The impact of innovation on the financial performance of SMEs within the scope of the COVID-19 pandemic

Submitted by

Samar Mahmoud Ali

Teaching assistant – Faculty of commerce – Department of Business administration - English section- South Valley University

Associate Professor
Mehlika Saraç

Faculty of economics and administrative sciences - Department of Administration and Organization - Bursa Uludağ University

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Abstract

The main purpose of this paper is to investigate the relationship between innovation based on (product, process, organizational, and marketing) as a recovery strategy adapted to overcome the threats posed by the COVID-19 pandemic and the financial performances of companies within the theoretical framework that guides this paper. To study these goals, the research hypotheses are designed to fill the gap in the literature. Research data were collected using the survey questionnaire to obtain a fast and high response rate. The research sample is SMEs located in South Upper Egypt and the sample was selected using the stratified random sampling technique to select 327 respondents for the analysis. Medium and small enterprises in South Upper Egypt are chosen as the research target population due to the presence of a large number of such projects and the fact that citizens of Egypt's southern governorates (Aswan, Qena, Luxor, and Sohag) rely heavily on these types of enterprises to create job opportunities. The findings demonstrate that innovation types—organizational, marketing, process, and product— have a statistically significant and positive impact on the firms' financial performance.

Keywords:

Innovation, SMEs, Financial Performance, COVID 19

الملخص:-

هدفت هذه الدراسة إلى التحقق في العلاقة بين الابتكار بأنواعه (المنتج، العمليات، التنظيمي، التسويقي) كاستراتيجية تعافي للتغلب على التهديدات التي نتجت عن جائحة كوفيد-19، والأداء المالي للشركات الصغيرة و المتوسطة. و لتحقيق الغرض من هذه الدراسة، تم جمع البيانات بواسطة استبيان علي عينة مكونة من 327 مفردة من الشركات الصغيرة والمتوسطة الواقعة في محافظات جنوب الصعيد (سوهاج, قنا, الأقصر, أسوان) و تم اختيار العينة باستخدام طريقة العينة العشوائية الطبقية. و قد توصلت الدراسة إلى أن الابتكار (المنتج، العمليات، التنظيمي، التسويقي) له تأثير إيجابي ذو دلالة احصائية على الأداء المالي لهذه الشركات.

الكلمات المفتاحية:-

الابتكار، الشركات الصغيرة والمتوسطة، الأداء المالي، كوفيد 19

1. INTRODUCTION

The outbreak of COVID in late 2019, which began in China, has spread all over the world by April 2020. And negatively affected both the human health and the economies of all countries (Caballero-Morales, 2021). The COVID-19 crisis was an unforeseen, low-probability, and unexpected event (Ratten & Jones, 2021). In response to this crisis governments around the world, imposed restrictions to limit the spread of the virus. Among these restrictions are social distancing, movement control orders, travel bans, and the closure of public places (Saez et al., 2020). As a consequence, these actions have hampered import and export operations and slowed the economic flow across all economic sectors and enterprises including small and medium enterprises (SMEs). Governments, societies, and small and medium enterprises all across the world have been confronted by the COVID-19 epidemic (Breier et al., 2021). As it is known, small and medium-sized enterprises constitute the backbone of any economy. This kind of enterprises is viewed as one of the main aspects that add to economic growth of numerous nations. It broadens trade opportunities and also assists in the creation of new jobs (Sun et al., 2021). But at the same time, small and medium enterprises face the liability of smallness which implies that these enterprises control fewer resources, and as a result, small and medium enterprises are seen to be more defenseless against internal and external events like important employees quitting work, the decline in demand because of a new rival entering the market, or as in the case of this study, an emergency hitting the worldwide economy (Eggers, 2020). In addition, small and medium enterprises are dealing with significant economic burdens and uncertainty. Also these enterprises are suffering from the absence of formal planning, managerial and technical skills, and restricted economic resources which ultimately make them more prone to failure (Caballero-Morales, 2021).

In light of the fact that small and medium enterprises already have limited resources, the COVID-19 pandemic has had a deeper effect on small and medium enterprises as it led to a lack of manpower and disruption of production inputs. As a result, many small and medium enterprises are predicted to disappear as a response to the "new normality" which would necessitate adjustments in business and infrastructure management. Under this scenario, it is clear that the COVID-19 pandemic has caused a shift in the business environment, posing numerous challenges (Van Auken et al., 2021). Therefore, innovation has been regarded as a critical aspect of small and medium enterprises' business recovery in order to repair the damage done to the enterprises and ensure their survival during this challenging period as COVID-19 has tested the public health system, the recovery from COVID-19 is now testing the world economic systems (Chesbrough, 2020).

The term innovation refers to an organization's adoption of new technology or management practices to accomplish a desired improvement in its operations (OECD, 2005). The main aim of innovation commonly is to; create distinctive new products or

processes that can serve the needs of the business customers more competitively than the ones that already exist, increase the business market share through adding enhanced products, and enter new promising markets (Zahra et al., 1999). All of these practices are supposed to reduce costs, improve productivity, and increase sales growth (Gunday et al., 2011). There are different types of innovation discussed in the literature which can be classified as process, product, organizational, and marketing innovation. Process innovation refers to the implementation of a new enhanced production method using new techniques, mechanisms, or procedures to reduce cost or improve quality (Gunday et al., 2011). Product innovation refers to the use of new knowledge or technologies in order to introduce new or modified products to enhance the competitive advantage of the enterprise (OECD, 2005; Gunday et al., 2011). Marketing innovation implies using new marketing ideas that lead to major modifications in the products' features, product distribution channels, or pricing approaches in order to improve customer satisfaction (Gunday et al., 2011; OECD, 2005). Organizational innovation refers to the implementation of new administrative methods and procedures in the business practices of the firm in order to reduce administrative costs and improve employee satisfaction which aims to increase the overall performance of the firm (Gunday et al., 2011; OECD, 2005).

This study aims to investigate whether innovation based on (product, process, organizational, and marketing) _ as a recovery strategy adopted by small and medium-sized enterprises in Egypt in their attempt to overcome the threats posed by the COVID-19 pandemic has a positive impact on the financial performance of these enterprises or not. Based on the literature, each variable in the study is designed by a specified definition and measurements.

