomes a significant negotiable subject at various levels of firms and its importance, and valuably encouraged researchers to dig into and identify its various driving forces (Becheikh, Landry, & Amara, 2006). A number of definitions of innovation have been found in literature. It was firstly described by the German economist and political scientist - Schumpeter in 1934) who defined it as "the driving force for development". In his definition, there are five manifestations of innovation that were proposed (Vyas, 2009):

1. Creating new products or improving and enhancing the current products.
2. Use of a new industrial process.
3. New market introductions.
4. Development of new raw material sources or other new inputs.
5. New forms of industrial organisations.

Moreover; according to OECD & Eurostat, (2005), innovation is defined as "the implementation of a new organizational improved product, process, a new marketing technique…". Further, Hurley & Hult, (1998) view innovation as "an aspect of firm's culture and openness toward new ideas". Consequently; several opposing definitions can be identified depending on the typology on

which innovation is analysed, and examined (Prifti & Alimehmeti, 2017). In addition, globalisation has an impact on firms and business environment by triggering them to be more competitive and improving their innovation practices (Gunday et al., 2011; Alshurideh et al., 2019). Also, it has claimed that "dynamic environments are fertile fields for boosting innovation" (JZhang, Garrett-Jones, & Szeto, 2013). Thus, the way firms compete and survive in the global challenging niche markets, must be through integrating and aligning their adoption of innovation into their strategy (Humphreys, McAdam, & Leckey, 2005), which will enhance both quality and innovativeness (Hung, 2007; Aburayya, Al Marzouqi, Al Ayadeh, Albqaeen, & Mubarak, 2020; Aburayya, Marzouqi, Alawadhi, Abdouli, & Taryam, 2020).

According to Prifti & Alimehmeti, (2017), firms are facing continuous pressure from global market competition; hence, they need to optimise their decision-making capabilities on such conditions. To persist and prosper in connected and competitive markets, firms find innovation as the most reasonable solution (Kim, 2005). Furthermore, innovation is crucial for the success and survival of firms (Bell, 2005; Cho & Pucik, 2005; Fiol, 1996), as well as attaining sustainable competitive advantage (Bartel & Garud, 2009; Mumford & B Licuanan, 2004). OECD & Eurostat (2005), categorised innovation into diverse categories: product; process, marketing innovation and organisational innovations. Additionally, innovation is a multi-dimensional concept which covers all scientific, technological, organisational, financial, and commercial activities (Naser et al., 2004). Also. It was claimed that firm performance is considered to be a multidimensional construct, and considered a measurement tool of corporate success and achievement (Yeung, Lee, & Chan, 2003). There are three main performance related dimensions of innovation, which are financial performance, operational performance and product quality. Brüderl & Preisendörfer (2000) revealed that innovation is the only most significant factor in expecting firm growth.

Firm Performance

According to Dubey et al. (2012), measuring firm performance is a critical debating issue, and over the years traditional economics theories considered two main elements as the significant determinates of firm performance which are: market power and industry structure (Chadwick, 1999; Wiklund, 1999). Additionally, performance is viewed as "the ability to measure organizational effectiveness, productivity, profitability, quality, continuous improvement, work quality, and social responsibility as leading indicators for performance" Therefore, for measuring firm performance, a set of financial measures should be considered such as ROA, market share, ROI, and growth rates (Hitt & Ireland, 1985), and non-financial measures like management's perception of productivity, profitability, market share, and customer satisfaction (Dubey et al., 2012).

Innovation and Firm Performance

Developing as essential aspect of firm evolution, innovation is considered as the significant issue for firm growth, and long-standing progress. Innovation can be considered the valued and effective instrument for any firm to accomplish sustainable development, maintain its competitive advantage, and have access into the new markets (Becheikh et al., 2006). There is a link between innovation practices' implementation and firm performance, which has been well established in previous researches (Psomas et al., 2018). Further, research is rich on viewing the influence of innovation on firm performance and growth (Hölzl & Friesenbichler, 2010; Santi & Santoleri, 2017). Accordingly, Murphy et al. (1996) claimed that firm performance is a multidimensional concept, or has consequences like growth and profit (Wolff & Pett, 2006). Moreover, innovative performance is the overall accumulated organisational accomplishments due to the enhancement efforts implemented, taking into consideration different aspects of firm innovativeness such as processes, products, marketing and organisational structure (Tuan, Nhan, Giang, & Ngoc, 2016). Consequently, innovative performance is a compound construct (Hagedoorn & Cloodt, 2003) based on different performance indicators related to new patents, new product announcements, new projects, new processes, and new organisational arrangement (Tuan et al., 2016). SMEs are the engine of innovation activities and technological growth and development (Acs & Audretsch, 1988; Z. J. A. y D. B. Audretsch, 1988). Practical evidences on the effect of innovation on firm performance is abundant, since most of studies are showing a positive relationship of innovation on firm performance (Acs & Audretsch, 1987; Audretsch, 1988; Hall et al., 2009). Therefore, as many results show the positive relationship between innovation and firm performance (Choi et al., 2012), government should encourage SMEs to participate in innovation activities to achieve higher results in both production and diversification (Nguyen, Nguyen, & Nguyen, 2018). After highlighting the link between innovation and firm performance, the next section discusses the methodology in selecting studies to conduct the systematic review.

