STRATEGY DETERMINATION OF SMALL AND MEDIUM ENTERPRISES
A COMPARISON OF TURKISH AND LIBYAN ENTERPRISES

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
ATILIM UNIVERSITY

BY

WALID ELMABROUK

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
INDUSTRIAL ENGINEERING

JANUARY 2018

Approval of the Graduate School of Natural and Applied Sciences, Atılım University.

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I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

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This is to certify that we have read the thesis "**Strategy Determination of Small and Medium Enterprises – A comparison of Turkish and Libyan Enterprises**" submitted by "**Walid ELMABROUK**" and that in our opinion it is fully adequate, in scope and quality, as a thesis for degree of Master of Science.

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ABSTRACT

STRATEGY DETERMINATION OF SMALL AND MEDIUM ENTERPRISES

A COMPARISON OF TURKISH AND LIBYAN ENTERPRISES

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Jan. 2018, 119 pages

The success and performance of SMEs is known to drive the growth of the economies worldwide, as the majority of the jobs and business volume is attributed small and medium enterprises. Therefore, the continuous establishment, survival and growth of SMEs is considered a key strategy for any economy to stay healthy. In this research, several aspects of SMEs success factors and key performance indicators (KPIs) are studied through the literature review and the case study. A read through the literature contributed into compiling a list of key performance indicators for the success and performance and SMEs. Moreover, an Analytical Hierarchy Process (AHP) method is used in a case study in order to evaluate a strategy for the SMEs success and growth in Turkey and Libya. The KPI's are used as criteria and sub-criteria for the feedback of the experts from both countries on the most important items to be considered in the SME strategy through a pairwise comparison between them. In Turkey, the results of the study showed innovation as the most important main criteria in SMEs success and growth, while management and human resources, and financial performance are indicated as the most important main criteria for Libya. Furthermore, flexibility in facings risks, R & D focus, and laws and regulation in support of the SMEs, are concluded as the most important sub-criteria for Turkey. Understanding customer and market conditions, knowledge competency, and management strategies are concluded among the most important sub-criteria for SMEs' success and growth in Libya. Based on the results of the research, recommendations are provided for both case studies in order to empower SME's development.

Keywords: Small and Medium Enterprise (SME), Key Performance Indicators (KPIs), Analytical Hierarchy Process (AHP)

ÖZ

KÜÇÜK VE ORTA BÜYÜKLÜKTEKİ İŞLETMELERİN STRATEJİLERİNİN BELİRLENMESİ: TÜRKİYE VE LİBYA KARŞILAŞTIRMASI

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Ocak 2018, 119 Sayfa

KOBİ 'lerin başarısı ve performansının, ekonomilerin dünya çapında büyümesine neden olduğu biliniyor, çünkü işlerin ve iş hacminin büyük bir çoğunluğunun küçük ve orta ölçekli işletmeler olduğu düşünülüyor. Bu nedenle, KOBİ 'lerin sürekli kurulması, hayatta kalması ve büyümesi, ekonominin sağlıklı kalması için kilit bir strateji olarak düşünülmektedir. Bu araştırmada, KOBİ'lerin başarı faktörlerinin ve kilit performans göstergelerinin (KPI'lar) çeşitli yönleri, literatür taraması ve vaka çalışması aracılığıyla incelenmiştir. Literatürdeki okumalar başarı ve performans ile KOBİ'ler için önemli performans göstergelerinin bir listesini hazırlamaya katkıda bulundu. Ayrıca, Türkiye ve Libya'daki KOBİ'lerin başarısı ve büyümesi için bir strateji değerlendirmek için bir vaka çalışmasında Analitik Hiyerarşi Süreci (AHP) yöntemi kullanılmaktadır. KPI'lar, her iki ülkenin uzmanlarının KOBİ stratejisinde dikkate alınması gereken önemli konular hakkında ikili karşılaştırmalar yaparak geri bildirimde bulunmak için kriter ve alt kriterler olarak kullanılır. Türkiye'de yapılan araştırmanın sonuçları, yenilikçiliği KOBİ 'lerin başarısı ve büyümesinde en önemli ana kriter olarak gösterdi; yönetim ve insan kaynakları ve mali performans ise Libya için en önemli temel kriterler olarak gösterildi. Ayrıca, yüz riskleri, AR-GE odaklılık ve KOBİ'leri destekleyici yasa ve yönetmeliklerdeki esneklik, Türkiye için en önemli alt ölçüt olarak değerlendirilmektedir. KOBİ'lerin Libya'daki başarısı ve büyümesi için müşteri ve pazar koşullarını, bilgi yeterliliğini ve yönetim stratejilerini anlamak en kritik alt kriterler arasında yer almaktadır. Araştırmanın sonuçlarına dayanarak, KOBİ 'lerin gelişimini güçlendirmek için her iki vaka çalışması için de öneriler sunulmaktadır.

Anahtar Kelimeler: Küçük ve Orta Ölçekli İşletmeler (KOBİ), Anahtar Performans Göstergeleri (KPI), Analitik Hiyerarşi Süreci (AHP)

ACKNOWLEDGMENTS

To my family

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LIST OF ABBREVIATIONS

AHP	Analytical Hierarchy Process
CI	Consistency Index
CR	Consistency Ratio
GDP	Gross Domestic Product
KPI	Key Performance Indicator
MCDM	Multi-Criteria Decision Making
R&D	Research and Development
RI	Random Index
ROI	Return on Investment
SME	Small and Medium Enterprises

1. INTRODUCTION

1.1 Study Background

Small and medium enterprises (SME) are one of the important factors that builds developing and developed economies due to its huge volume and the amount of jobs it provides for the people, which forms more than 65% of the total occupied jobs in the world. Hence, the SME's represent 99% of all the existing companies forming 50%, 66% and 86% of the Filipino, European and Greek economy, respectively (Savlovschi & Robu, 2011). The way a company classifies as an SME differs from one source to another. However, there is a consensus within the business world that an SME is based on:

1. Total number of employees
2. Annual turnover
3. Total assets balance
4. Annual sales

Figures 1.1 and 1.2 show the definitions of SME's according to Turkey and Libya, respectively.

Company Category	Number of Employees	Annual Turnover
Medium	< 250	≤$ 17,200,000
Small	< 50	≤$ 3,400,000
Micro	< 10	≤$ 430,000

Figure 1.1: SME definition criteria in Turkey(Karadag, 2016)

Company Category	Number of Employees	Annual Turnover
Medium	< 300	≤$ 15,000,000
Small	< 50	≤$ 3,000,000
Micro	< 10	≤$ 100,000

Figure 1.2: SME definition criteria in Libya(Berisha & Pula, 2015)

Due to its proven importance to the economy on the micro and macro levels, most of the countries support the small and medium enterprises (SME's) as a major player in the sustainable development of the economies. For instance, in Germany the government supports the SME's with:

1. Providing steady legal environment by eliminating any complicated laws.
2. Providing accessible and affordable financing with various options.
3. Supporting the business in its first year to ensure survival by providing guidance (FMECD, 2011).

In this study, the different strategies from around the world will be studied in order to form an idea about the techniques used in supporting SME's, taking into consideration the country differences in terms of economy, dedicated budgets and regulations. Moreover, a case study is selected of one small and another medium enterprise in order to determine the best fit strategies that would lead to its success within its environment.

1.2Aims and Objectives

The main goal of this thesis is to determine the best fit strategy for a small and a medium size enterprises (SME's) by studying the current economic environment that the companies are operating under. Thereafter, a comparison will be developed between the two entities in order to highlight the similarities and differences, the current strategies that the companies have adopted, and the best fit strategy that should be applied to them in order to increase their probability for success.

Therefore, the main objectives of this study are as the following:

1. Defining the small and medium enterprises and finding the economic and legal challenges that each type of businessgoes through during their establishment and operations.
2. Study the encouraging and discouraging strategies in different countries to understand their impact on survival and returns of the enterprises.
3. Select ideal strategy cases where probabilities of business success were increased due to the incentivized approach.

4. Select two companies falling under the small and medium enterprises categories and study the current business strategies that are followed in each one.
5. Understand the impacts of current strategies on the growth and survival of the selected business.
6. Apply the lessons learned from incentivized approaches into the selected case studies and look for development opportunities.
7. Study the surrounding factors around the two enterprises and understand their impact on the success or failure.
8. Compare the two enterprises in terms of the number of years they have been operating, yearly revenue and net profits, while studying the other affecting factors such as country strategies and economic environment.
9. Provide specific recommendations for the enterprises in order to adopt better strategies and simulate better growth.
10. Provide general recommendations for small and medium enterprises (SME's) and for concerned governments in order to help SME's grow, hence growing a large segment of any country's economy.

1.3Research Significance and Questions

The importance of this research emerges from the importance of the case studies in question. Growing the SME sector of any economy would mean eventually growing the economy of the country, which provides better life for its people. Moreover, understanding the difference between the compared enterprises, in term of operation, challenges and strategies, would allow the researcher to provide more precise recommendations for each business, which would help them into growing.

Nevertheless, a series of research questions need to be developed in order to achieve the aims of the study. Therefore, the initial study questions are as the following:

Q1: What are the definitions of the small and medium enterprises?

Q2: What is the importance of SME to the country's economy?

Q3:What are the distinguishing differences between the selected enterprises, aside from number of employees, revenue and assets?

Q4: How do the small and medium enterprises adopt similar or different strategies and is that the right approach?

Q5: How can the AHP methodology help developing a strategy for SMEs in Turkey and Libya?

Q6: What are the criteria and sub-criteria that are considered when developing a strategy for SME success and development?

Q7: What are the most important criteria and sub-criteria that shall be focused on when developing a strategy for SMEs in Turkey and Libya?

1.4Methodology Summary and Thesis Structure

Answering the abovementioned questions is accomplished through a comprehensive methodology as shown in Figure 1.3 below.

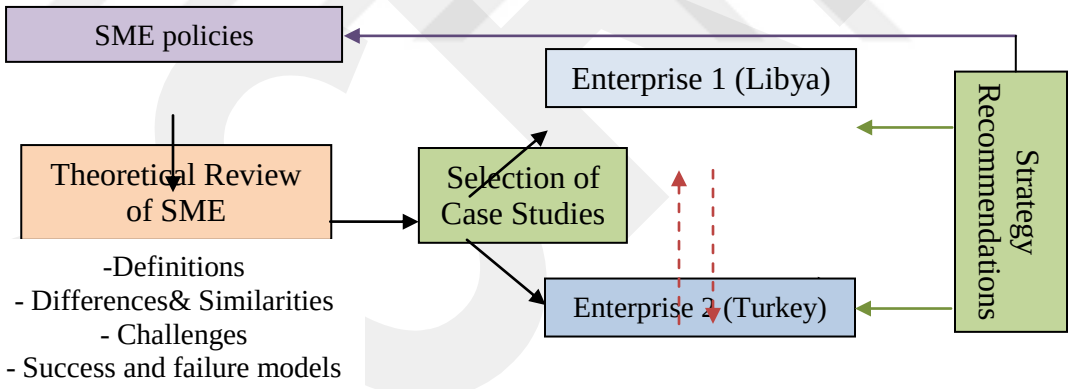

Figure 1.3: Summary of SME research methodology

Furthermore, the structure of the thesis is divided into the following chapters:

1. **Introduction:** basic definitions of SME's from different sources. Introducing the aims of the study, which emerges from the importance of the SME's as a major player in any country's economy. This chapter is introducing the initial study questions, methodology summary and the research structure.
2. **Literature review:** contains a survey of information from the literature to extract the properties of SME's, similarities and differences between small and

medium enterprises, adopted SME policies and regulations in different countries, and success and failure SME examples.