2. RESEARCH PROBLEM

In the rapidly changing world, innovation has become one of the essential factors that help nations and businesses achieve their macroeconomic and microeconomic growth goals. Businesses that want to survive have to reduce their costs and increase their sales and relatively their profitability to ensure sustainability. In all these processes, it is very important to gain a competitive advantage and to be able to accurately determine the factors that can be referred to as performance indicators. At this point, even if R&D expenditures are included as part of the operating expenses of the enterprises, R&D provides great opportunities for businesses to increase their market shares (Aytekin & Özçalık, 2018).

Considering the studies examining the relationship between innovation and financial performance; for example, Ayaydın & Karaaslan (2014) found that R&D expenditures and patenting positively affect the financial performance of firms. It was determined by Yavuz (2010) that there is a significant positive relationship between businesses' tendency to innovate and increasing the business' financial performance. Artz et al. (2010), on the

other hand, found that contrary to expectations, there is a negative relationship between innovation and financial performance. Additionally, according to the results reached by Demir & Alpaslan (2016), there is no meaningful relationship found between R&D expenditure and business performance.

On the other hand, considering the national studies on the subject; as a result of studies conducted by researchers such as Salem (2014), Hassan & Hart (2016), and Elshamy (2020) and others, it has been determined that there is a positive relationship between innovation and financial performance and it has been determined that R&D expenditures have a positive effect on profitability.

Such a broad variety of impacts refers to the main issue. The relationship between innovation and business performance is more complex than it might initially appear. In addition to the above-mentioned conclusions, the researcher noticed that most of the studies that were conducted focused on the relationship between innovation and the performance of the organization as a whole, which indicates that dealing with the impact of innovation on the financial performance specifically is a new matter that adds to the scientific balance of the Arab library.

Therefore, this paper aims to investigate the impact of innovation based on (product, process, organizational, and marketing) as a recovery strategy on the financial performance of small and medium-sized enterprises in their attempt to overcome the threats posed by the COVID-19 pandemic.

Hence, it can be said that the problem of the study is to answer the following questions:

- What is the impact of adapting product innovation on the financial performance of SMEs as an attempt to overcome the threats resulting from the COVID-19 pandemic?

- What is the impact of adapting process innovation on the financial performance of SMEs as an attempt to overcome the threats resulting from the COVID-19 pandemic?

- What is the impact of adapting marketing innovation on the financial performance of SMEs as an attempt to overcome the threats resulting from the COVID-19 pandemic?

- What is the impact of adapting organizational innovation on the financial performance of SMEs as an attempt to overcome the threats resulting from the COVID-19 pandemic?

3. RESEARCH OBJECTIVES

The current study seeks to achieve the following objectives:
- Identify the impact of organizational innovation on SMEs financial performance.

- Identify the nature of the relationship between product innovation and SMEs financial performance.
- Analyze the impacts of new market innovation on SMEs financial performance.
- Investigate the impacts of process innovation on SMEs financial performance.
- Provide recommendations that SMEs can benefit from in developing their strategies, especially.

4. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

First, the terms innovation and financial performance have to be defined.

4.1 Innovation

Innovation is a broad term and is seen to be one of the main drivers of economic growth, decisions making processes, and the creation of new or improved products or processes (Kogabayev & Maziliauskas, 2017). It's important to be realized that innovation is not a one-time phenomenon, but rather, a protracted and aggregated process involving several hierarchical steps spanning from the generation of new ideas to their execution resulting in dynamic growth, value addition, and pure profit generation for the innovative business enterprise (Urabe et al., 1988).

There is no universally accepted view of innovation as the concept of innovation is seen to be complicated, sophisticated, and multifaceted as a result there is no single, standard accepted definition of innovation. In this article, innovation is understood concerning the Oslo Manual which was prepared by the Organization for Economic Cooperation and Development (OECD) in a series of manuals to provide a composite definition of innovation. The latest revision of these manuals is the Oslo Manual which defines innovation as *"the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations"* (OECD, 2005).

The development of the concept of innovation has led to the appearance of different types of innovation. As a result, recent studies have started to focus attention on explaining these different types of innovation and emphasizing that each type of innovation is distinguished by different goals and necessitates different resources and methods to be developed, which reflect the complexity of the innovation process. The four types of innovation are:-

- Product innovation: Product innovation is the implementation of a new or improved good or service with innovative change. This involves improvements in terms of technical characteristics, components, materials, embedded software, user-friendliness, durability, or other functional features (OECD, 2005). This indicates that

a new product can be developed by recombining and applying existing technologies in a different way or by developing completely new technologies.

- Process Innovation: It has been observed that product innovations are frequently followed by process innovations in what is known as the industry innovation cycle (Trott, 2017). To accomplish process innovation, the company may adopt new technology, purchase new machinery, train its employees, and reorganize its processes. Oslo Manual (OECD, 2005, P.49) defines process innovation as the introduction of new or enhanced methods of production or delivery. This type of innovation in most cases is accompanied by a reduction in unit production cost, or improvements in the product's quality (Tajvidi & Karami, 2015).

- Marketing Innovation: Marketing innovations aim to better satisfy customer needs, open up new markets, or position a company's new product on the market in order to maintain more growth in the company's sales (Gunday et al., 2011). A marketing innovation as defined by Oslo Manual is the introduction of a new marketing method with considerable changes in product packaging or design, promotion, product placement, or pricing for both new and/or current products.

- Organizational Innovation: Organizational innovation expresses the degree of implementing change in the company's management style. Oslo Manual (OECD, 2005, P.51) defines organizational innovation as the introduction of new organizational methods such as changes in business practices, in the organization of the workplace, or in the company's external relations (OECD, 2005). Organizational innovation can be associated with the use of new work techniques, the organization of work procedures, the development of new models to encourage employees' participation in decision-making processes, the improvement of worker retention, and the integration of various business activities (Avermaete et al., 2003).

4.1.1. Innovation in SMEs in times of crisis

Innovation has been recognized as an effective catalyst for small- and medium-sized business organizational resilience and economic growth in both the service and manufacturing sectors in times of crisis (Forsman, 2011). As the COVID-19 pandemic has caused a changing environment that presents numerous challenges and calls for creative solutions, altering the landscape of innovation (Van Auken et al., 2021).