Research Methodology

The Research Methodology section addresses the analysis of the paper's focused topic (Alhashmi, Alshurideh, Al Kurdi, & Salloum, 2020). One of the most important things to do before conducting any study is to have a critical review as confirmed by many scholars such as Al-Emran, Mezhuyev, & Kamaludin, 2018; Alhashmi et al., 2020; Assad & Alshurideh, 2020b; Salloum, Alshurideh, Elnagar, & Shaalan, 2020a, 2020b). This paper depends heavily on secondary data, in order to investigate the factors in the existing literature of previous published studies, to create new conceptual models or theories (Alhashmi et al., 2020). Furthermore, the systematic review is a scientific methodology used to refer to a certain methodology of the research generated, and to select, collect and assess the existing evidence relating to a focused topic (Biolchini, Gomes Mian, Candida Cruz Natali, & Horta Travassos, 2005). Further, it provides a summary of the existing

literature (Bettany, 2012). In the systematic review, "the research conduction process will follow a structured and well-defined sequence of methodological steps, regarding to aprioristically protocol" (Biolchini et al., 2005). Also, the systematic review tool is built around a key issues that signifies the core of the examination by using certain concepts and terms which are addressed to information related to a specific pre-defined, focused, and structured question (Biolchini et al., 2005; Alshurideh, 2016a, 2016b).

In the current paper, the data collection method includes assessment for a number of "innovation and firm performance" papers. Specifically, a systematic analysis design involves 33 published studies, which have been reviewed. Webster et al. (2002) have suggested a structured approach to simply find the relevant publication of the selected topic. The systematic review went through four stages which are: specifying inclusion and exclusion criteria, data source and search strategies, quality assessment, and data coding and analysis (Al-Emran, Mezhuyev, & Kamaludin, 2018). Afterwards, the key elements in every study have been educed and concluded in a planned manner (Alhashmi et al., 2020). Consequently, based on the previous step of proper consideration, the TAM model can be used appropriately along with its elements (Alhashmi et al., 2020). The following sections are showing the implementation of each stage.

Inclusion/Exclusion Criteria

Table 1 shows the inclusion and exclusion criteria in which articles will be selected and critically analysed. (Fetters, Figueiredo, Keane-Miller, McSweeney, & Tsao, 2004).

NO.	CRITERIA	INCLUSION CRITERIA	EXCLUSION CRITERIA
1	**Year period**	2010-2020	Less than 2010
2	**Source type**	- Peer-reviewed articles - Scholarly journals - Case studies - Academic journals - Dissertations & theses	- Non- peer-reviewed articles - Newspapers - Book reviews - Other types of publications
3	**Language**	English	Other languages
4	**Types of studies**	- Peer-reviewed - Quantitative - Qualitative - Empirical studies - Systematic review	- Annual reports - Audio\ video clips - Advertisement directory - Films and other studies
5	**Study design**	- Meta-analysis randomised and controlled studies - Survey - Interview - Case study	-
6	**Outcome**	Relationship between innovation and firm performance	-

Table 1: Inclusion and Exclusion Criteria

Data Sources and Search Strategies

The importance of the systematic review comes from considering it as a guideline to accomplish the research (Al-Emran, Mezhuyev, Kamaludin, & Shaalan, 2018; Alhashmi et al., 2020; Assad & Alshurideh, 2020b; Said A Salloum et al., 2020b, 2020a). Accordingly, in this systematic review, research articles have been included from certain databases which are Emerald, ProQuest, Wiley, IEEEXplore, Springer, and google Scholar search engine (Monteiro, 2016). Searching for the articles has been conducted on March 2020, by using advanced search criteria to search in the title only with specific keywords included in the search term;

- ti("innovation") AND ti("firm performance")
- allintitle: "innovation" AND "firm performance"

Inclusion and exclusion criterion, as shown in the previous section in Table 1, have been applied before selecting the articles. Table 2 is showing the number of the selected studies and included in this systematic review.

Set #	Search by title	Databases	Results	Used
1	- ti("innovation") AND ti("firm performance") - allintitle: "innovation" AND "firm performance"	Emerald	26	3
2		ProQuest	145	7
3		Wiley	24	3
4		IEEEXplore	18	2
5		Springer	2	2
6		Google Scholar	760	16
Total			975	33

Table 2: Data Sources and Keywords

According to Calabrò et al. (2019), the following search process and selection steps went through four successive steps, as shown in Table 3, and Figure 1. The first stage is identification, by searching databases for articles with the selected keywords in the title only, and applying inclusion and exclusion criterion, to meet the objectives of the study. The second stage is screening, by going through the titles, removing duplication, and non-related articles. The third stage assesses the full text article, and is called eligibility. In the last stage articles and citation tracing to be used as reference to support the literature, have been shortlisted and included.