3. **Methodology:** Elaborating on the methodology of the research, which is an MCDM method. The AHP methodology process and selected criteria for comparison are narrated in this chapter.
4. **Case Study:** Studying the strategies indicated by experts from the selected case studies and comparing them. Furthermore, this chapter discusses the results in comparison with the literature.
5. **Conclusions:**A comparison between the two case studies is performed. Furthermore, the researcher provides recommended strategies for the case studies and a set of recommendations to the countries in order to support the SME's. Finally, the study conclusions are provided along with opportunities for future research.

2. LITERATURE REVIEW

In this chapter, a review of several studies is conducted in order to cover the theoretical background of the research. The significance of the SME's is shown through studies from around the world in order to understand the impact of small and medium enterprises in global and local economies. Moreover, the issues and challenges facing SME's are evaluated on different levels, as well as the strategies that are adopted in order to overcome these issues and boost the economic environment. Finally, in order to be able to assess the performance of the SME entities selected in this research, key performance indicators (KPI's) for SME's are studied for review and application.

2.1 Significance and Characteristics of SME's

The importance of SMEs comes mainly from its volume in any given economy and its impact on the workforce in the country. On average, the SMEs in the developed countries form 90% of the total companies and provide 60% of the workforce population with jobs and income (Stefanovic, Milosevic, & Miletic, 2009). Table 2.1 shows the impact of micro, small and medium enterprises on the European Union economy in 2005 in terms of their number, employment, economic added value and productivity in comparison with large enterprises. It is evident from the statistics that the SMEs form 99.8% of the European Union economy, while they provide more than 65% of the employment opportunities. Furthermore, the economic growth of the SMEs form more than 55% of the companies operating the European Union due to a productivity rate that exceeds the 85% (Stefanovic, Milosevic, & Miletic, 2009).In India, the SMEs have contributed into the growth rate of industrial sectors with a rate

ranging between 88% to 226% between the years 1993 and 2005, as well as providing an employment for more than 31 million people (Uma, 2013).

Table 2.1: SMEs key performance numbers in the European Union economy in 2005 (Stefanovic, Milosevic, & Miletic, 2009)

	Total	SMEs	Enterprises			
			Micro	Small	Medium	Large
Enterprises (millions)	19.65	19.60	18.04	1.35	0.21	0.04
Percent (%)	100.0	99.8	91.8	6.9	1.1	0.2
Employees (Millions)	126.7	85.0	37.5	26.1	21.3	41.7
Percent (%)	100.0	67.1	29.6	20.6	16.8	32.9
Economic added value (Billion €)	5,360	3,090	1,120	1,011	954	2,270
Percent (%)	100.0	57.6	20.9	18.9	17.8	42.4
Productivity rate (thousand € per working person)	42.3	36.4	29.9	38.7	44.8	54.4
Percent rate (%)	100.0	86.1	70.7	91.5	105.9	128.6

Based on the number presented in Table 2.1, there are several advantages that empower the position of SMEs in their markets, including (Stefanovic, Milosevic, & Miletic, 2009):

1. High level of flexibility: which enables SMEs to react rapidly to the demands and adapt to the environmental changes.
2. High level of innovation: the closeness of the enterprise members from each other opens the door for a more transparent communication that drives the innovation to higher levels.

3. Clearer definition of competencies: the SMEs are more aware of what gives them the competitive edge in the market as they are continuously forced to look for them based on their limited resources.
4. Ease of management: the limitations of its employment and operations make SMEs easier to coordinate and control.
5. Easier development and growth: the ability of SMEs to take on small opportunities makes it easier to survive and develop, rather than waiting for significant contracts.

Other than the economic characteristics of SMEs that were discussed in the introduction chapter, there are other features that makes the SMEs unique in terms of their influence on the economy. The SMEs were called as the "engines of growth" showing that the economic growth in any country is mainly driven by the small and medium projects rather than the strategic projects and large businesses that are available in the economy. Moreover, the SMEs were also described as a "key source of dynamism, innovation and flexibility" (Karadag, 2016).

Despite the lack of studies that proves statistically the impact of innovation within SMEs on themselves and the economy, it is apparent that innovation supports the growth of SMEs, as many of them are established based on business plans classified as innovations (Hossain, 2015). Furthermore, in a study that 30 SMEs to correlate innovation to performance and sustainability, there were several factors influencing innovation in SMEs, illustrated in Figure 2.1, as follows(Mbizi, Hove, Thondhlana, & Kakava, 2013):

1. Company characteristics: from the literature, companies that empower R & D are more innovative. Moreover, the size of the company influences the innovation level as more developed SMEs have high levels of innovation, while the increase of competition had an adverse effect on it.
2. Management characteristics: as the employment size is limited, the manager's position is more centralized in SMEs and affects innovation.
3. Company's age: firms that have been well-established in the economy support more innovation on the organizational and operational levels.

4. Technological factors: there are three sub-factors under this category; complexity of technology, compatibility between the technology and the knowledge, and perceived advantage of the technology. The simpler the technology that the business requires, the higher possibility that the SMEs would adopt it. Furthermore, the knowledge within the SME need to be compatible with the technological advances for innovative development. The perception of the technology within the company is similarly important, which is translated by the management understanding of it and the potential performance enhancements that could occur due to its adoption.
5. Organizational factors: the cooperation with the supply chain members of the SMEs increases innovation, as well as the ability of the company to compare its performance with its equivalents in the market. Moreover, the communication between the company's members has been proven to empower innovation in the organization.

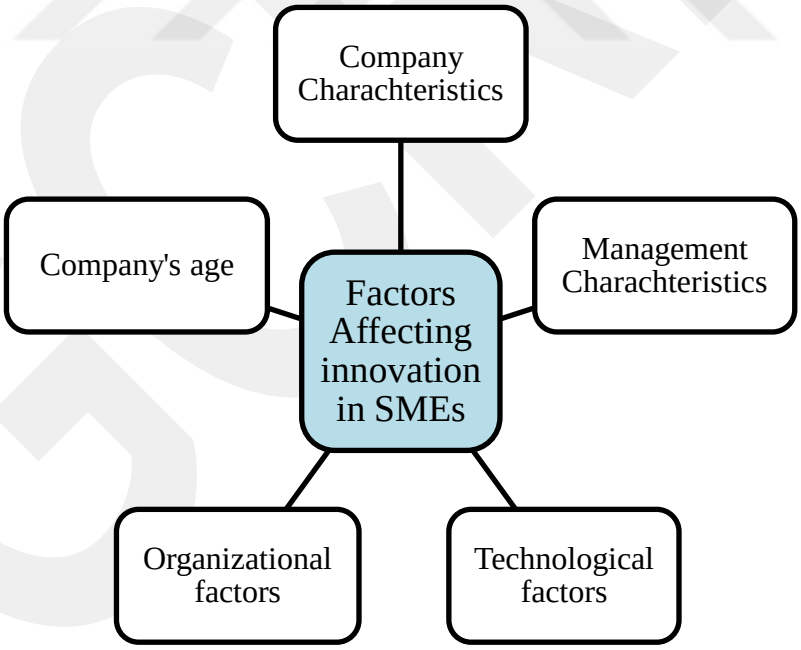

Figure 2.1: Factors affecting innovation in SMEs (Mbizi, Hove, Thondhlana, & Kakava, 2013)

According to Mbizi, Hove, Thondhlana, & Kakava, (2013) there are four main types of innovations that are used in enterprises:

1. Incremental: developing the existing designs, products and services.
2. Radical: connecting a new design and components in a new configuration.
3. Modular: adding new components or replacing the old components with new ones.
4. Architectural: connecting the old design and components in a different way.

The results of the study show that 50% of the studied SMEs depend mainly on incremental innovation. Furthermore, the participating SMEs indicated the management characteristics are the most influential factor on SME innovation, followed by the age of the organization and the technological factors. In the same study, statistical testing was carried out to test the relationship innovation and performance indicators; sales revenue, market share , efficiency, sustainability and customer loyalty. Therefore, based on chi-square significant level of more than 0.05 in testing no relationship between those indicators and innovation, the study concluded that there is a relationship between the two variables (Mbizi, Hove, Thondhlana, & Kakava, 2013).

In an Indonesian study that involved 140 SMEs, the relationships between level of entrepreneurship, flexibility and performance were tested. By considering several factors in evaluating the three variables, the study established that the three dimensions have interrelationships between them (Arief, Thoyib, Sudiro, & Rohman, 2013). Other SME characteristics are also studied such as competitiveness within the market, which was explored in some studies and are further reviewed in coming sections (Anton, Muzakan, Muhammad, Syam-sudin, & Sidiq, 2015).

2.2 Challenges of SME's

There are several threats that face the small and medium enterprises due its nature and size in comparison with bigger companies that are more secured in terms of operations and assets. These threats are often identified as risks that could hinder or diminish the small and medium enterprises. (Verbano & Venturini, 2013) reviewed the concept of

risk management, which led to the conclusion that there are nine different domains of risk, as follows:

1. Strategic risks: concerns the fundamentals of the business, which directly affect the operations and aims of the company.
2. Financial risks: emerging from the economic value of the company, its credit and liabilities, and the market environment.
3. Enterprise risks: which could come from events that cannot be managed by the company.
4. Insurance risks: mainly concerned with the severely damaging events that could occur to the company.
5. Project risks: which are emerging from specific operations and contracts.
6. Engineering risks: regarding the systems used by the company including its design, operation and update.
7. Supply chain risks: which are emerging from the partners of the company including the other companies and the customers.
8. Disaster risks: which are unpredicted risks that can be caused by nature or human including terrorism.
9. Clinical risks: related to human health, which the company could be the cause or an affected entity in it.

In SMEs, there are four main types of risks that shall always be taken into consideration when studying the SME challenges(Verbano & Venturini, 2013):

1. Health risks: which could cause injuries or loss of hours in the limited human resources available for SMEs.
2. Financial risks: which could hinder the growth of SMEs and can cause its diminishment due to the limited liquidity available.
3. Strategic risks: SMEs mainly depend on limited on a limited product or service variability. Therefore, any changes caused by the market or competition could directly impact the business concept.
4. Operational risks: due to the limited resources, the SMEs may face a serious challenge in delivering the required quality of product or service to their

customers. Therefore, other issues emerge by the increase of the partners in the supply chain and the technological issues that needs to be updated with the limitations and competition.