The following are the key survival measures recommendations for SMEs to survive the COVID-19 pandemic based on (Kuckertz et al., 2020):-

- Use resources to come up with solutions to new problems by creatively combining current technology and human capital.
- Activate network resources which include flexible staffing and payment options.
- Focus on allocating resources to recently viable and value-generating activities.
- Reduce the scope of non-essential activities temporarily.

- Seek out potential new opportunities that may appear at the end of the crisis such as developing digital work solutions.
- Proactively investigate greater opportunities that might emerge following the crisis such as a rise in digitization or a change in trends and behavior.

Generally, innovation still provides a survival advantage during crisis times. Even when the financial structure of a business is taken into account, businesses that introduce any type of innovation continue to have higher chances of surviving crises than non-innovating ones (Cefis et al., 2020). Innovation can be seen in this context as a means of resolving crises and as a tool that improves the performance and competitiveness of SMEs.

4.2. Financial performance

Similarly, the term performance may seem to be a simple concept; however, a unique definition does not exist in the literature. In general, performance is the evaluation of any situation of a person or institution by comparing it according to predetermined criteria (Helvacı, 2002). Financial performance, which expresses the operating results of the business in monetary terms, reveals the level of use of assets to generate income and the financial position of the business in a certain period (investopedia.com/terms/f/financial performance). Financial performance has been frequently used as a concept that meets business performance alone until the early 1990s, but in recent years, parallel to the acceleration of the transition to the information economy, it has begun to be regarded as a sub-dimension of business performance together with non-financial performance.

It is necessary to measure financial performance in order to determine where the business is financially and to make decisions about future financial management. Financial performance indicators, which are subject to different calculations, are used to measure and evaluate the results of the activities carried out in order to achieve the financial performance targets and to reveal the financial performance. Financial indicators, which are tools of financial management in businesses; assist in the use of financial resources in a way that supports the overall objectives of the business in the context of the efficient and effective execution of the finance function. While financial indicators provide information about whether the targeted financial performance level, which is among the main objectives of the enterprise, has been achieved, it also operates the control mechanism by expressing the inputs and outputs in financial terms (Otley, 2002:3-4).

The main tool in financial analysis is the transfer of information to decision-makers about the financial situation and development of the enterprise. Financial analyses help managers to make future management and investment decisions, determine the creditworthiness of the business in question, and evaluate the investment preferences of investors regarding the business. Therefore, the results of financial analysis concern not

only businesses but also a wide audience such as partners, employees, and creditors (Sekreter et al., 2004).

In this study, the financial performance of the Egyptian SMEs will be assessed using four criteria which are General profitability of the firm, Return on Assets (Net Income/Total Assets), Return on Sales (Net Income/Total Sales), and Cash Flow excluding investments.

4.3. The relationship between innovation and financial performance

The relationship between the firms' innovation performance and their financial performance has been the subject of numerous theoretical and empirical investigations in the literature. According to a list of some research investigations that have been done in Egypt and around the world and as mentioned above; there are different conclusions about the impacts of innovation on the business' financial performance. For example; Yavuz (2010) found a significant positive relationship between businesses' tendency to innovate and increasing the business' financial performance. Artz et al. (2010), on the other hand, determined that there is a negative relationship between innovation and financial performance. While Demir & Alpaslan (2016) found that there is no meaningful relationship found between R&D expenditure and business performance.

Then it is acceptable to assume that the relationship between innovation and financial performance is more complex than it might initially appear. Therefore, this paper aims to investigate the impact of innovation on business financial performance (as evaluated by general profitability, Return on Sales (ROS), Return on Assets (ROA), and cash flow excluding investments). The hypotheses of the research have been designed considering the existing literature, and the pursuing hypotheses developed for the purpose of the research are as follows:

Hypothesis 1: Innovation types have a positive impact on financial performance.

   H1a: *Organizational innovation has a positive impact on Financial Performance.*

   H1b: *Marketing innovation has a positive impact on Financial Performance.*

   H1c: *Process innovation has a positive impact on Financial Performance.*

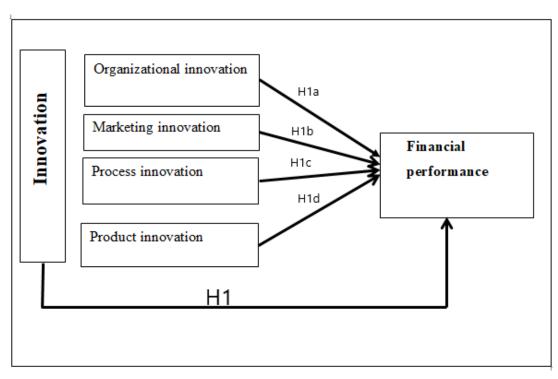   **H1d:** *Product innovation has a positive impact on Financial Performance.*

Figure 1: Research model

5. METHODOLOGY

5.1. Questionnaire design and Measures

The survey approach was used due to the quick and high rate of returns. The survey method is often used to collect data from a larger population. Each participant in this method is asked to answer the same questions. Before preparing the questionnaire, a literature review was conducted to better understand the topic. Then, a structured questionnaire form was created as the data collection method. The questionnaire questions were prepared with reference to the article "Effects of Innovation Types on Firm Performance" by (Gunday et al., 2011) and the OECD studies. In the article "Effects of Innovation Types on Firm Performance" on which the study was based, the internal consistency and reliability between the elements were investigated through the use of Cronbach's α and one-dimensional tests. The results of Gunday et al. (2011) reflect the following reliabilities: financial performance (4 items, alpha 0.930), process innovation (5 items, alpha 0.819), product innovation (5 items, alpha 0.758), organizational innovation (9 items, alpha 0.896), and marketing innovation (5 items, alpha 0.833). Cronbach α values for the underlying factors (innovation and financial performance) range from 0.93 to 0.76 showing satisfactory levels of construction reliability, since the scale is considered reliable when Cronbach α values are greater than 0.70 (Taber, 2018).