Stages	Emerald	ProQuest	Wiley	IEEEXplore	Springer	Google Scholar	Total Studies
Stage 1	26	145	24	18	2	760	**975**
Stage 2	20	71	15	7	2	155	**296**
Stage 3	10	18	9	2	2	15	**56**
Stage 4	3	7	3	2	2	16	**33**
Final selected studies	**33**						**1360**

Table 3: Selection criteria for articles from each database

The study's PRISMA flow chart is shown in Figure 1 below. It demonstrates the process of narrowing down selecting studies, in order to critically analyse the shortlisted ones (Ramezani, Ghazimirsaeed, Azadeh, Esmaeilpour-bandboni, & Yektakooshali, 2018). The main goal of the PRISMA Statement is to assist authors enhance the presenting of systematic reviews and meta-analyses (Liberati et al., 2009).

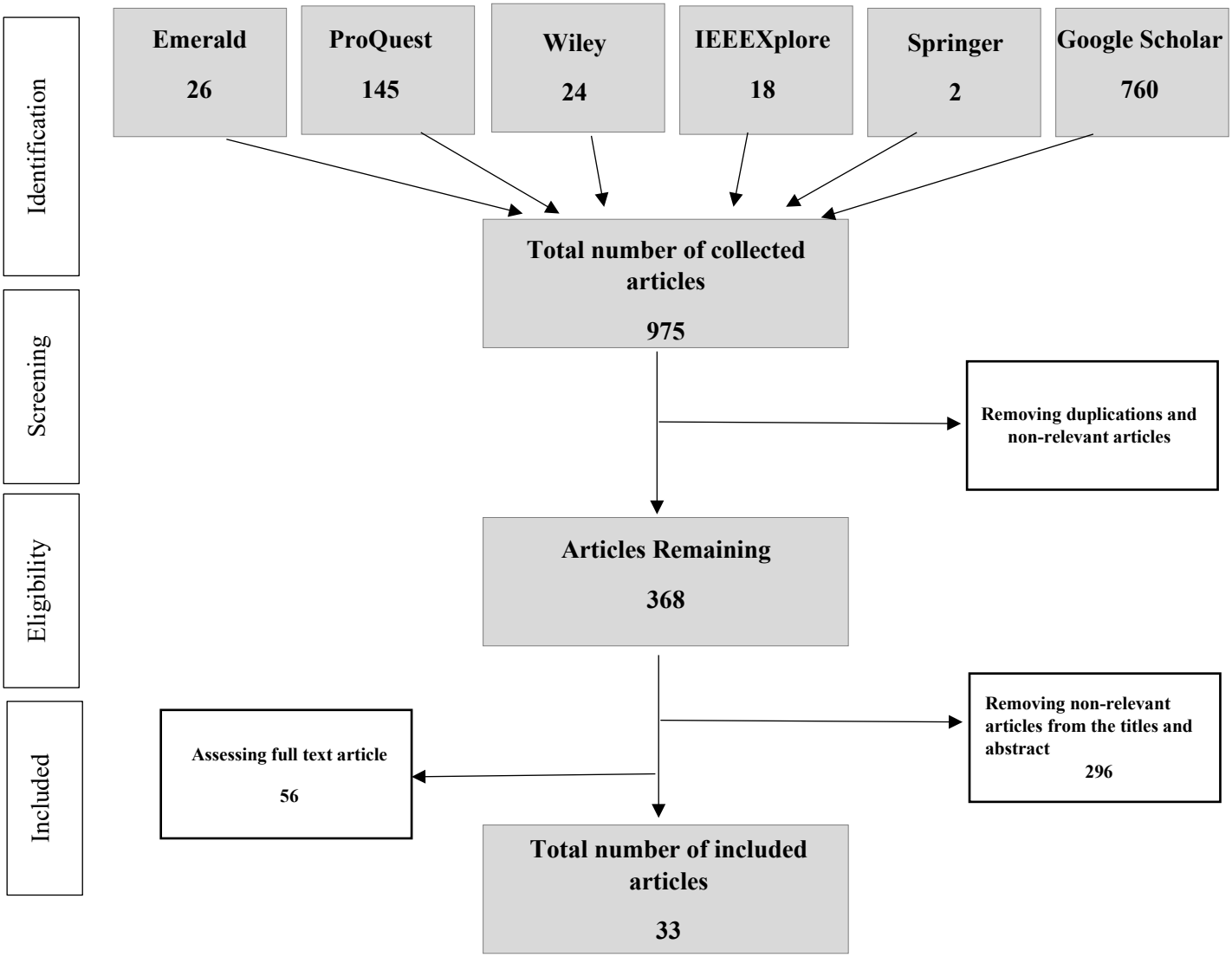

Figure 1: PRISMA flow diagram illustrating the results of the search strategy

After selecting the shortlisted articles, it is important to assess their quality using the quality assessment nine questions and checklist as criteria of inclusion and exclusion.