A review of the SMEs in South Africa has shown that there are no systematic risk identification techniques implemented in the small and medium enterprises, which leads to ineffective measures in facing the different occurring and recurring risks. Therefore, the studyhas recommended establishing risk management strategies by SMEs for the following advantages (Smit & Watkins, 2012):

1. Aligning the company's operations with its mission and objectives.
2. Reduce the influence of external factors on the company's performance.
3. Complying the company's practices and operations with the market standards.
4. Protecting the company legally.
5. Increasing financial efficiency by increasing productivity, or cost and time savings.

Furthermore, there are several disadvantages that surround SMEs through different domains, including (Stefanovic, Milosevic, & Miletic, 2009):

1. Access to large and profitable markets: due to limited capital as such markets may require high levels of investment that could be very risky for SMEs. Large markets require a certain developed level in marketing, distribution and production capacity.
2. Scale issues: it is known that some economic activities can be more efficient by reaching a certain level of production, which requires a high investment that cannot be achieved by the SMEs.
3. Impact of cash: the available liquidity for the SMEs is very limited as the operations do not support a high growth operationally. Therefore, raising capital is an issue in SMEs as their operations do not support a strong portfolio and operations can be less lucrative due to efficiency issues.
4. Employment limitations: the available personnel within the company could lack the required expertise to support the aimed growth of the SMEs. Moreover,

adding employment to the available workforce can be not unfeasible financially for this type of companies.

Furthermore, (Stefanovic, Milosevic, & Miletic, 2009) defined nine issues that face SMEs during their establishment and operations. Through their study, the authors investigated 16,339 SMEs in more than 25 countries as part of the European Union. While Table 2.2 shows the results of the study ordered from the most to the least important, the results show that the limitation in purchasing power forms the top issue in SMEs. Moreover, issues with regulations, workforce, infrastructure followed, respectively. The results of the study shall be read, where each enterprise may have indicated more than one issue.

Table 2.2: Issues facing SMEs in the European market during their establishment and operations (Stefanovic, Milosevic, & Miletic, 2009)

Issue	Percentage (%)
Limitation in purchasing power	46
Unsuitable regulations	36
Problems with workforce	35
Costs of workforce	33
Unsuitable infrastructure	23
Financial limitations	21
Quick technological development	17
Development of organizational forms	16
Management issues	11
Total	238

Other studies have defined challenges based on the local markets in which the SMEs operate. In a research that involved 200 participants in Bangladesh, the main challenges and issues of SMEs were identified as the following (Moudud-Ul-Huq, Ahammad, & Naseem, 2013):

1. Limitation of cashflow and capital
2. High interest rates offered by financing institutions
3. Complicated financing processes
4. Lack of interest in SMEs by the graduates of higher education institutions
5. Lack of gender diversity
6. Increased competition in many of the sectors
7. Lack of marketing strategy knowledge
8. Lack of qualified operational staff
9. Unavailability of transportation and supply chain infrastructure
10. Rapid technological advancements
11. Tax increases
12. Inability to sustain a high employment retention rate

After the recent global economic crisis that started by the bankruptcy of Lehman Brothers, SMEs have faced a strong challenge internationally. Karadag (2016)states that the member countries of the Organization for Economic Cooperation and Development (OECD) have witnessed an economic shrinkage of 6.4% in two years. By 2011, the statistics show that more than 9 million jobs have been lost in the OECD economy, which 60% of them were from SMEs. Based on that, several characteristic challenges of SMEs were mentioned in case of destructive events like this (Karadag, 2016):

1. Limited downsizing flexibility
2. Business model that does not have a diversified portfolio
3. Weak financial reserves
4. Dependency on financing and credit

2.3 Indicators of SME Performance

Different studies have considered various factors in evaluating the performance of SMEs, due its important in achieving success and sustainability for the companies and the economy (Sinisammal, Bely, Karkonen, Mottonen, & Vayrynen, 2012) However, the evaluation of SME performance came through assessing the company's performance depending on localized factors, and through the evaluation of the impact of SMEs on the economy. In a localized assessment,Arief, Thoyib, Sudiro, & Rohman (2013), level of entrepreneurship, flexibility and performance were assessed through a questionnaire involving the employees of small and medium enterprises by considering several factors in evaluating the three variables, including:

1. Level of entrepreneurship: three factors were considered; innovation, proactivity and risk-taking.
2. Flexibility: measured through sustaining attention, regular assessment and taking initiative.
3. Performance: measured through sales relative growth, ROI, and profitability.

Another important variable is the competitiveness of the SME, which can be measured through the performance of the company. Studies have shown the owner's and the manager's knowledge in the company business is the most influential factors in driving the SME performance based on a research carried out with 590 SMEs in Indonesia (Anton, Muzakan, Muhammad, Syam-sudin, & Sidiq, 2015). Similar results have been found through a study in Nigeria (Shehu, et al., 2013).Moreover, other reports have showed a relationship between competitiveness and innovation through the ability of protecting intellectual property. According to the report, protecting the innovation of the SME could establish the business identity, encourage creativity, increase company's value, increase access to financing and provides the company with a competitive edge within its competition (Jaiya, 2003).

In assessing the SMEs impact on the economy, Stefanovic, Milosevic, & Miletic (2009) measured the SMEs performance within the economy by their numbers, employees number, economic added value (growth), and productivity rate. Furthermore, in evaluation of Turkey's SMEs performance within the economy using the same factors,

(Karadag, 2016) showed that over a ten-years period, the SMEs have increased in the Turkish market after the global financial crisis, Figure 2.2, as well as increasing the employment in the market, Figure 2.3. Nonetheless, the added value rate had decreased from 58.2% in 2004 to 54% in 2012, Figure 2.4.

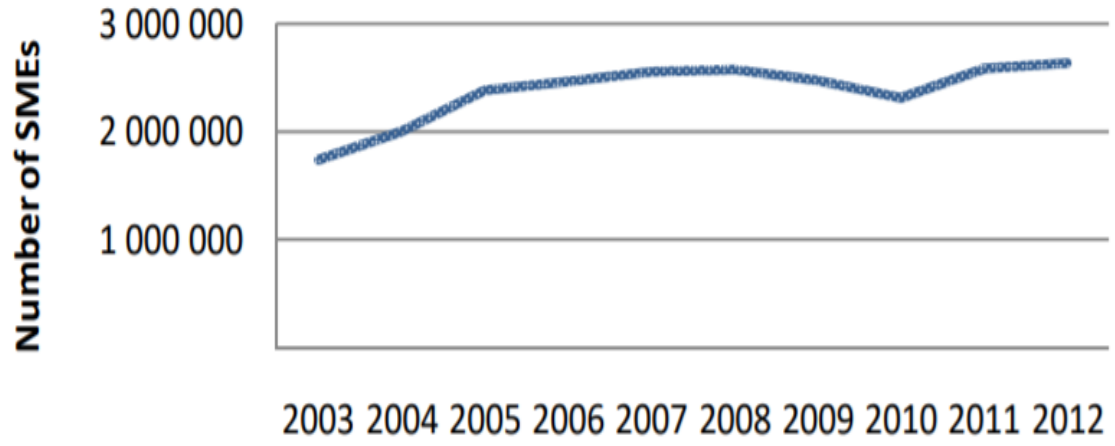

Figure 2.2: Number of SMEs in Turkey between 2003 and 2012 (Karadag, 2016)

Figure 2.3: Employment in SMEs in Turkey between 2003 and 2012 (Karadag, 2016)

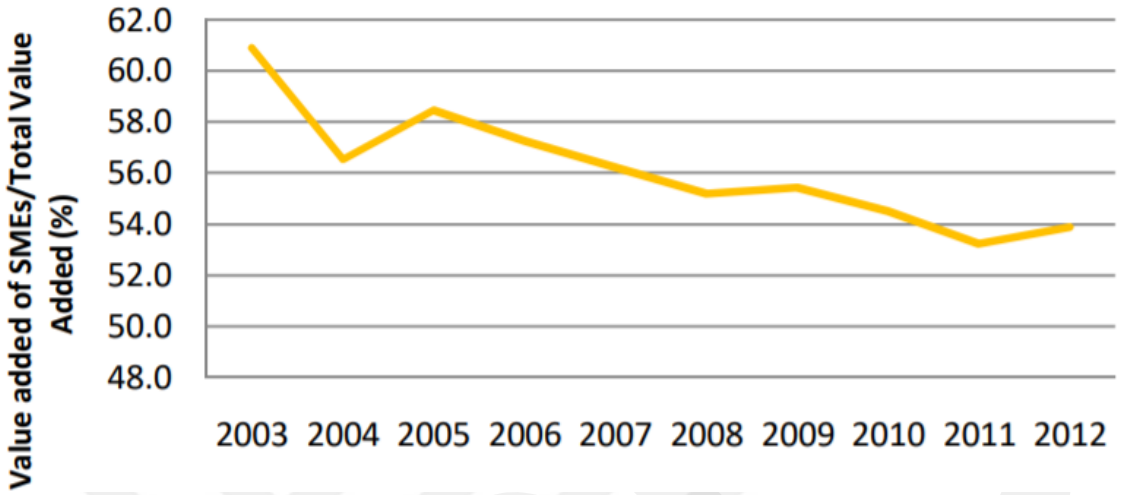

Figure 2.4: Rate of value added of SMEs between 2003 and 2012 (Karadag, 2016)

Moreover, a study by Wu (2009) have presented a framework for performance measurement in businesses, which included customers, financials, internal business and innovation. After reviewing several studies in the literature presenting performance assessment models, the study presented a combination of the different evaluation factors used for businesses, as shown in Table 2.3. The study performed a questionnaire and interviews with 45 SMEs in the information technology sector. The researcher has found a relationship between the SME performance and its team performance, strategy, capability, customer satisfaction, optimizing resources, innovation and management internal processes (Wu, 2009).