The questionnaire was prepared in Arabic and underwent review by specialists. The objective was to ensure the clarity of item phrasing, eliminate redundancy, and guarantee

an accurate representation of the study variables. This questionnaire was then administered to a pilot sample of 20 SME owners. Upon completion, participants were prompted to disclose the time taken to finish the questionnaire and identify any items, terms, or challenging words that were unclear and necessitated clarification or rephrasing. Based on the feedback received, adjustments were made to refine the questionnaire items. The final version of the questionnaire consists of a cover page and three sections. The cover page clearly outlines the purpose of the questionnaire and seeks cooperation from respondents. In the first part of the questionnaire, there are questions regarding the demographic information of the enterprises such as the field of activity of the business, how long have the business been operating, and the number of employees which reflects the size of the enterprise. In the following sections of the questionnaire questions about organizational innovation, marketing innovation, process innovation, product innovation, and finally questions about financial performance are asked. In the research, a 5-point Likert scale was used to measure various types of innovation and financial performance.

For innovation types; five-point scales ranging from "never implemented (1), rarely implemented (2), moderately implemented (3), often implemented (4), and continuously implemented (5)" were used. While for financial performance scales ranging from "very unsuccessful (1), unsuccessful (2), somewhat successful (3), successful (4), and very successful (5)" were used. The use of such a subjective scale is necessary since enterprises are apprehensive to share specific performance records and managers are unwilling to provide objective performance statistics (Gunday et al., 2011).

The scales used in the measurement of all the variables in the study and all the items in the scales are explained below.

5.1.1. Innovation Scales

Table 1: Innovation Scale

FACTOR
Organizational Innovation Scale
1. Renew the routines, procedures, and processes employed to execute firm activities in an innovative manner.
2. Renewing the supply chain management system.
3. Renewing the production and quality management systems.
4. Renewing the human resources management system.
5. Renewing the in-firm management information system and information sharing practice.
6. Renewing the organization structure to facilitate teamwork.

7. Renewing the organization structure to facilitate coordination between different functions such as marketing and manufacturing.
8. Renewing the organization structure to facilitate project-type organization.
9. Renew the organizational structure to facilitate strategic partnerships and long-term business collaborations.
Marketing Innovation Scale
1. Renewing the design of the current and/or new products through changes such as appearance, packaging, shape, and volume without changing their basic technical and functional features.
2. Renewing the distribution channels (direct sales, online sales…etc.) Without changing the logistics processes related to the delivery of the product.
3. Renewing the product promotion techniques employed for the promotion of the current and/or new products/services.
4. Renewing the product pricing techniques employed for the pricing of the current and/or new products/services.
5. A new market strategy to target a new consumer group or a new market (e.g. A new advertisement, the first use of a new media or technique for product positioning, the introduction of a new brand symbol…).
Process Innovation Scale
1. Determining and eliminating non-value-adding activities in production processes.
2. Decreasing variable cost components in manufacturing processes, techniques, machinery, and software.
3. Increasing output quality in manufacturing processes, techniques, machinery, and software.
4. Determining and eliminating non-value-adding activities in delivery-related processes.
5. Decreasing variable costs and/or increasing delivery speed in delivery-related logistics processes.
Product Innovation Scale
1. Increasing manufacturing quality in components and materials of current products.
2. Decreasing manufacturing cost in components and materials of current products.
3. Developing newness for current products leading to improved ease of use for customers and improved customer satisfaction.
4. Developing new products with technical specifications and functionalities totally differing from the current ones.
5. Developing new products with components and materials totally differing from the current ones.

(Gunday et al., 2011)

5.1.2. Financial Performance Scale

The dependent variable in this study, financial performance was applied based on the approach of Gunday et al. (2011) as the researchers had argued that financial performance is the best way in expressing the impact of in-firm innovation. The use of such a subjective scale is necessary since enterprises are apprehensive to share specific performance records and managers are unwilling to provide objective performance statistics (Gunday et al., 2011).

The questions aimed to rate the level of achievement of the following financial performance items in the enterprises which represent the research sample after the implementation or lack of implementation of any of the above innovations during the last three years (COVID-19 period). The financial performance of Egyptian SMEs was assessed using the following criteria:-

Table 2: Financial Performance Scale

FACTOR
1. General profitability of the firm.
2. Return on sales (Net income/total sales).
3. Return on assets (Net income/total assets).
4. Cash flow excluding investments.

(Gunday et al., 2011)

5.2. Sampling and data collection

The sample of this study is SMEs located in the South Upper Egypt region. Medium and small enterprises in South Upper Egypt are chosen as the research target population due to the presence of a large number of such projects and the fact that citizens of Egypt's southern governorates (Sohag, Qena, Luxor, and Aswan) rely heavily on these types of enterprises to create job opportunities. Despite the importance of these projects, there is a scarcity of studies that have been conducted on the enterprises in this region.

According to the criteria of the Central Bank of Egypt, enterprises are classified as micro when they have fewer than 10 employees, small and medium when they have between ten and 200 employees, and large when they have more than 200 employees. In accordance with Egyptian Law No. 152 of 2020 related to the development of medium, small, and micro-enterprises that was issued on the thirteenth of July 2020, a government agency was established under the name of the Small, Medium, and Micro Enterprises Development Agency. The law also determined the definition of micro, small, and medium companies, which is as follows:-

- Micro-enterprises: each project whose annual turnover is less than one million L.E.

- Small enterprises: each project whose annual turnover is one million L.E. and less than 50 million L.E.
- Medium-sized enterprises: each project has an annual turnover of 50 million L.E. and does not exceed 200 million L.E.

The target population of this study is the owners/ managers of small and medium-sized enterprises operating in the southern Upper Egypt region, which are 305,491 enterprises. The following table shows the research population.

Table 3: The research population

South Upper Egypt region	Population
Aswan	48,461
Luxor	41,150
Qena	86,572
Sohag	129,308
TOTAL	**305,491**

Source: prepared by the researcher based on the data issued by the Central Agency for Public Mobilization and Statistic

The sample was selected from that population using the stratified random sampling method that represents the research community. A quantitative Approach was held, by using questionnaire with structured type of questions. One questionnaire was distributed to each enterprise. The sample size is 384 with a confidence level of 95% and a 5% of error estimate. The size of that sample was determined through the statistical tables of Krejcie & Morgan, (1970) and the researcher proposes the following table for the size of the sample and its distribution among the research population:-

Table 4: The research sample

South Upper Egypt region	Population	Ratio	Sample size
Aswan	48,461	15.9 %	61
Luxor	41,150	13.5 %	52
Qena	86,572	28.3 %	109
Sohag	129,308	42.3 %	162
TOTAL	**305,491**	**100 %**	**384**

Almost 600 questionnaires were distributed and collected from owners/managers of SMEs in South Upper Egypt in the governorates of Aswan, Qena, Luxor, and Sohag. 335 surveys were returned by the owners or managers of the SMEs, but it was found that there were 8 incomplete questionnaires, so they were excluded. As a consequence, only a total of 327 questionnaires were used as a sample for the research.