Quality Assessment

As discussed by Al-Emran, Mezhuyev, Kamaludin, et al. (2018) and Alhashmi et al. (2020), data quality assessment is one of the four stages to be followed while conducting a systematic review. This quality assessment is used as another factor for inclusion and exclusion criteria. Table 4 is showing a checklist with the identified nine criteria to assess the quality of the 33 shortlisted studies.

N	Questions
1	Clearly stated research goals.
2	Goals achieved by research design.
3	Clearly stated variables.
4	Clearly stated study context.
5	Sufficiently discussed data collection methods.
6	Reliability and validity of the measures clearly discussed.
7	Sufficiently defined the statistical techniques.
8	Results add to the literature.
9	Study adds to your knowledge.

Table 4: Quality Assessment Checklist

The selected studies will go through the quality assessment checklist, which has been improved and recommended by Budgen & Brereton (2006). Each question in the assessment checklist (as in Table 5) is scored according to three-point scale (Yes = 1 point, Partially = 0.5 point, No = 0 point). Selected studies will be scored from 0 to 9, thus; and the higher the study's score, the closer to address the research question.

Qs / No.	Q1	Q2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Total	Percentage
S 1	1	1	1	1	1	1	1	0.5	0.5	8	88%
S 2	1	1	1	1	1	1	1	0.5	1	8.5	94%
S 3	1	1	1	1	0	0	0	1	1	6	66%
S 4	1	1	1	1	1	1	1	0	1	8	88%
S 5	1	0.5	1	1	1	1	1	0	0.5	7	77%
S 6	1	1	1	1	1	0.5	1	1	0.5	8	88%
S 7	1	1	1	1	1	1	1	1	1	9	100%
S 8	1	1	1	1	1	1	0.5	1	0.5	8	88%
S 9	1	1	1	0.5	0.5	1	1	0.5	1	7.5	83%
S 10	1	1	1	1	0.5	0	0.5	0.5	1	6.5	72%
S 11	1	1	1	1	1	1	1	1	1	9	100%
S 12	1	1	0.5	1	1	1	1	1	1	8.5	94%
S 13	1	1	1	1	1	0.5	1	1	1	8.5	94%
S 14	1	1	1	1	1	0.5	1	0	1	7.5	83%

Qs / No.	Q1	Q2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Total	Percentage
S 15	1	1	1	1	1	1	1	0.5	1	8.5	94%
S 16	1	1	1	1	0	0	0	0.5	1	5.5	61%
S 17	1	1	1	1	1	1	0.5	0	0	6.5	72%
S 18	1	1	1	1	1	1	1	1	0	8	88%
S 19	1	1	1	1	1	1	1	0.5	0.5	8	88%
S 20	1	1	1	1	1	1	1	0.5	1	8.5	94%
S 21	1	1	1	1	1	1	1	0	1	8	88%
S 22	1	1	1	1	1	1	1	1	0.5	8.5	94%
S 23	1	1	1	1	1	1	0.5	0	1	7.5	83%
S 24	1	1	1	1	1	1	1	0.5	1	8.5	94%
S 25	1	1	1	1	1	0	1	1	1	8	88%
S 26	1	1	1	1	1	1	1	0	1	8	88%
S 27	1	1	1	1	1	1	1	0.5	1	8.5	94%
S 28	1	1	1	1	1	0.5	1	1	1	8.5	94%
S 29	1	1	1	1	1	0	1	1	1	8	88%
S 30	1	1	0.5	1	1	0.5	1	1	0.5	7.5	83%
S 31	1	1	1	1	0.5	1	0.5	1	1	8	88%
S 32	1	1	1	1	1	1	1	0	1	8	88%
S 33	1	1	1	1	1	1	1	0	1	8	88%

Table 5: Quality Assessment Results

From the quality assessment done for the selected 33 studies, it has been found that all of the studies are above 60% and passed the quality assessment. 6% of the studies scored 100%, 27% from the studies scored 94%, while 51% from the studies scored 80-88%, and 15 % from the studies scored 60-70%. The following section conducts in depth the analysis of the data collected from the selected 33 studies.

Data Coding and Analysis

According to many studies such as Alhashmi et al., 2020; Assad & Alshurideh, 2020b; Salloum, Alshurideh, Elnagar, & Shaalan, 2020; Salloum et al., 2020a), the features related to research methodology quality were identified including the following features: author, year, place/country, sample size, data collection method, context, citation, research purpose, research findings and limitations. Further, in order to thoroughly and critically analyse the selected studies, the analysis will stand for the main frequent factors that were used in studying the innovation effect on firm performance as seen in appendix tables 1 and 2. The elicited factors were categorised into seven groups, which are:

1. Knowledge factors: all factors related to knowledge and learning.

2. Innovation factors: factors related to innovation performance, innovation capabilities, open innovation, innovation culture, innovation types, and innovation activities.
3. Technology factors include factors that related to technological innovation, and technological innovation capabilities.
4. Market factors consist of customer-oriented factors, market demand, and market orientation.
5. Green innovation factors include factors associated with green innovation, green product innovation and performance, and environmental product innovation.
6. Service factors contains all factors related to service innovation, and service innovation strategy.
7. Management factors includes management innovation, business strategy, TQM practices, HRM practices, e-business use, ownership concentration…etc.