Table 2.3: A compilation of SME indicators from the literature (Wu, 2009)

Assessment Dimension	Evaluation Factors	
Efficiency	Return on Assets (ROA)	Revenue per incremental change in cost
	Return on Investment (ROI)	Ratio of gross profit to sales
	Return on Equity (ROE)	Gross earnings
	Internal rate of return (IRR)	
Growth	Sales growth	Assets growth
	Employees number growth	Return on sales
	Market share growth	Profitability
	Product and service development	Available capital
	Margin growth	Revenues
Profit	Net profit	Market returns
	Return on sales	Profitability in comparison with competition
	Net profit margin rate	
Size and Liquidity	Number of employees	Net cash flow
	Gross revenue	Cash flow in comparison with competition
	Sales share	
Strategy, Stakeholders and operations	Patents	Market partnerships
	Operational efficiency	Customer satisfaction

Furthermore, a South African study investigated the key performance indicators that shall be used in SMEs through a questionnaire methodology involving ninety-two SMEs' leaders and managers in the city of Cape Metropolis. The study did not only focus on the financial indicators, but also involved non-financial and strategic indicators assessed on a Likert scale. The results of the study show that more than 50% of the participants agree that the top five financial KPIs are(Maduekwe & Kamala, 2016):

1. Sales growth

2. Cash flow
3. Operating income
4. Net profit margin
5. ROI (Return on Investment)

Similarly, the strategic and non-financial indicators that were agreed by more than 50% of the participants are(Maduekwe & Kamala, 2016):

1. Response time to customers
2. Customer satisfaction
3. Ration of repeat customers
4. Complaints handling
5. Employees retention rate
6. Knowledge competency
7. Training hours per employee

The study shows that such key indicators are used for several purposes. However, the top three benefits of using KPIs were found for monitoring the business, measuring performance, and as a tool for future planning and goal setting. Nonetheless, the participants identified the lack of qualifications, management support and required resources as the main reasons KPIs could be ineffective in SMEs(Maduekwe & Kamala, 2016).

2.4 Success Factors and Strategies

After reviewing the performance indicators mentioned in the literature, it is important to understand the key success factors that have driven the growth of SMEs globally. Moreover, several countries have succeeded in developing a policy for SMEs that supported its growth and contribution into the economy.

As SMEs are strongly affected by the centralized leadership of their owners (Mbizi, Hove, Thondhlana, & Kakava, 2013), there are studies that focused on the success characteristics of the entrepreneur. In a Malaysian study, nine keyentrepreneur personality success factors were shortlisted from a pool of forty-two characteristics through interviews with twenty-five SMEs in the country. As illustrated in Figure 2.5, those characteristics are as the following (Abu Zarim, 2013):

1. Confidence: which reflects the certaintyof the business model and the strong leadership personality that the company needs especially at the first few years of its operations.
2. Determination: a required trait at the establishment, which is based on the entrepreneur's belief in his company and team.
3. Diligence: a personality and professional trait that describes the persistence of the entrepreneur on achieving goals through hard work and effort.
4. Flexibility: the ability to adapt with the market and work environment changes.
5. Facing challenges: the entrepreneur is unique for his or her desire to face the challenges rather than avoiding them, opening the door for opportunities.
6. Fore sighting: being able to develop a vision for the company in details for the short and long runs.
7. Courage: which is needed to face difficulties, especially the ones involve identifying own mistakes, accepting advice, and taking corrective actions.
8. Aggression: although it is perceived usually in a negative way, this trait is needed to ensure the achievement of the company's mission and objectives.
9. Commitment: in order to lead a team and ensure collective efforts, the entrepreneur should lead by example, setting the bar for all team members.

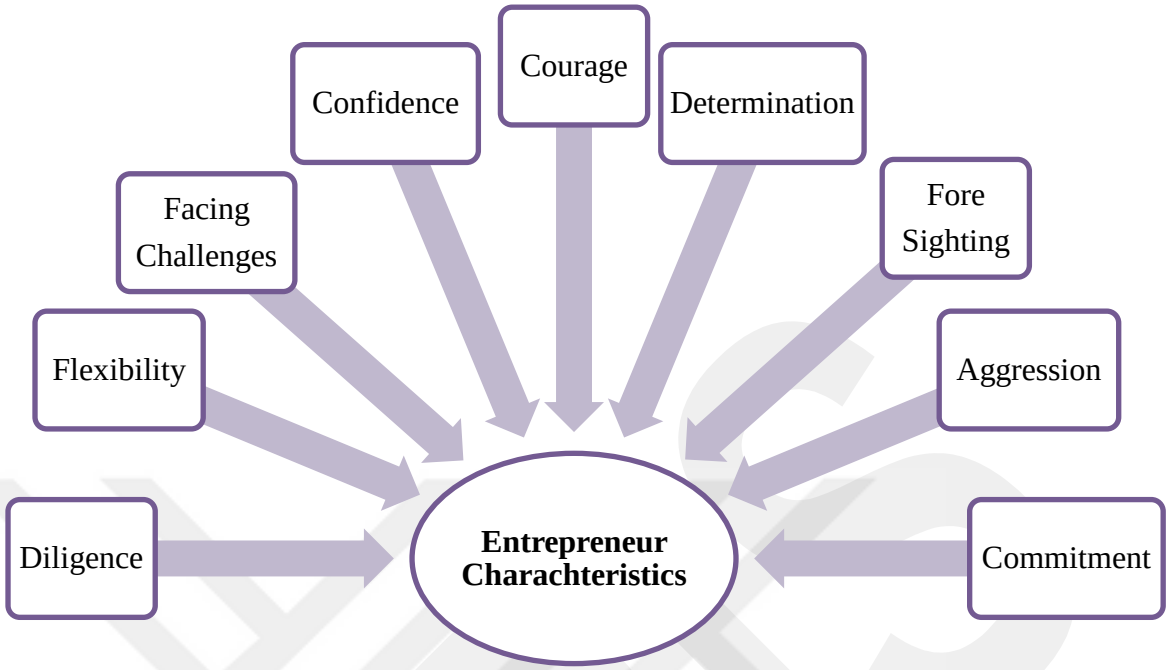

Figure 2.5: Key Entrepreneur characteristics for SMEs' success(Abu Zarim, 2013)

Furthermore, the study has defined the key success factors for the SME as having a financial control in order to ensure efficiency, adopting an innovative approach for development, ensuring the delivery of product or service with safety and quality standards, developing a team work environment, and taking studied risks through applying risk management techniques (Abu Zarim, 2013). Moreover, through deploying 56 factors under seven categories, which are capability, resource, environment, strategy, process, measurement and innovation, the previously reviewed study of Wu (2009) found that responding to customer demands quickly, the clear definition of market and customers, and company's reputation are the top three factors that influence the success of SMEs. Another study in Thailand have found that there are several factors having a positive impact on the success of SMEs, which are (Chittithaworn, Islam, Keawchana, & Yusuf, 2011):

1. Strong company characteristics such as size and age
2. Understanding customer and market conditions
3. Effective supply chain strategies

4. Available resources and financing opportunities
5. Successful planning and available infrastructure(Oduyoye, Adebola, & Binuyo, 2013).

Authorities and legislators can understand the issues and challenges that face SMEs through direct investigations and researches, as evaluating challenges in SMEs is important for their healthy and continuous development, and for the country's economy. Therefore, there are studies that focused on understanding the problems facing the small and medium-sized companies through selecting a wide sample of SMEs from different region, studying the following factors and indicators(Moudud-Ul-Huq, Ahammad, & Naseem, 2013):

1. Qualifications of owners and managers
2. Gender participation
3. Savings from profit
4. Profit growth
5. Volume of fresh investments
6. Issues and challenges that are facing SME owners

Another research performed in the United Kingdom investigated the success factors through a questionnaire methodology involving 1,600 participants. More than 85% of the participants indicated that SME success means higher customer satisfaction, profit growth, and high customer retention. It was found that more than 70% of newly established SMEs mainly depend on savings, while successful established SMEs depend on reinvesting profits. Moreover, the results show that the top eight strategies that contribute in SME's success, agreed by more than 50% of the participants, are (Gary, Saunders, & Goregaokar, 2012):

1. Identifying opportunities, such as outsourcing and exporting, and planning based on them.
2. Strong management skills and techniques for cashflow and liquidity.
3. Team management skills
4. Focusing on sales

5. Using technological tools such as websites.
6. Early identification of negative market conditions
7. Development of business management skills
8. Successful marketing strategies by utilizing direct referrals and search engine optimization.

Due to the major impact of SMEs on the market economy, as discussed in previous sections, and to ensure the utilization of the SMEs' success factors, many countries have developed strategies and plans aiming to provide the best infrastructure for SMEs' success. In Malaysia, the government have developed several plans and visions in order to increase the living standards of the country through the development of SMEs. A total of ten plans were established concluded by the masterplan for the period from 2011 to 2020 aiming to increase GDP contribution of SMEs from 32% to 41% in ten years and increasing SMEs employment market share and export market share from 59% to 62% and 19% to 25%, respectively, for the same period. The main four strategies adopted by these plans are(Ng & Kee, 2012):

1. Increasing business opportunities and ensuring the establishment of new businesses.
2. Focusing on innovation and growth as the main drivers for the economy.
3. Imposing legislations that guarantees fairness and increases productivity.
4. Providing incentives for innovators and high achieving businesses.

Therefore, the strategy of Malaysia for SMEs has mainly focused on the following areas(Ng & Kee, 2012):

1. Easing access to financing
2. Encouraging a green supply chain
3. Providing skill and knowledge opportunities
4. Proposing local development agendas
5. Empowering social and judicial policies that strengthen communities and ensures fair competition
6. Assisting in efficient employment

3. METHODOLOGY

The main objective of this chapter is to review the method that is used in the research in order to recommend SME strategy for Turkey and Libya. The study uses one of the MCDM techniques, which is Analytical Hierarchy Process (AHP) to identify the main criteria that an SME strategy should be based on for the two countries. The chapter starts by reviewing the process of the AHP method, then follows to identify the criteria and sub-criteria that are used and apply the method preparatory steps for application.

3.1 MCDM and AHP Method

The main advantage of using multi-criteria decision-making methods (MCDM) in complex decision-making is the ability of these techniques to provide a justified approach in choosing between different alternatives based on influential criteria (Ardielli, 2016). There are several MCDM techniques that are used and applied in engineering and human science research, including (Vyas Gayatri & Misal Chetan, 2013)(Velasquez & Hester, 2013):

1. Simple Additive Weighting method (SAW)
2. Weighted Product Method (WPM)
3. Analytical Hierarchy Process (AHP)
4. Technique for Order Preference by Similarity to Identical Solution (TOPSIS)
5. Compromise Ranking method (VIKOR)
6. Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE)
7. Analytical Network Process (ANP)
8. Decision-making Trial and Evaluation Laboratory Technique (DEMATEL)
9. Zero-One Goal Programming (ZOGP)

The AHP method is chosen for this research due to its linear model, which increases the simplicity of its application, in addition to its several applications in similar research for strategy determination in different disciplines (Mohagher, 2012)(Ho, Abdul-Rashid,

&Ghazilla, 2016). Moreover, the AHP method, which was developed by Thomas Saaty, has been successful in comparing alternatives and efficient in identifying the importance of a criterion over the other criteria through a process that involves experts in the domain of the research. The AHP method incorporates objective and subjective measurements in the process, while checking the consistency of the results in order to reduce the decision-making bias (Dalalah, Al-Oqla, & Hayajneh, 2010).

The AHP method commences by specifying the main goal of the research and identifying the criteria and sub-criteria, which the judgement is based on. Thereafter, the AHP hierarchy structure is constructed in order to develop the questionnaire that is directed to the expert on the problem. Moreover, through the questionnaire a pairwise comparison is performed between the criteria, which provides the values for the weight matrices. Thereafter, consistency of the results is checked and normalized weights for the criteria are calculated for comparison (Balubaid & Alamoudi, 2015).