6. STATISTICAL ANALYSIS

Analysis of the data was carried out using SPSS 22 program. The data underwent statistical analysis and firstly, descriptive statistics were obtained, and then correlation analysis which is a measure of association was performed to examine the relationships between the variables used in the study. Then, a reliability analysis was carried out in order to assess the structural reliability of the study instrument. Finally, regression analysis was employed to ascertain the strength and direction of relationships between the variables.

7. RESULTS

The findings of this study are as follows; descriptive analysis of respondents' profiles, reliability analysis, correlations between research variables, and hypothesis testing.

7.1. Descriptive Analysis of Respondents' Profiles

In terms of the age group of enterprises, responses indicated that 74 of the 327 enterprises surveyed are young enterprises between the ages of 1 and 10 years which represent 22.6%,119 enterprises are in the range of 11-20 representing 36.4%, 71 enterprises are in the age range of 21- 30 representing 21.7%. Finally, 63 enterprises are in the age range of 31 and above representing 19.3% of the sample size. According to the participant's responses to the question "What is the industry you work in?" "Manufacturing" with n=60 which represents18.3%, "Commercial and Trade" with n=146 which represents 44.6%, and "Service" with n=121which represents 37% of the sample size. Finally, regarding the question about the number of employees, participants indicated by n=124 which represents 37.9% that there are 1-9 employees in the enterprise, and n=171 owners answer that they have 10-49 employees which represents 52.3%, and n=32 indicated that they have 50-249 employees with a percentage of 9.8% of the sample size.

7.2. Reliability Analysis Results

Before testing the hypothesis, exploratory reliability and validity analyses were carried out for each scale over the research sample. Reliability refers to the degree to which the results can be repeated by another researcher. In this study, the Cronbach Alpha method is used to conduct the reliability analysis. The Cronbach alpha value indicates the total

reliability score of a factor or if the scale's individual items are measuring the same concept and are therefore highly correlated. Cronbach's alpha has a range of 0 to 1. Scores below 0.7 may indicate a poor level of reliability for the instrument, whereas scores of 0.7 and higher denote a high level of internal consistency and reliability for the instrument (Taber, 2018).

The survey list was tested on a sample of 30 individuals from the owners/managers of small and medium enterprises under study in order to ensure the correct understanding of the terms used in the list.

The reliability coefficients for the variables used in this study are given below for each scale.

Table 5: Reliability coefficients

Scale	Number of Items	Cronbach's Alpha	Validity
Organizational innovation	9	0.90	0.949
Marketing innovation	5	0.918	0.958
Process innovation	5	0.849	0.921
Product innovation	5	0.825	0.908

Source: Research Findings

- Product innovation had the lowest reliability (α =0.825), followed by process innovation (α =0.849), organizational innovation (α =0.90), and finally marketing innovation which has the highest reliability (α =0.918). This shows that each of the four scales was reliable because their reliability values were higher than the required thresholds of 0.7.
- Data recorded high validity coefficients for all study variables.
- The results indicated the reliability of the measurement tool used and its statistical validity to collect the current study data.

7.3. Correlation Analysis Results

It is essential to demonstrate the correlations that must be investigated in the research before going on to the models and necessary analyses that will evaluate the hypotheses in this research. The Pearson correlation coefficient is an analysis method that aims to determine the severity of the relationship between two variables. In addition to showing substantial correlations between almost all variables, correlation analysis also reveals a complicated web of associations.

Correlations of the variables used in the study with each other were examined. These variables are respectively; organizational innovation, marketing innovation, process

innovation, product innovation, and the financial performance of SMEs. The correlation coefficients between the variables used in the research are:-

Table 6: Descriptive Statistics and Correlation Analysis

	Mean	S.D.	Organizational innovation	Marketing innovation	Process innovation	Product innovation	Financial performance
Organizational innovation	3.4635	.72046	1				
Marketing innovation	3.6801	.87533	0.837**	1			
Process innovation	2.9450	.72816	.491**	.465**	1		
Product innovation	2.4697	.59034	.421**	.419**	.546**	1	
Financial performance	2.5466	.69004	.728**	.713**	.529**	.528**	1

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

Source: Research Findings

From the above table, it is clear that:

- All the research variables recorded an arithmetic mean greater than or approximately near to the degree (3), which represents the middle of the scale, and this indicates an increase in the level of the variables. The scale reached its maximum in the two variables of marketing innovation and organizational innovation and lowest in the variable of product innovation.
- The standard deviation scores for the study variables appear to be less than one, which indicates a high degree of consensus among the sample members about the study variables. The agreement reached its maximum in the product innovation variable and the lowest in the marketing innovation variable.

R= 0.00 – 0.30 means there is a weak correlation between the variables, R = 0.30 – 0.70 a medium level, and R = 0.70 – 1.00 a high-level relationship. Therefore; as seen in Table 6;

- There is a statistically significant correlation between organizational innovation and other types of innovation. The correlation between organizational innovation and marketing innovation is seen to be the strongest as it is indicated by 0.837. There also seems to be a medium level of correlation between organizational innovation and both process and product innovations by 0.491 and 0.421 respectively.
- Also, correlation coefficients indicate that there is a medium positive correlation between marketing innovation and both process innovation and product innovation. The values of the correlation coefficients are 0.465 and 0.419 respectively.
- And a medium positive significant correlation exists between process innovation and product innovation by a correlation coefficient of 0.546.

- Additionally, there are statistically significant correlations between financial performance (dependent variable) and innovation (independent variable). As the values of correlation between organizational innovations, marketing innovation, process innovation, product innovation, and the dependent variable financial performance are 0.728, 0.713, 0.529, and 0.528 respectively.