Study Results and Discussion

The findings of the 33 selected studies that investigated the effect of innovation on firm performance were used to answer the study questions as seen in the following sections:

3.1 Research Question 1: What are the key research purposes of the examined articles?

Regarding the selected 33 studies that examine the relationship of innovation on firm performance, they have been categorised into seven different categories according to their factors which are: 1. Knowledge factors, 2. Innovation factors, 3. Technology factors, 4. Market factors, 5. Green innovation factors, 6. Service factors, and 7. Management factors. As shown in Figure 2 below, 29% of the selected studies were related to innovation factors, and they scored the highest percentage, followed by innovation factors, management factors that scored 26% of the total studies. Further, studies associated with green innovation factors got 13% of the total studies, whereas knowledge and market factors reached 10% of the total. The least percentage is 6% of the total studies, which is related to technological and service factors.

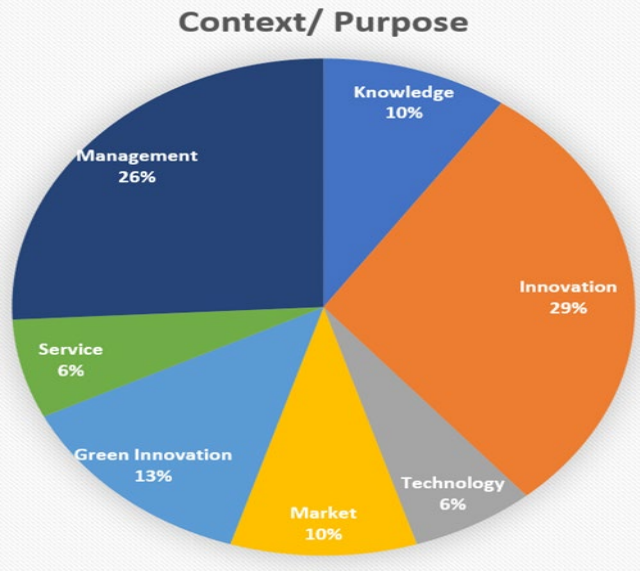

Figure 2: Research purpose of the selected studies

It has been noticed that few studies have been done in terms of knowledge, market, service and technology, so, it is important to shed the light on such contexts. Additionally, studies related to green innovation (13%) also have been given less attention. According to Schiederig et al. (2012), the significance of green innovation management is growing and developing further in both practice and academia. Therefore, it is imperative to shine the light on such context and examine it critically.

3.2 Research Question 2: What are the key research methods of the examined articles?

The selected studies have been analysed based on the research methods conducted. Figure 3 is presenting several data collection methods, which are survey, databases, interviews, and NA. It is shown significantly that the survey method is used mainly in the selected studies, and scored 86%. Some studies (N=2) collected data through databases such as the Korean database, China listed company reports (Bong Choi & Williams, 2013), and China stock market and accounting research database (Zhang et al., 2019). Further, Prifti & Alimehmeti, (2017) have used in their study both survey and face to face interviews which scored 3% of the total. Finally, there are two studies (6%) which have not mentioned (NA) their data collection methods.

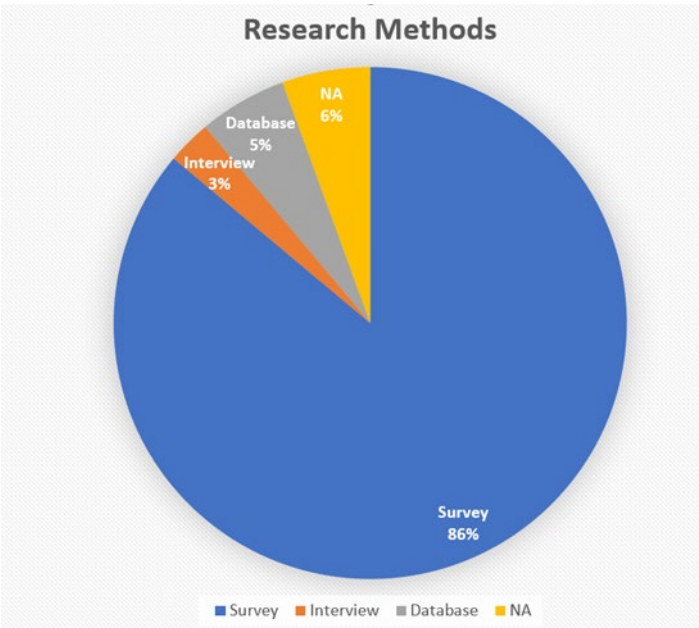

Figure 2: Research methods of the selected studies

3.3 Research Question 3: What are the participating countries in the context of the examined articles?

Figure 4 shows variety of the participating countries of the selected studies in this systematic review. It is obvious that the studies conducted are from different continents which are Asia, Europe, Australia and North & South America. From the selected studies, countries in Asia which studied the association between innovation and firm performance counted 54%, followed by Europe 31%, North and South America 9%, and finally Australia 6%. China has scored the highest percentage (14%) of the total studies, and the second is Turkey at 11%. It is highly noted that none of the selected studies were from Arab countries especially UAE. Therefore, conducting the study in the UAE is a future opportunity.