Based on the above process, the mathematical steps for the AHP method are as the following(Ibraheem & Atia, 2016):

1. Following the pairwise comparison, Matrix A is constructed containing the weights of the criteria in accordance with the experts' inputs:

$$A = \begin{bmatrix} 1 & \frac{w_1}{w_2} & \dots & \frac{w_1}{w_n} \\ \frac{w_2}{w_1} & 1 & \dots & \frac{w_2}{w_n} \\ \vdots & \vdots & \vdots & \vdots \\ \frac{w_n}{w_1} & \frac{w_n}{w_2} & \dots & 1 \end{bmatrix} \quad (1)$$

Where,

A = Matrix for criteria pairwise comparison

W_1= weight of criteria 1

W_2 = weight of criteria 2

W_n = weight of criteria n

2. For the case of the one expert comparisons of the criteria, the ratings in matrix A are considered the ratings that are normalized. However, for the case of more than one expert, the scores for each pairwise comparison are aggregated using the geometric mean of the same element in each individual matrix in order to form a resultant matrix.
3. Based on the maximum eigenvalue of matrix A (λ_{max}) is calculated using the unit matrix (I) of matrix A, as shown in the below equation (2):

$$W(A - \lambda_{max}\ I) = 0 \qquad (2)$$

Where W is the relative weights of matrix A

4. After the calculation of the maximum eigenvalue of matrix A, which is the aggregate matrix in case of several respondents, the consistency index (CI) using equation (3):

$$CI = \frac{\lambda_{max} - n}{n - 1} \qquad (3)$$

5. In order to calculate the consistency ratio (CR), the random index (RI) has to be found through using Table 3.1 below, or through the graph shown in Figure 3.1 depending on the size of the matrix.

Table 3.1: Random Index (RI) values (Ibraheem & Atia, 2016)

N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RI	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

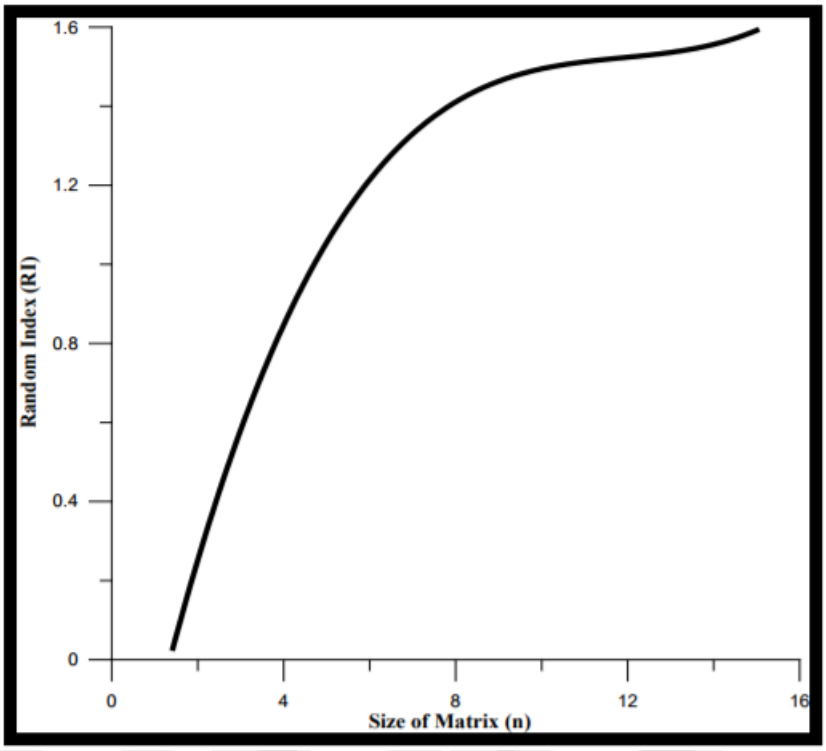

Figure 3.1: Random Index graph (Ibraheem & Atia, 2016)

6. After finding the consistency (CI) index from equation (3) and the random index (RI), the consistency ratio (CR) can be calculated using equation (4):

$$CR = \frac{CI}{RI} \quad (4)$$

In order to ensure the consistency of the results, CR must be less than 0.1. Otherwise, results shall be reobtained or altered based on the experts' judgements. For strategy determination purpose, there are no alternatives involved in the process. Therefore, the strategy is determined based on the weights of the criteria.

7. The weights of the criteria are calculated by obtaining the geometric mean of the row scores and normalizing them into a percentile score.

3.2 Criteria Selection for Pairwise Comparison

Through the literature review performed in the second chapter of this thesis, the judgement criteria are selected and compiled, as shown in Table 3.2. The sub-criteria are classified based on the general classification of the literature into six main criteria, which are:

1. Company's characteristics: including number of employees, company's age, ease of technological update (due to the nature of the operations), and flexibility in facing risks.
2. Operational performance: which includes several indicators such as productivity rate that is used to measure SME volume and development, and understanding customer and market conditions, which is essential for strategy development of the business.
3. Innovation: it was identified through the literature that most of the successful SMEs rely on this criterion to sustain competitive edge in the market.
4. Management and human resources: since manpower is a critical aspect of the SME strategy and operations, this criterion is added to represent the challenges that could be faced by the case studies of this research in this region.
5. Financial performance: the majority of the indicators considered in the literature are of financial nature, as it provides a quantified measure of the progress and performance.
6. Governmental agenda: the strategy imposed by the government plays a major role in deciding the overall performance of SMEs in the economy. Therefore, it is significant to consider this criterion in the study.

Table 3.2: Criteria and sub-criteria for AHP comparison of SME's

Criteria	Sub-Criteria	Reference
Company's Characteristics	Number of Employees	(Stefanovic, Milosevic, & Miletic, 2009)(Wu, 2009)
	Company's age	(Mbizi, Hove, Thondhlana, & Kakava, 2013)
	Ease of technological updates	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)
	Flexibility in facing risks	(Arief, Thoyib, Sudiro, & Rohman, 2013)
Operational Performance	Economic added value	(Stefanovic, Milosevic, & Miletic, 2009)
	Productivity rate	(Stefanovic, Milosevic, & Miletic, 2009)
	Organizational relations and effective supply chain strategies	(Mbizi, Hove, Thondhlana, & Kakava, 2013)(Chittithaworn, Islam, Keawchana, & Yusuf, 2011)
	Sales growth	(Wu, 2009)(Maduekwe & Kamala, 2016)(Gary, Saunders, & Goregaokar, 2012)
	Customer satisfaction	(Wu, 2009)(Maduekwe & Kamala, 2016)
	Understanding customer and market conditions	(Chittithaworn, Islam, Keawchana, & Yusuf, 2011)(Gary, Saunders, & Goregaokar, 2012)
	Efficient planning	(Chittithaworn, Islam, Keawchana, & Yusuf, 2011)
Innovation	R&D Focus	(Mbizi, Hove, Thondhlana, & Kakava, 2013)
	Technology adopted	(Mbizi, Hove, Thondhlana, & Kakava, 2013)
	Efficient business opportunity identification	(Ng & Kee, 2012)(Gary, Saunders, & Goregaokar, 2012)
	Patents	(Wu, 2009)
Management and	Manager's Strategies	(Mbizi, Hove, Thondhlana, &

Table 3.2: Criteria and sub-criteria for AHP comparison of SME's

Criteria	Sub-Criteria	Reference
Human Resources		Kakava, 2013)(Gary, Saunders, & Goregaokar, 2012)
	Accessible workforce	(Stefanovic, Milosevic, & Miletic, 2009)
	Empower marketing strategies	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)(Gary, Saunders, & Goregaokar, 2012)
	Owner qualifications	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)
	Gender participation	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)
	Knowledge competency	(Maduekwe & Kamala, 2016)
Financial Performance	Purchasing power	(Stefanovic, Milosevic, & Miletic, 2009)(Wu, 2009)
	Accessible cashflow / Liquidity	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)(Wu, 2009)
	Efficient ROI (compared to competition)	(Wu, 2009)(Maduekwe & Kamala, 2016)
	Gross earnings	(Wu, 2009)
	Profitability	(Wu, 2009)
Governmental Agenda	Laws and Regulations	(Stefanovic, Milosevic, & Miletic, 2009)
	Suitable infrastructure	(Stefanovic, Milosevic, & Miletic, 2009)
	Suitability of interest rate	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)
	Accessible financing	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)(Chittithaworn, Islam, Keawchana, & Yusuf, 2011)
	Promoting SME's in higher education	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)
	Tax incentives	(Moudud-Ul-Huq, Ahammad, & Naseem, 2013)

4. FINDINGS AND DISCUSSION

Based on the pairwise comparison performed using the questionnaire form (Appendix A), the feedback of ten SME experts are obtained; five Turkish and five Libyan. This chapter narrates the weighted and normalized comparison between the several criteria identified in the third chapter, and by applying the AHP method steps to ensure the consistency of the results.

4.1 Turkish Case Study Results

Five experts with experience in the Turkish SME domain were asked to indicate the importance of the criteria and sub-criteria in a pairwise comparison. As part of the AHP methodology, the consistency ratio is found acceptable for the resultant matrix, as shown in Table 4.1. Detailed steps are provided in Appendix B.

Table 4.1: Consistency ration check for Turkish experts' results

Main Criteria	
N	6
RI	1.24
λ_{max}	6.6179
CI	0.12358
CR	0.0997
CR Check	Less than 0.1

Company's Characteristics	
N	4
RI	0.9
λ_{max}	4.24
CI	0.08
CR	0.0889
CR Check	Less than 0.1

Operational Performance	
N	7
RI	1.32
λ_{max}	7.6641
CI	0.1107
CR	0.0839
CR Check	Less than 0.1

Innovation	
N	4
RI	0.9
λ_{max}	4.2618
CI	0.0873
CR	0.0970
CR Check	Less than 0.1

Management & HR	
N	6
RI	1.24
λ_{max}	6.6093
CI	0.1219
CR	0.0983
CR Check	Less than 0.1

Financial Performance	
N	5
RI	1.12
λ_{max}	5.117
CI	0.02925
CR	0.0261
CR Check	Less than 0.1

Governmental Agenda	
N	6
RI	1.24
λ_{max}	6.3691
CI	0.07382
CR	0.0595
CR Check	Less than 0.1

In comparison of the main criteria, as shown in Figure 4.1, the Turkish experts indicated that the most important criterion is innovation with 43.85%, which confirms the literature's findings of it being one of the most important criteria in determining the performance of SMEs (Stefanovic, Milosevic, & Miletic, 2009; Karadag, 2016; Hossain, 2015; Mbizi, Hove, Thondhlana, & Kakava, 2013). Moreover, the second most important criterion is shown as Management strategies and human resources (18.18%). This result reflects the importance of human resources for small and medium enterprises, due to the limited capability for employment and the need for key and skillfulmanpower in in order to compete in the market. Company's characteristics (14.18%), Operational performance (10.14%), Financial performance (9.15%), and governmental agenda (4.51%), follow respectively.