Given the previous studies, it was observed that the values of the correlation coefficients between the types of innovation and financial performance are very high. This can be attributed to the sample size, as a sample of 327 individuals is statistically acceptable, but its results may not accept generalization. Thus, we can conclude that the high rate of correlation coefficients may be spurious or not reflective of a genuine relationship between the variables. In other words, the high correlation may not be meaningful or may be influenced by external factors, leading to a misleading interpretation.

Therefore, an additional analysis to understand the nature of the relationship was done, which is the analysis of the partial correlation between the variables of the study, where the type of industry in which the sample enterprises operate was used as a controllable variable. The following table shows the partial correlation values:-

Table 7: Partial Correlation Analysis

Correlations

Control Variables		Organizational innovation	Marketing innovation	Process innovation	Product innovation	Financial performance
Industry	Organizational innovation	1				
	Marketing innovation	.552**	1			
	Process innovation	.331**	.296**	1		
	Product innovation	.281**	.302**	.482**	1	
	Financial performance	.497**	.432**	.400**	.439**	1

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

Source: Research Findings

7.4. Regression Analysis Results

The findings, which are summarized in the table below, aimed to determine whether there is a relationship between organizational innovation, marketing innovation, process innovation, and product innovation and the financial performance of SMEs. The positive correlation coefficient (R) = 0.789 and coefficient of determination (R^2) = 0.623 and adjusted R-squared of 0.619 as given below, respectively, represent the degree to which

organizational innovation, marketing innovation, process innovation, and product innovation are related to financial performance.

According to the results (R^2), variations in organizational, marketing, process and product innovation explain 62.3% of the variation in SMEs' financial performance. Also, the Adjusted R-square which is a measure of the model's goodness of fit, indicates that variations in organizational, marketing, process, and product innovation collectively explain 61.9% (Adj R-square = 0.619) of the variance in the financial performance of SMEs.

Table 8: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.789ᵃ	.623	.619	.42617
Dependent Variable: SMEs' financial performance				

Source: Research Findings

7.5. Analysis of Variances (ANOVA)

Analysis of variance was used to test the regression model's significance with regard to differences in the means of the dependent and independent variables. The ANOVA test produced an F-value of 133.16 which is significant at p=0.000. The regression model is statistically significant in predicting how organizational innovation, marketing innovation, process innovation, and product innovation impact SMEs' financial performance.

Table 9: ANOVA

ANOVAᵃ					
Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	96.743	4	24.186	133.164	.000ᵇ
Residual	58.483	322	.182		
Total	155.226	326			
a. Dependent Variable: Financial performance					

Source: Research Findings

The findings in Table 10 below are based on this regression model:

$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$
Where:

Y = SMEs' financial performance

X1 = organizational innovation

X2 = marketing innovation

X3 = process innovation

X4 = product innovation

Bo= constant

B1- B4= coefficient of the variables

e = error

The research sought to determine the extent to which the financial performance (FP) of SMEs is predicted by organizational innovation (OI), marketing innovation (MI), process innovation (PRI), and Product Innovation (PI).

Consequently, the regression model can be explained in the following form:

$FP = Bo + b_1 OI + b_2 MI + b_3 PRI + b_4 PI + e$

According to the research, the results are:

$FP = -.335 + .338\ OI + .221\ MI + .111\ PRI + .231\ PI + e$

Thus, as will be shown in Table 10 below, organizational innovation, marketing innovation, process innovation, and product innovation all have positive coefficients, illustrating that these independent variables are effective predictors of SMEs' financial performance. In light of this, every unit increase in organizational innovation, marketing innovation, process innovation, and product innovation will, respectively, result in 0.338, 0.221, 0.11, and 0.231 unit increases in the financial performance of SMEs.

Table 10: Coefficients

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	-.335	.131		-2.558-	.011
	Organizational innovation	.338	.061	.353	5.516	.000
	Marketing innovation	.221	.050	.280	4.427	.000
	Process innovation	.111	.041	.117	2.681	.008
	Product innovation	.231	.049	.198	4.716	.000
a. Dependent Variable: Financial performance						

Source: Research Findings

This demonstrates clearly that organizational innovation, marketing innovation, process innovation, and product innovation all contribute positively to SMEs' financial performance. The study additionally indicated that all of the independent variables' P-values were less than 5%, indicating that they were all statistically significant and, therefore, in a position to support the study's conclusions.

7.6. The Main Hypothesis Test Results:

This hypothesis states that "There is a significant positive correlation between the innovation types and the financial performance of small and medium enterprises." This hypothesis was confirmed by using regression analysis, as previously shown.

7.6.1. Results of testing the validity of the first sub-hypothesis:

H1a: "*Organizational innovation has a positive impact on Financial Performance.*"

To test the validity of this hypothesis, a simple regression method was used, as shown in the following table:

Table 11: The results of the analysis of the first sub-hypothesis test

Variable	Beta	B	T	Sig. t
Organizational innovation	0.728	0.698	19.163	0.000
Constant	0.131			
Correlation R	0.728			
Coefficient of determination R^2	0.530			
Adjusted R^2	0.529			
F value	367.212			
Sig. F	0.000			
P<0.01				

Source: Research Findings

By reviewing the results of the previous table, it becomes clear that:

- The impact of organizational innovation on the financial performance of small and medium-sized enterprises has a significant positive trend.
- The values of the correlation coefficients indicate that there is a significant positive correlation between organizational innovation and financial performance with a value of (0.728).
- The ability of organizational innovation to predict the financial performance of small and medium enterprises, where the value of F (367.212) was significant at (0.000).
- The value of R^2 shows that the organizational innovation variable explained about 53% of the variance in the financial performance variable of small and medium enterprises.

Thus, it is possible to accept the validity of the first sub-hypothesis that there is a significant positive correlation between organizational innovation and the financial performance of small and medium enterprises.