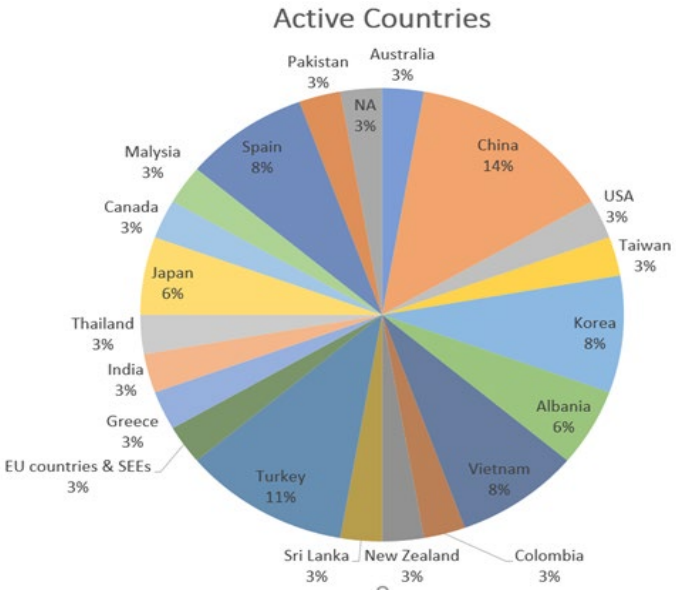

Figure 3: Participating countries of the selected studies

3.4 Research Question 4: What are the contexts of the examined studies?

Figure 5 is demonstrating the various contexts of the selected studies such as manufacturing, which scored the highest percentage of 31% among the rest of the contexts; both service industry of 11%, SMEs and mechanics, automobiles and automotive supplier industry have scored 8%. While the rest of the industries like operating companies, metal industry, innovative firms, electronic industry, economic industry, technology firms, customer-oriented firms and other different industries scored 6% and below.

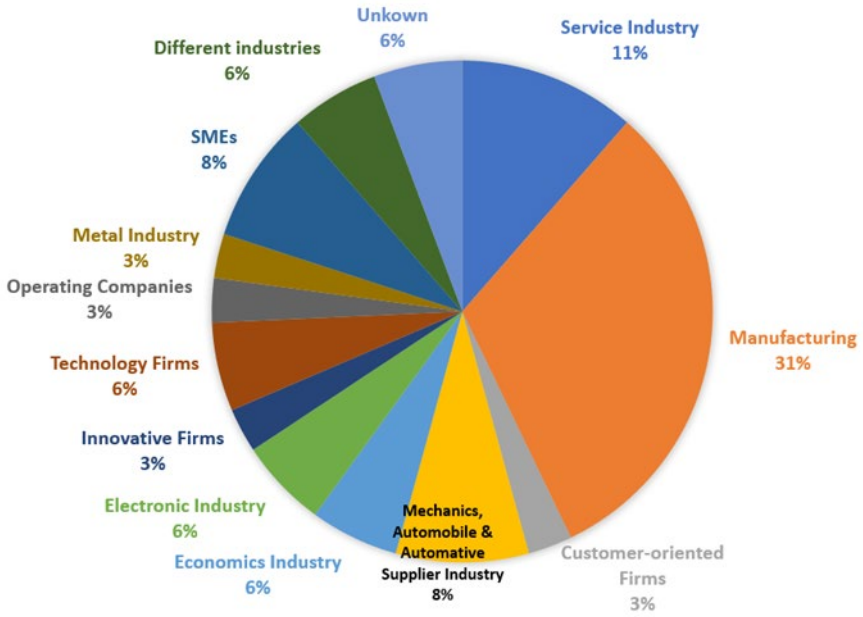

Figure 4: Contexts of the selected studies

3.5 Research Question 5: What is the publication year of the examined articles?

To analyse the publication year of the selected studies, Figure 6 illustrates the distribution of the studies and their year of publication. It has shown that the publication year range of the selected studies lies between 2010 – 2019. The largest number of the studies were conducted in the year of 2013 (N=7) followed by 2018 (N=5). In addition, both years of 2015 and 2016 are showing equal number of studies (N=4), as well as the years of 2012, 2014, and 2017 have similar number of studies (N= 3). The least studies collected from 2011 and 2019 (N=1).