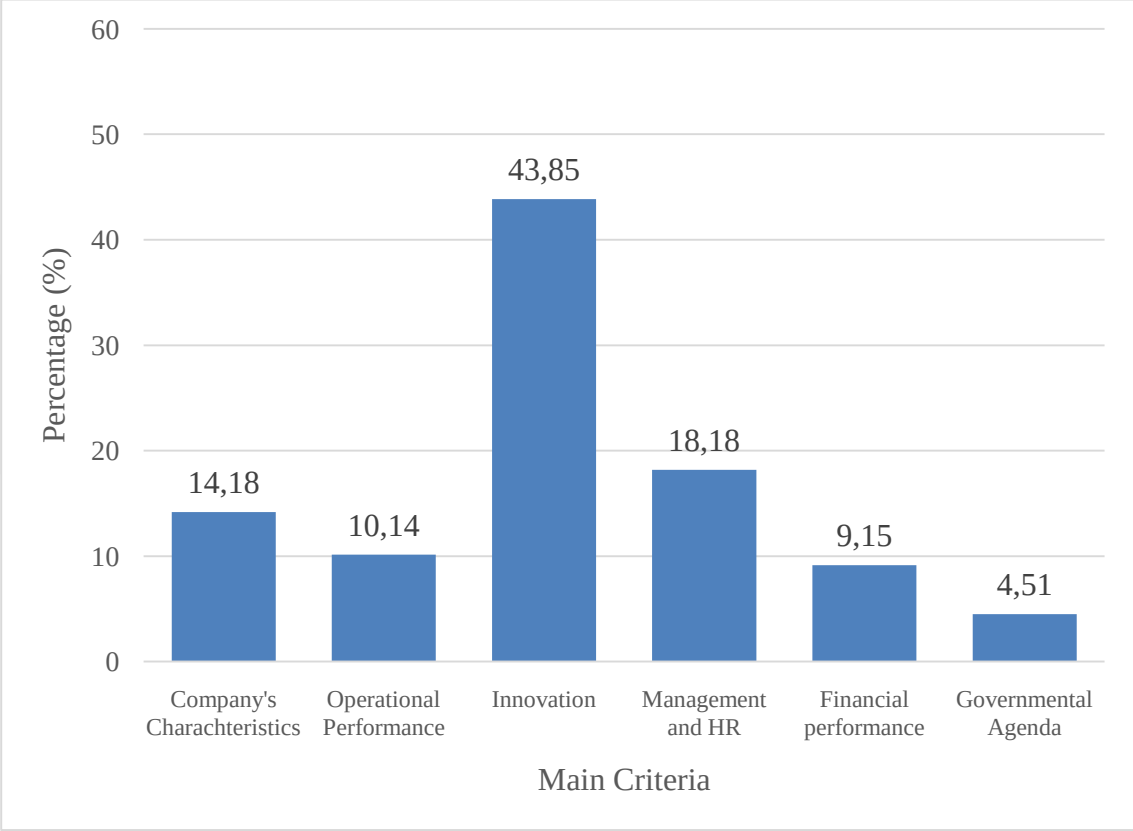

Figure 4.1: SMEs main criteria normalized weights for Turkey

Furthermore, under the main criterion company's characteristics, as shown in Figure 4.2, the Turkish experts have indicated that flexibility in facing risks as the most important sub-criterion with 48.93%, followed by number of employees (32.28%). The SME being flexible generally and in facing risks specifically is confirmed through the literature that the success of the SME is correlated to a high level of flexibility (Abu Zarim, 2013; Stefanovic, Milosevic, & Miletic, 2009). For the number of employees, being one of the key indicators used in the majority of the studies to indicate performance, justifies the findings of the study (Berisha & Pula, 2015; Stefanovic, Milosevic, & Miletic, 2009). These results are followed with 12.87% for ease of technological updates, which depends on the activity nature of the SME, and 5.92% for company's age, which requires questioning the representation of performance through such a criterion, especially that several SMEs did not follow the age rule.

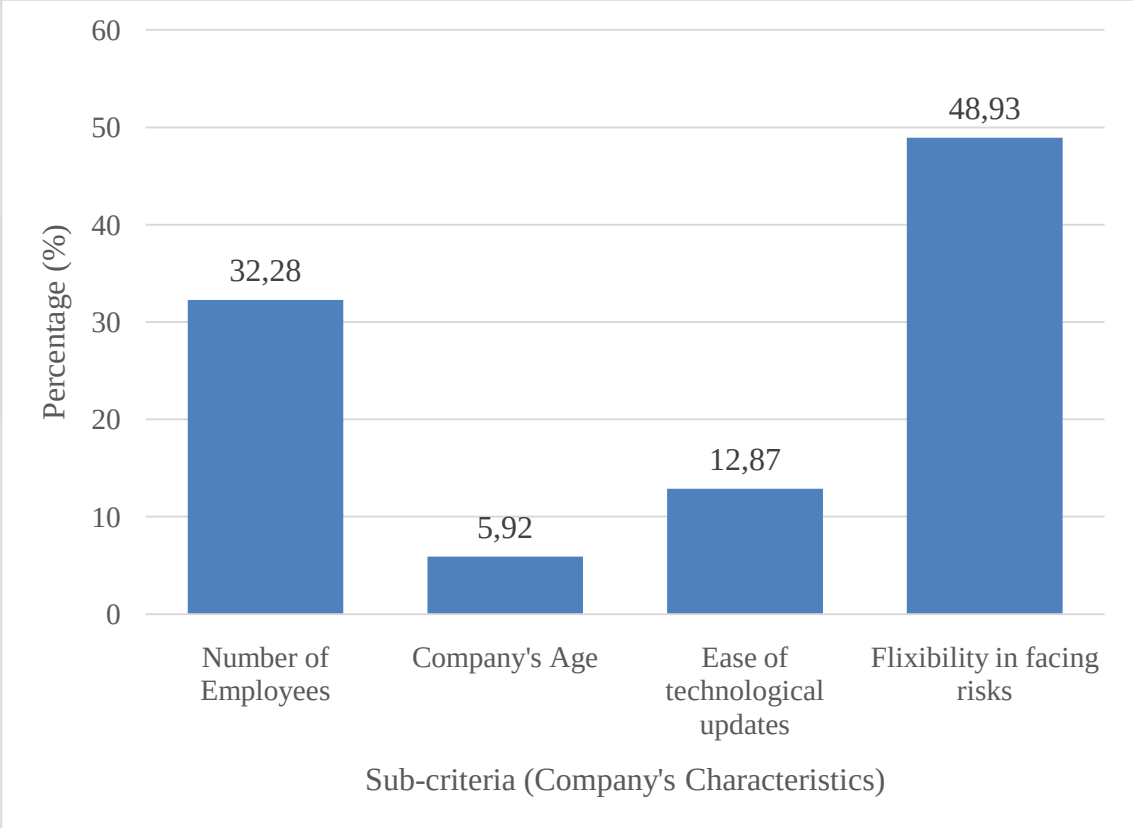

Figure 4.2: Normalized weights for company's characteristics criteria for Turkey

For the operational performance results, as shown in Figure 4.3, the customer satisfaction, and understanding customers and market conditions, have gained the top scoring with 28.34% and 23.91%, respectively. Such results confirm the importance of customer satisfaction as showed earlier by Wu (2009). Furthermore, Verbano & Venturini (2013) have showed the customer in relation with supply chain risks and operational risks, confirming that addressing this criterion is effective for SME development. Through the research of Gary, Saunders, & Goregaokar (2012), a strong correlation is shown between SME success and customer satisfaction. These two results are followed by the criterion sales growth with 17.96%, which justifies its inclusion in several studies that measured the success of SMEs (Arief, Thoyib, Sudiro, & Rohman, 2013; Mbizi, Hove, Thondhlana, & Kakava, 2013), as well as economic added value (12.65%), which is a key performance indicator in measuring SME impact on the economy(Stefanovic, Milosevic, & Miletic, 2009).

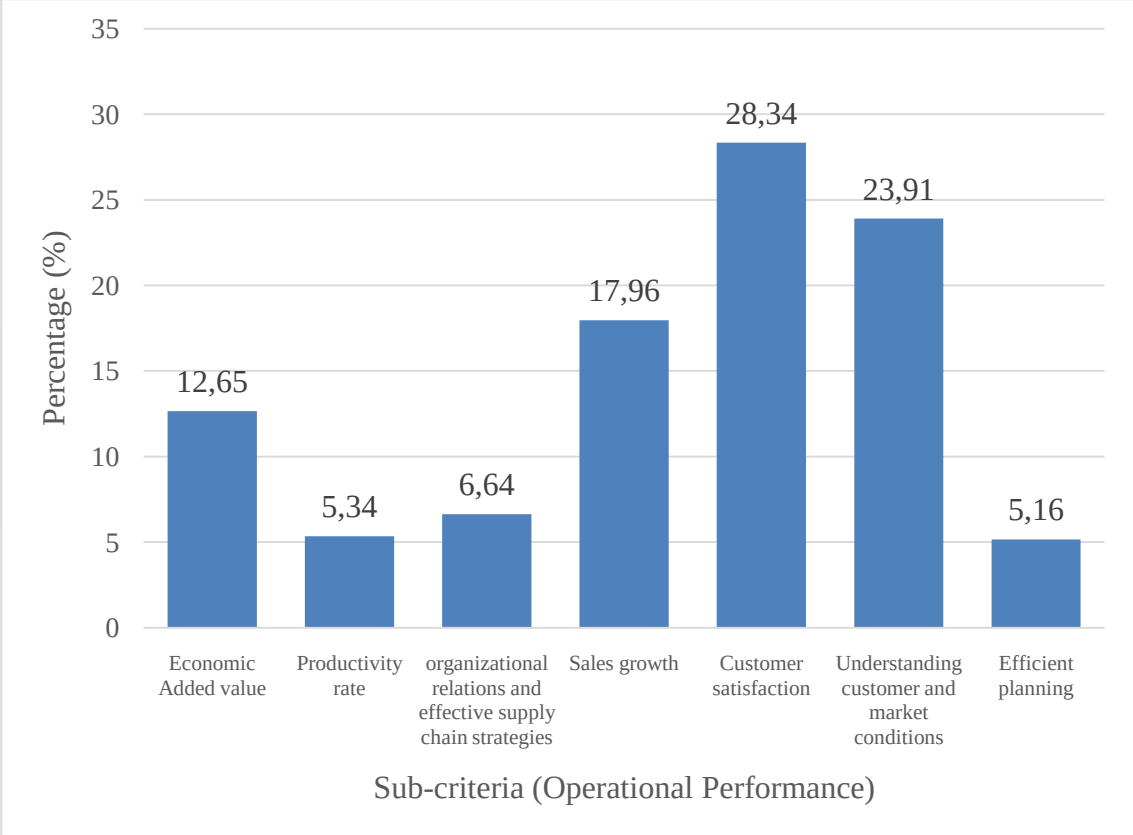

Figure 4.3: Normalized weights for operational performance criteria for Turkey

Innovation was identified earlier by the Turkish experts as the most important criterion for SME success, Figure 4.4 shows that focusing on R&D is the most important sub-criterion for this category with 41.76%. Along with technological updates (26.06), the R&D focus is considered a key success factor for innovation in SMEs and the overall success of the company, as confirmed by Mbizi, Hove, Thondhlana, & Kakava (2013) and presented by Verbano & Venturini (2013) as a part of the Engineering risks in SMEs. The Turkish experts have also given a close importance for efficient identification of business opportunities with 23.42%, as part of the innovation efficiency of SMEs and contributing to SMEs overall success.The least important criterion was given for patents (8.76%), which is part of the innovation criteria but could be seen as less important for Turkish SMEs according to the Turkish experts.