7.6.2. Results of testing the validity of the second sub-hypothesis:

H1b: "*Marketing innovation has a positive impact on Financial Performance.*"

To test the validity of this hypothesis, a simple regression method was used, as shown below:

Table 12: The results of the analysis of the second sub-hypothesis test

Variable	Beta	B	T	Sig. t
Marketing innovation	0.713	0.562	18.341	0.000
Constant	0.478			
Correlation R	0.713			
Coefficient of determination R^2	0.509			
Adjusted R^2	0.507			
F value	336.388			
Sig. F	0.000			
P<0.01				

Source: Research Findings

By reviewing the results of the previous table, it becomes clear that:

- The impact of marketing innovation on the financial performance of small and medium-sized enterprises has a significant positive trend.
- The values of the correlation coefficients indicate that there is a significant positive correlation between marketing innovation and financial performance with a value of (0.713).
- The ability of marketing innovation to predict the financial performance of small and medium enterprises, where the value of F (336.388) was significant at (0.000).
- The value of R^2 shows that the organizational innovation variable explained about 50.9% of the variance in the financial performance variable of small and medium enterprises.

Thus, it is possible to accept the validity of the second sub-hypothesis that there is a significant positive correlation between marketing innovation and the financial performance of small and medium enterprises.

7.6.3. Results of testing the validity of the third sub-hypothesis:

H1c: "*Process innovation has a positive impact on Financial Performance.*"

To test the validity of this hypothesis, a simple regression method was used, as shown below:

Table 13: The results of the analysis of the third sub-hypothesis test

Variable	Beta	B	T	Sig. t
Process innovation	0.529	0.501	11.227	0.000
Constant	1.071			
Correlation R	0.529			
Coefficient of determination R^2	0.279			
Adjusted R^2	0.277			
F value	126.042			
Sig. F	0.000			
P<0.01				

Source: Research Findings

By reviewing the results of the previous table, it becomes clear that:

- The impact of process innovation on the financial performance of small and medium-sized enterprises has a significant positive trend.
- The values of the correlation coefficients indicate that there is a significant positive correlation between process innovation and financial performance with a value of (0.529).
- The ability of process innovation to predict the financial performance of small and medium enterprises, where the value of F (126.042) was significant at (0.000).
- The value of R^2 shows that the process innovation variable explained about 27.9% of the variance in the financial performance variable of small and medium enterprises.

Thus, it is possible to accept the validity of the third sub-hypothesis that there is a significant positive correlation between process innovation and the financial performance of small and medium enterprises.

7.6.4. Results of testing the validity of the fourth sub-hypothesis:

H1d: "*Product innovation has a positive impact on Financial Performance.*"

To test the validity of this hypothesis, a simple regression method was used, as shown below:

Table 14: The results of the analysis of the fourth sub-hypothesis test

Variable	Beta	B	T	Sig. t
Product innovation	0.528	0.617	11.202	0.000
Constant	1.023			
Correlation R	0.528			
Coefficient of determination R^2	0.279			
Adjusted R^2	0.276			
F value	125.476			
Sig. F	0.000			
P<0.01				

Source: Research Findings

By reviewing the results of the previous table, it becomes clear that:

- The impact of product innovation on the financial performance of small and medium-sized enterprises has a significant positive trend.
- The values of the correlation coefficients indicate that there is a significant positive correlation between product innovation and financial performance with a value of (0.528).
- The ability of product innovation to predict the financial performance of small and medium enterprises, where the value of F (125.476) was significant at (0.000).
- The value of R^2 shows that the product innovation variable explained about 27.9% of the variance in the financial performance variable of small and medium enterprises.

Thus, it is possible to accept the validity of the fourth sub-hypothesis that there is a significant positive correlation between product innovation and the financial performance of small and medium enterprises.

8. DISCUSSION AND CONCLUSION

In prior research exploring the relationship between innovation types and financial success, especially in times of crisis innovation has been found to have an important role to play in recovering from the effects of crises as innovation positively impacts financial performance and it was found that firms introducing any kind of innovation still have a higher probability than non-innovators to survive the crises. The findings of this study, which show a statistically significant relationship between the financial performance of SMEs and innovation types, are in line with those of earlier empirical research on the topic (El Chaarani et al., 2021) (Cefis et al., 2020) (Van Auken et al., 2021).

These results support our conceptual model and provide some management ramifications. The favorable consequences of innovation on financial performance, however, might take some time in order to be observed. In addition to the finding that each innovation type is significantly and more or less positively correlated with the financial performance of the SMEs, the researcher also noticed that organizational innovation has the highest standardized coefficient (Beta = 0.353), indicating a relatively stronger influence on financial performance compared to the other types of innovation. Marketing Innovation has a Beta of 0.280, indicating a moderate influence. Product Innovation follows with a Beta value of 0.198, suggesting a moderate influence. Process Innovation has the lowest Beta at 0.117, suggesting a relatively weaker influence among the four types of innovation. Also, it was also found that organizational innovation plays an important role in stimulating other types of innovation. This finding is in accordance with the results reached by previous researchers. Camisón & Villar-lópez (2014) confirmed that organizational innovation can lead to superior firm performance. Also, M. Hassan et al. (2013) concluded that organizational innovation accounted for a greater share of performance explanation compared to other types of innovation. Similarly, Gunday et al. (2011) found that organizational innovations not only provide an

environment that is conducive to other innovation types but also significantly and directly affect innovative performance. Thus, it is acceptable to assume that managers need to pay closer attention to organizational innovations because they are essential for the development of innovative capabilities.

Also, from the researcher's observations, it became clear that innovation was more in companies working in the field of tourism and hospitality. Additionally, it is recommended that the Egyptian government should also focus on assisting micro-enterprises and SMEs to create jobs, particularly for women, young people, and informal workers.

9. RECOMMENDATIONS

- Enterprise owners/managers should focus more on innovations because they are critical tools for improving financial performance.
- It is acceptable to assume that managers need to pay closer attention to organizational innovations because they are essential for the development of innovative capabilities.
- The research suggests that SME management should embrace new organizational innovations. This is advocated because improved organizational innovation such as renewing the routines, procedures, and processes employed to execute firm activities in an innovative manner, ultimately will lead to enhanced firm performance.
- Concerning product innovation and its impact on SMEs' financial performance, the study suggests that SME management should consider developing newness for current products. This recommendation stems from the understanding that introducing novelty to current products leads to improved ease of use for customers and enhances customer satisfaction.
- The study suggests that marketing departments in SMEs should contemplate updating the techniques employed for promoting current and/or new products offered by the SMEs.