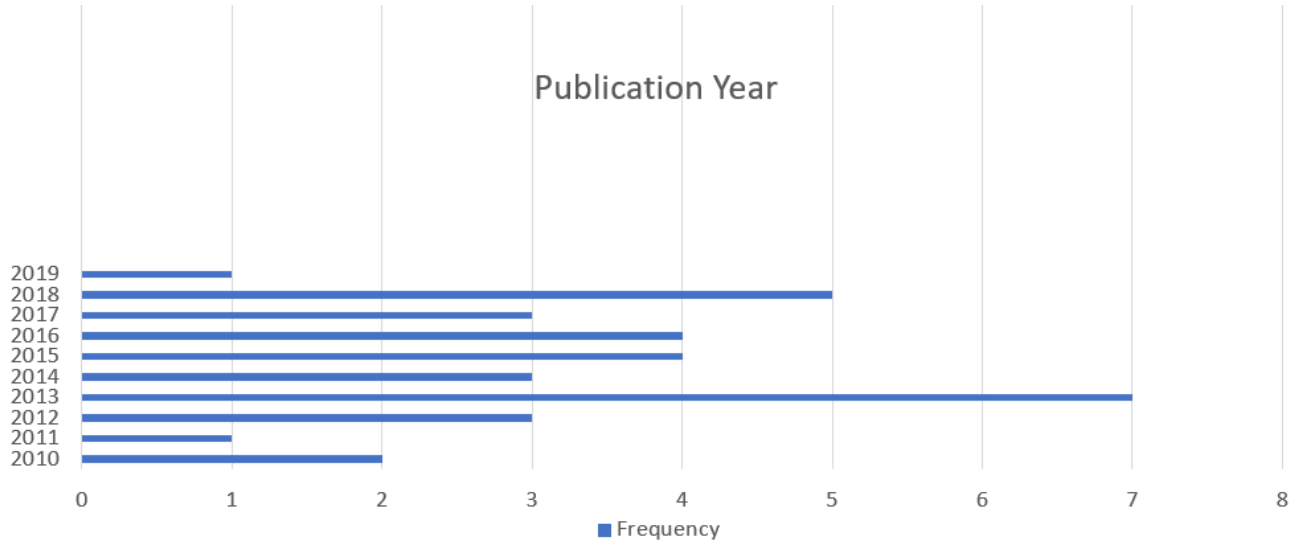

Figure 5: Year of publication of the selected studies

Conclusion

Study reviews have clearly shown the significant association between innovation and firm performance. Based on this, there are remarkable core findings of the current systematic review. First, factors affecting innovation and firm performance have been categorised into seven groups. Starting with the most frequent factors reaching to the least ones are innovation factors, followed by management factors, then green innovation factors, market and knowledge factors, and finally service and technology factors. Second, most of the selected studies used quantitative method for data collection; i.e. surveys and questionnaires; whereas, using qualitative data collection method; ie. interview, and focus groups, was the least. Third, most of the studies' findings revealed a positive relationship between innovation and firm performance. Fourth, the highest number of the selected articles were focusing on manufacturing context and service industry context. Fifth, the most frequent and active countries in the selected studies were China and Turkey, and this indicates the importance of innovation in such countries. Sixth, although the year of publication range was between 2010-2020, the most frequent year(s) which perceived a notable number of publications were in 2013 and 2018. Finally, most of the selected studies have added value to the literature and provided a new vision and future insight on how innovation is affecting firm performance due to the multiple and various factors.

Limitations and Further Studies

Despite the efforts to examine the association of innovation on firm performance, the current systematic review has recognised a number of limitations for further research avenues. First, the systematic review done on a small sample size; therefore, generalisation might affect the results. By having a larger number of articles, it would encourage future research direction in the related field to better results and increase the number of the participating countries in such a topic especially that related to Arab countries. Second, the restricted number of databases is considered another limitation. Accordingly, increasing the number of the databases to collect larger numbers of studies will give opportunities to shed additional light on other important studies related to such a field. Third, other factors correlated to the relevance between innovation and firm performance can be examined in other additional studies in a better-off data set. Finally, there are some studies with a lack of important data like place, context, sample size and data collection method, which slightly affected the results.

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Appendices

Table 7: Frequency variables

Factors	Independent Factors																																	Mediators						Dependent Factors				
	Knowledge			Innovation									Technology		Market			Green Innovation				Service		Management										Social Dimension	Employees	Innovation				Others	Organizational Factors				
No.	Knowledge	Learning	Knowledge Sharing	Innovation	Innovation activities	Innovation Culture	Innovation Performance	Innovation Capability	Innovation Types	Open Innovation	Supply Chain Innovation	Tech. Innovation Capabilities	Technological Innovation	Customer Orientation	Market Demand	Market Orientation	Green Product Innovation	Green Innovation	Gr. Prod. Innovation Performance	Environmental Product Innovation	Service Innovation	Service Innovation Strategy	Management Innovation	Business Strategy	TQM Practices	HRM Practices	E-business Use	Complementary Capabilities	Ownership Concentration	Financial Orientation	Social Capital	Employees' Job-related Attitude	Employee Performance	Innovation Performance	Innovation (Speed & Quality)	Product Innovation	Organizational Innovation	Tacit and Explicit Knowledge	Firm Performance	Product Performance	Innovation	Labor Productivity	Competitive capability
S 1	x			x																																		x				
S 2																		x																				x				
S 3										x																					x							x				
S 4																					x																	x	x			
S 5																						x		x														x				
S 6				x												x																						x				
S 7					x		x																															x				
S 8						x																					x				x							x				
S 9		x																																				x		x		
S 10				x																								x										x				
S 11							x	x																														x				
S 12									x																													x				
S 13					x																																	x				