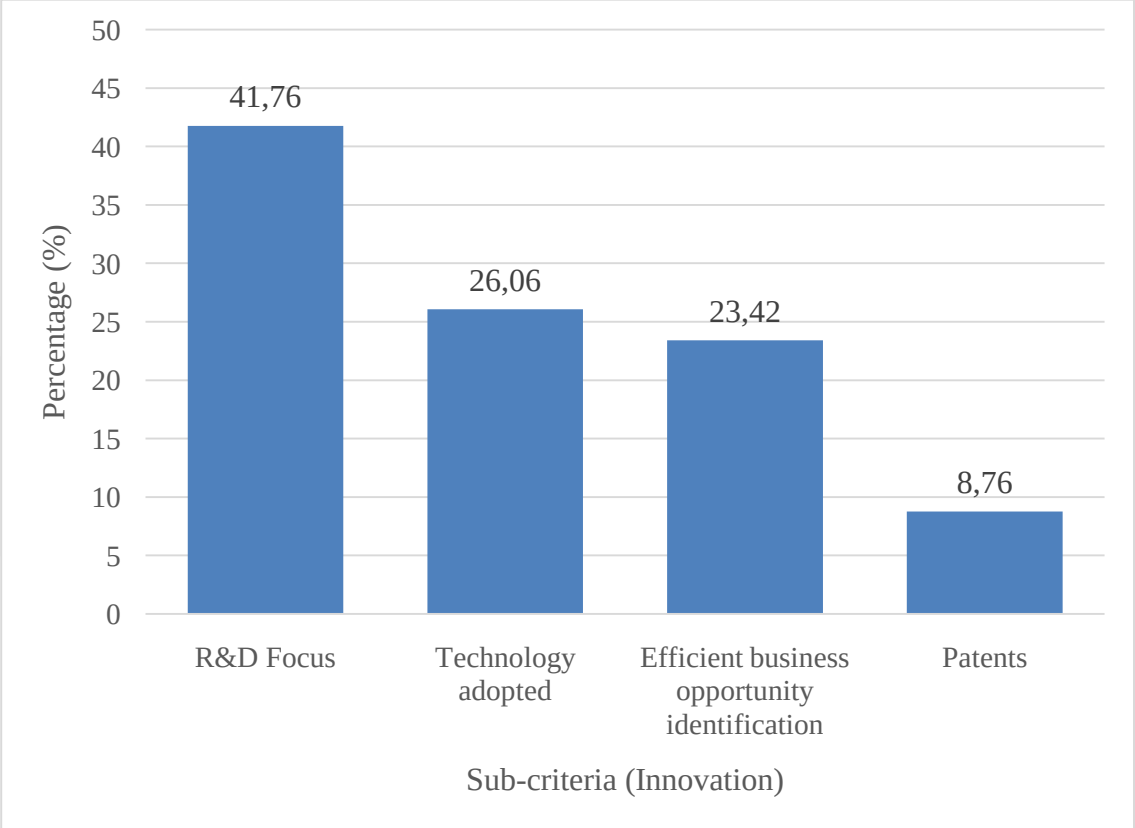

Figure 4.4: Normalized weights for innovation criteria for Turkey

In the criterion of management and human resources, Figure 4.5, the experts indicated that the owner's qualification is the most important sub-criterion with 30.52%. Such as result confirms the focus of the literature on this indicator, as very influential for SME's success. Anton, et al. (2015) confirmed the impact of owner's qualification on the success of SMEs through the study of 590 companies in Indonesia, while Moudud-Ul-Huq, Ahammad, & Naseem (2013) presented the lack of this criterion as an issue facing the growth of SMEs. Moreover, the manager's strategies, empowering marketing strategies and accessible workforce follow the owner's qualification with 19.08%, 17.29% and 16.55%, respectively. These three criteria show a similar influence on the SME's success and growth, which is confirmed by the same studies. Knowledge competence has scored 11.06%, which is a significant score. However, gender participation came in the last place with 5.50%, which contradicts the suggestions of Moudud-Ul-Huq, Ahammad, & Naseem (2013) of being a challenge facing SMEs but can be attributed to the strong gender participation in the economic success by the Turkish women.

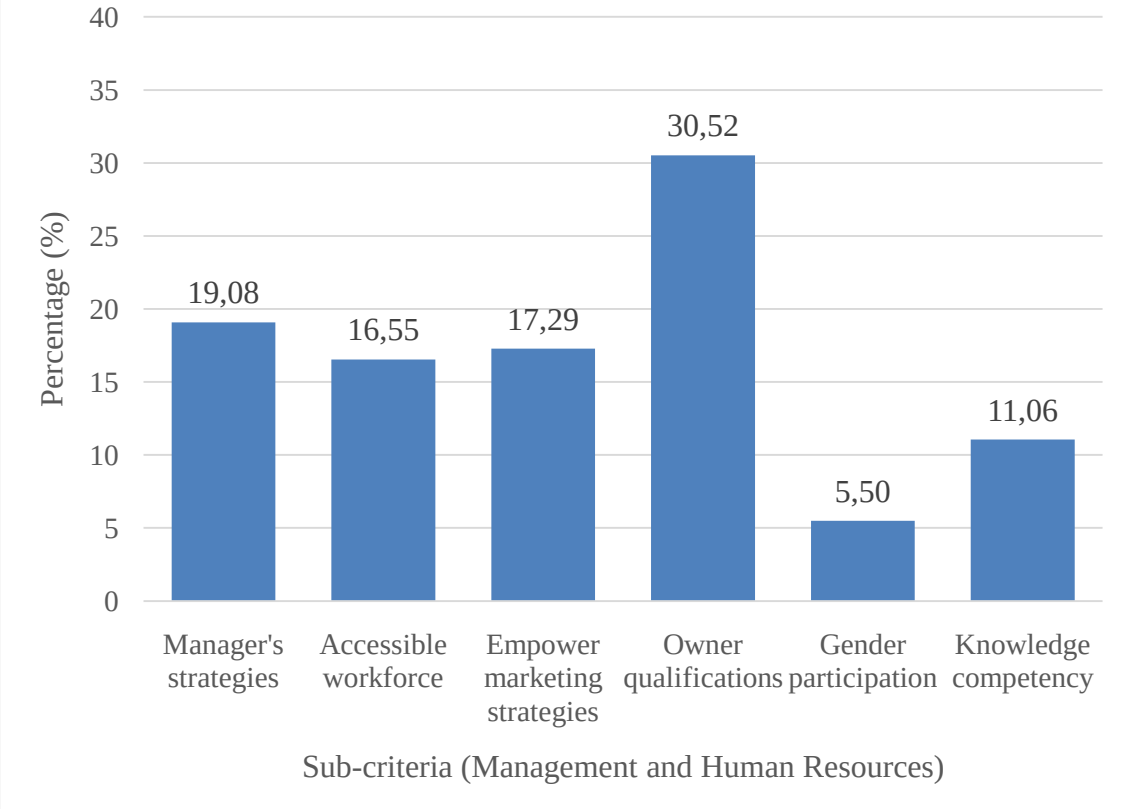

Figure 4.5: Normalized weights for management and HR criteria for Turkey

The financial performance has been considered through several studies of SMEs' performance worldwide. The results for the Turkish case study show that profitability is the strongest indicator for the success in financial performance with 31.66%, as shown in Figure 4.6, which also can be understood as a dimension that shall be focused on by the SMEs in Turkey. Profitability is followed by the purchasing power of the company (19.83%) and the accessibility of the company to cashflow and liquidity (19.32%). Verbano & Venturini (2013) had presented this aspect as one of the risks that hinder SMEs financially, while Stefanovic, Milosevic, & Miletic (2009) said that it stops the growth of operations to meet the market demands by SMEs. The results are followed closely by gross earnings (15.57%) and Efficient ROI in comparison with competition (13.62%), which are both identified in the literature as financial indicators.