10. LIMITATIONS OF THE STUDY

Due to time and financial limitations, the Southern Upper Egypt region was chosen as the study's target population since the study could not have included SMEs operating in all regions of Egypt. Targeted SMEs can be viewed as the representation of all SMEs in Egypt due to the abundance, diversity, and presence of a large number of such projects and the fact that citizens of Egypt's southern governorates rely heavily on these projects to create job opportunities. Although the Southern Egypt region can be viewed as home to most SMEs, variations in the managerial approaches and degrees of expertise of SME owners and managers might affect how financial management in businesses is carried out.

Another limitation of the research is related to the data collection method. Objective indicators of financial performance were unavailable for the research due to the absence of an official database including financial information on SMEs in the Southern Upper Egypt region. Because of this, this study uses subjective financial performance measures, as advised by the literature.

To ensure that the data could be handled, the research solely used questionnaires that depended on self-report responses. However, the issue with using such questionnaires is that they rely on the assumption that participants responded to the questions honestly and accurately. On the other hand, it is not always the case that respondents provide truthful answers. This is due to the fact that respondents frequently provide responses they consider to be preferable.

11. IMPLICATIONS FOR FUTURE RESEARCH:

This research aimed to investigate the relationships between different innovation types and the financial performance of SMEs as a recovery strategy from the impacts of COVID-19, with empirical evidence from Egypt. Thus, the above-mentioned limitations that have been already discussed in the current research can be used to identify some potential areas for further future research.

- Small and medium enterprises from different geographic regions of the country can be chosen for data collection in future research, thus expanding the data pool.
- To investigate any possible variances, empirical results from large organizations can be compared to those from small and medium-sized firms.
- Future research is required to broaden the scope of the investigation by including more study variables.

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APPENDIX I- QUESTIONNAIRE

BURSA ULUDAĞ ÜNİVERSİTESİ

SOSYAL BILIMLER ENSTİTÜSÜ

The impact of innovation as a recovery strategy on the financial performance of SMEs within the scope of the COVID-19 pandemic

Dear Respondent,

I am a student at Bursa Uludağ University, Department of Business Administration, pursuing a Master of Business Administration degree in Management and Organization. I am conducting research to reveal the effects of innovation applied in SMEs in Egypt on the financial performance of SMEs.

I kindly request you spend a few minutes of your time completing the attached questionnaire. Your response is highly valuable to assist me gather data from you for the completion of this project. Participation in the research is on a voluntary basis. For this reason, you have the right to stop answering at any point in the research without giving reasons. It will take approximately 8 - 10 minutes to answer the questionnaire. The results obtained will only be evaluated by researchers and used in scientific research and publications. The questions you are going to answer do not have any correct answers. For each question, you are expected to choose the most appropriate statement for you.

If you have any questions about the research, you can contact the researcher at 701920011@ogr.uludag.edu.tr e-mail address.

Thank you in advance for your valuable time and for participating in our survey.

Kind regards

Samar MOHAMED

QUESTIONNAIRE FORM

SECTION A: BACKGROUND INFORMATION

1. What is your gender?	Male ( ) Female ( )
2. Field of activity of your business	Manufacturing ( ) Commercial and Trade ( ) Service ( ) Other ......
3. For how long have you been operating?	1-10 years ( ) 11-20 years ( ) 21-30 years ( ) 31 years and above ( )
4. How many employees do you have?	1 - 9 employees ( ) 10 - 49 employees ( ) 50 - 249 employees ( )

SECTION B: Innovation

5. To what extent were the following types of innovations implemented in your organization in the last three years? (Five-point scales ranging from 1= "never implemented", 2= "rarely implemented", 3= "moderately implemented" 4= "often implemented", and 5= "continuously implemented")

FACTOR	1	2	3	4	5
Organizational Innovation Scale					
1. Renew the routines, procedures, and processes employed to execute firm activities in an innovative manner.					
2. Renewing the supply chain management system.					
3. Renewing the production and quality management systems.					
4. Renewing the human resources management system.					

5. Renewing the in-firm management information system and information sharing practice.					
6. Renewing the organization structure to facilitate teamwork.					
7. Renewing the organization structure to facilitate coordination between different functions such as marketing and manufacturing.					
8. Renewing the organization structure to facilitate project-type organization.					
9. Renew the organizational structure to facilitate strategic partnerships and long-term business collaborations.					
Marketing Innovation Scale					
1. Renewing the design of the current and/or new products through changes such as appearance, packaging, shape, and volume without changing their basic technical and functional features.					
2. Renewing the distribution channels (direct sales, online sales…etc.) Without changing the logistics processes related to the delivery of the product.					
3. Renewing the product promotion techniques employed for the promotion of the current and/or new products/services.					
4. Renewing the product pricing techniques employed for the pricing of the current and/or new products/services.					
5. A new market strategy to target a new consumer group or a new market (e.g. A new advertisement, the first use of a new media or technique for product positioning, the introduction of a new brand symbol…).					
Process Innovation Scale					
1. Determining and eliminating non-value-adding activities in production processes.					
2. Decreasing variable cost components in manufacturing processes, techniques, machinery, and software.					
3. Increasing output quality in manufacturing processes, techniques, machinery, and software.					
4. Determining and eliminating non-value-adding activities in delivery-related processes.					

5. Decreasing variable costs and/or increasing delivery speed in delivery-related logistics processes.					
Product Innovation Scale					
1. Increasing manufacturing quality in components and materials of current products.					
2. Decreasing manufacturing cost in components and materials of current products.					
3. Developing newness for current products leading to improved ease of use for customers and improved customer satisfaction.					
4. Developing new products with technical specifications and functionalities totally differing from the current ones.					
5. Developing new products with components and materials totally differing from the current ones.					

Section C: Financial Performance Measures

6. How would you rate the level of achievement of the following financial performance items in your organization after the implementation or lack of implementation of any of the above innovations? (Five-point scales ranging from 1= "very unsuccessful", 2= "unsuccessful" 3= "somehow successful", 4= "successful", 5= "very successful")

FACTORS	1	2	3	4	5
General profitability of the firm.					
Return on sales (profit/total sales).					
Return on assets (profit/total assets).					
Cash flow excluding investments.					

Thank you for your valuable time.