Factors	Independent Factors																																	Mediators								Dependent Factors					
	Knowledge			Innovation								Technology		Market			Green Innovation				Service		Management												Social Dimension	Employees	Innovation				Others	Organizational Factors					
S 14				x																																					x			x		
S 15												x																														x					
S 16								x						x																												x					
S 17											x																															x					
S 18																								x																		x	x					
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S 31																										x																						
S 32										x																																					
S 33																		x																														
Total	**3**			**19**								**2**		**3**			**5**				**2**		**8**																									

Table 6: Frequency variables according to the database

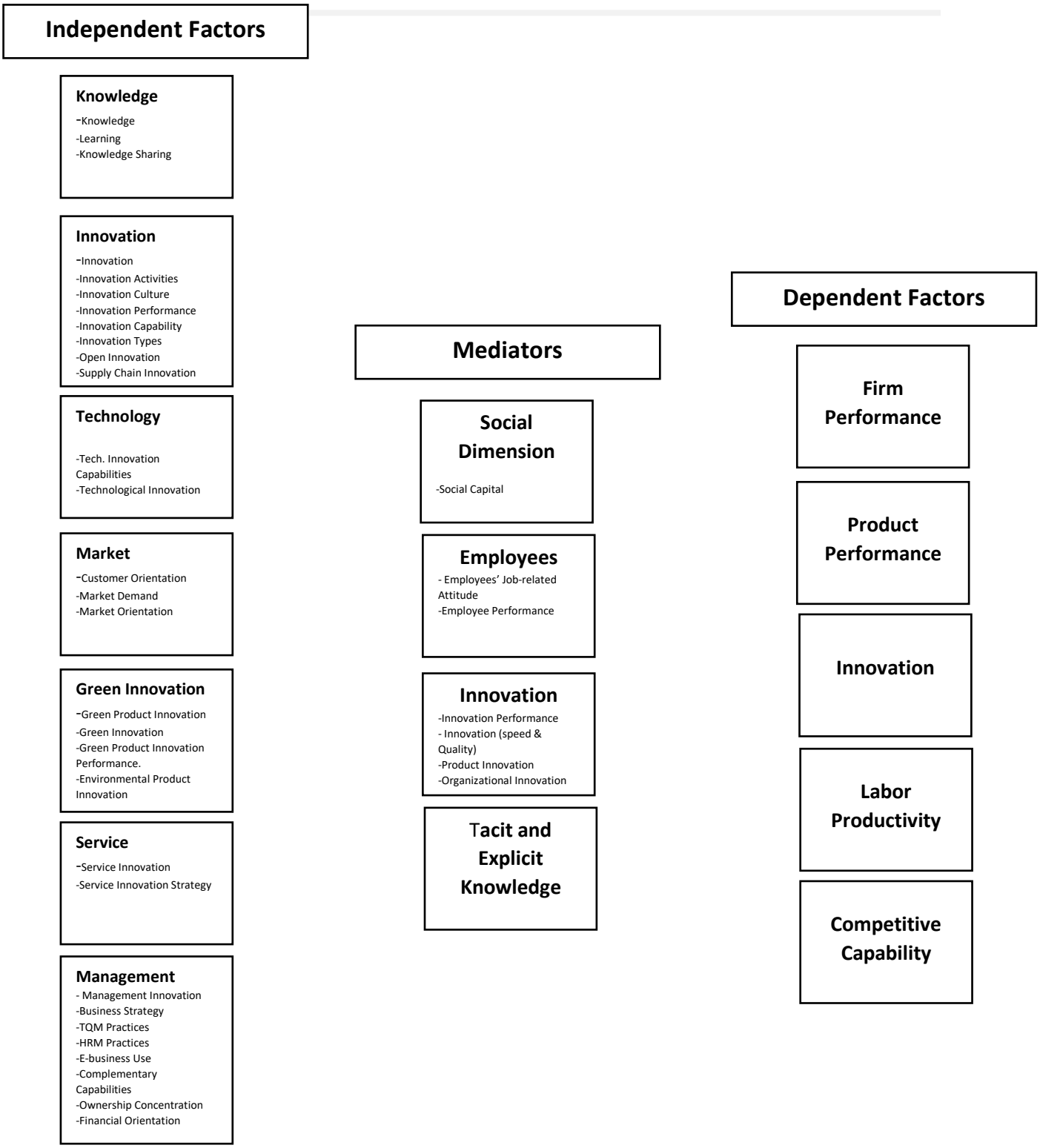

Figure 6: Independent and Dependent Factors