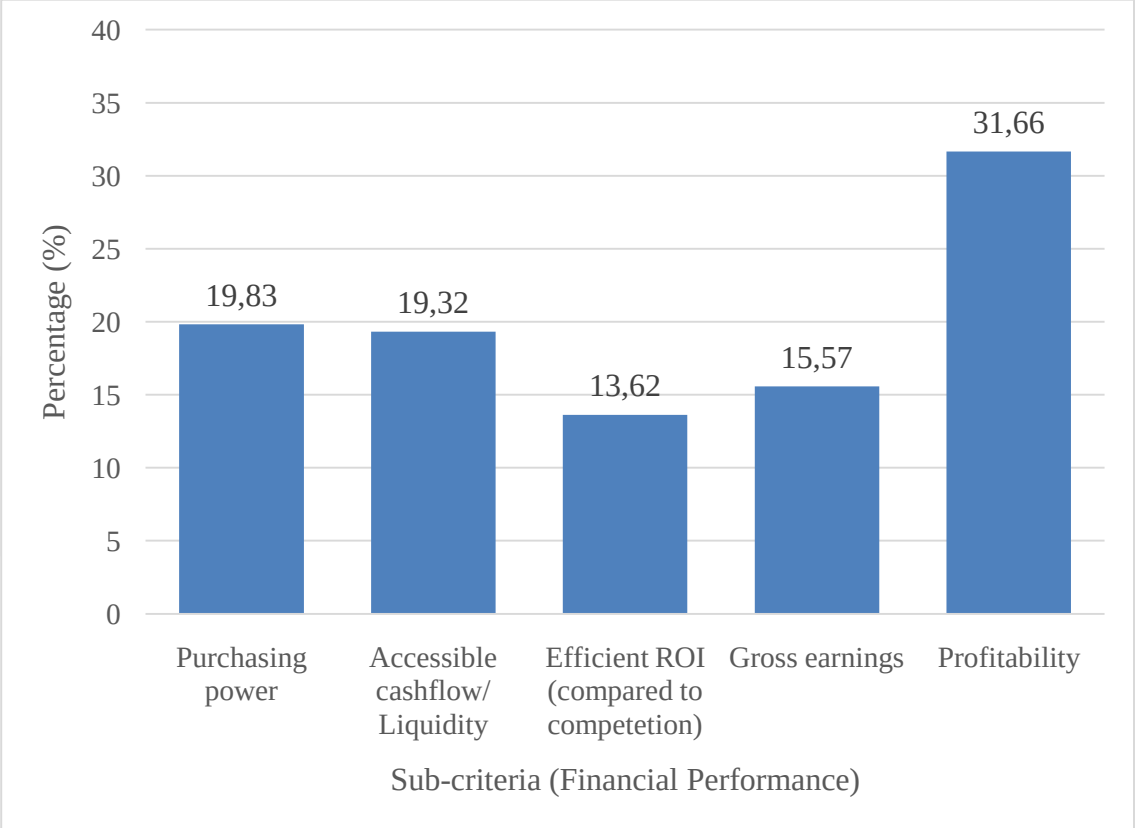

Figure 4.6: Normalized weights for financial performance criteria for Turkey

For governmental agenda in the Turkish case study, as shown in Figure 4.7, the experts similarly rated the impact of laws and regulations (32.74%) and the accessibility to financing (31.17%), as important criteria for the government contribution to the success of SMEs. Stefanovic, Milosevic, & Miletic (2009) has presented unsuitable regulations as one of the top issues facing the growth and success of SMEs in European countries. Nevertheless, Ng & Kee (2012) have presented the Malaysian case study, where encouraging and protecting regulations, in addition to a financing strategy, have contributed into the growth of the SMEs and the country's GDP. Other criteria have followed these two main criteria in the findings of the Turkish case study, where suitability of the interest rate, suitable infrastructure, promoting SME's in higher education, and tax incentives have scored 10.44%, 9.69%, 9.14% and 6.82%, respectively.

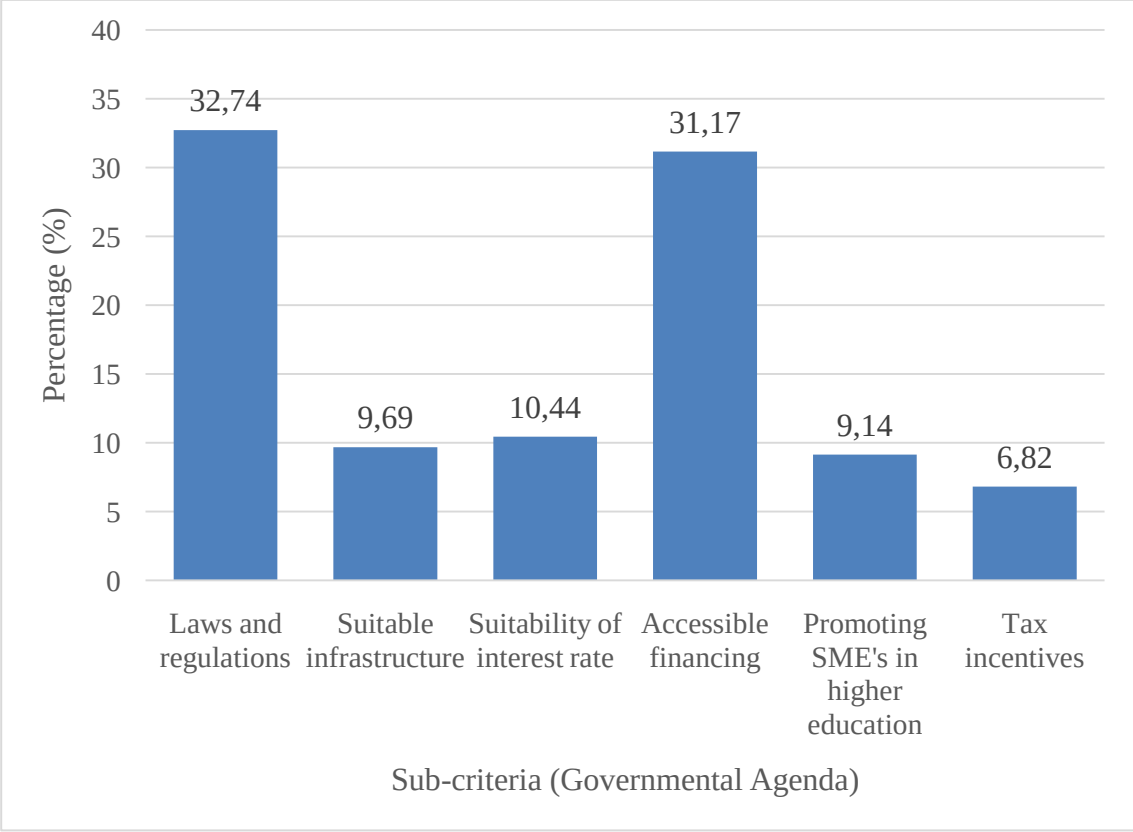

Figure 4.7: Normalized weights for governmental agenda criteria for Turkey

4.2 Libyan Case Study Results

Five experts with experience in the Libyan SME domain were asked to indicate the importance of the criteria and sub-criteria in a pairwise comparison. As part of the AHP methodology, the consistency ratio is found acceptable for the resultant matrix, as shown in Table 4.2. Detailed steps for calculation are shown in Appendix C.

Table 4.2: Consistency ration check for Libyan experts' results

Main Criteria	
N	6
RI	1.24
λ_{max}	6.3472
CI	0.06944
CR	0.056
CR Check	Less than 0.1

Company's Characteristics	
N	4
RI	0.9
λ_{max}	4.1854
CI	0.0618
CR	0.0687
CR Check	Less than 0.1

Operational Performance	
N	7
RI	1.32
λ_{max}	7.5552
CI	0.0925
CR	0.0701
CR Check	Less than 0.1

Innovation	
N	4
RI	0.9
λ_{max}	4.2491
CI	0.0830
CR	0.0923
CR Check	Less than 0.1

Management & HR	
N	6
RI	1.24
λ_{max}	6.4994
CI	0.0999
CR	0.0805
CR Check	Less than 0.1

Financial Performance	
N	5
RI	1.12
λ_{max}	5.4222
CI	0.1056
CR	0.0942
CR Check	Less than 0.1

Governmental Agenda	
N	6
RI	1.24
λ_{max}	6.5933
CI	0.11866
CR	0.0957
CR Check	Less than 0.1

The Libyan SME experts have shown that management and human resources is the most important main criteria for SME success with 31.21%, as shown in Figure 4.8. The literature confirms that the management strategies and the hired talent are very influential on the success of SMEs (Gary, Saunders, & Goregaokar, 2012), which confirms the view point of the experts. Moreover, the second place in importance was given to financial performance with 29.76%, which its indicators are used widely to measure the growth and performance of SMEs in the literature (Maduekwe & Kamala, 2016; Wu, 2009). These two criteria are followed by company's characteristics, operational performance, governmental agenda and innovation, with 13.88%, 10.55%, 9.92% and 4.76%, respectively.

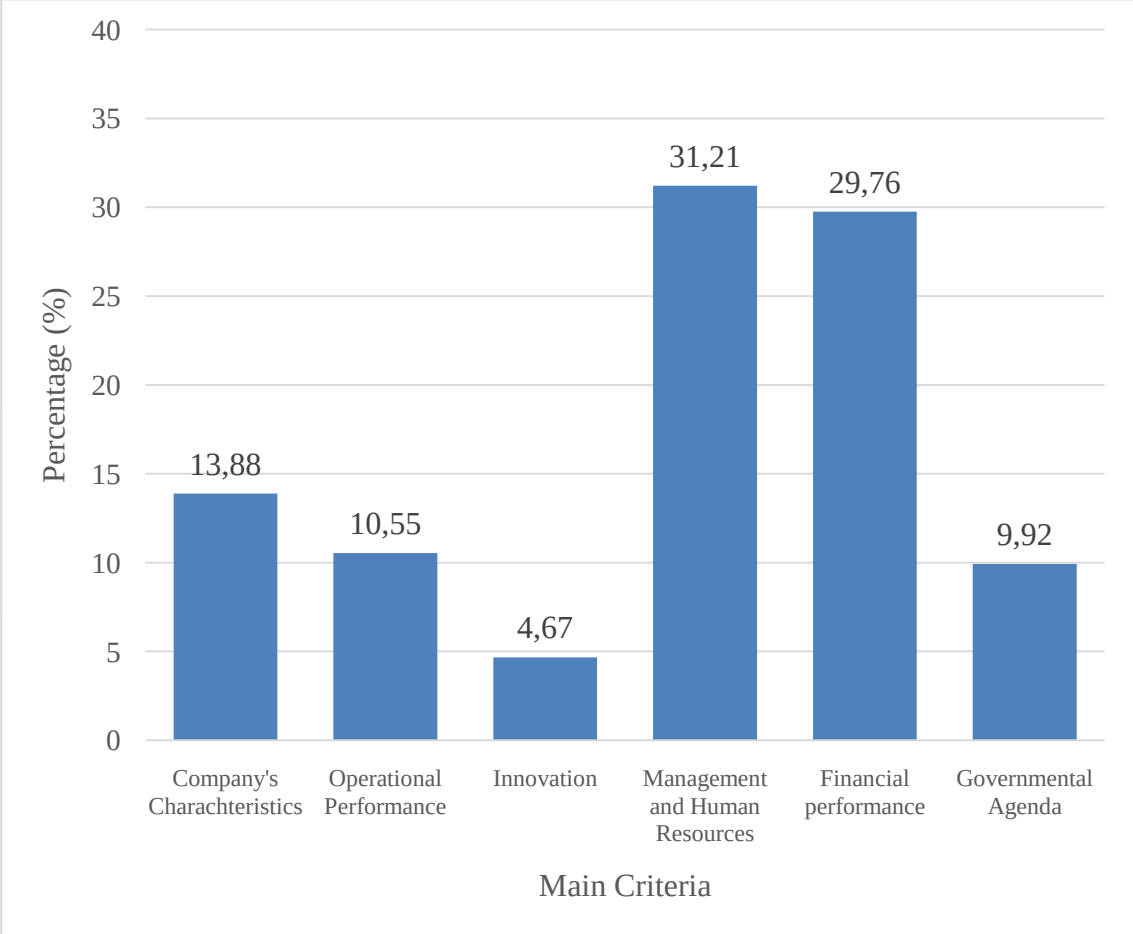

Figure 4.8: SMEs main criteria normalized weights for Libya

Furthermore, the Libyan experts have evaluated the sub-criteria under the company's characteristics main criterion, as shown in Figure 4.9. The highest importance was given to flexibility in facing risks with 33.04%. As shown in the literature, the size nature of SMEs makes them subject to risk with a higher severity (Verbano & Venturini, 2013). Therefore, the choice of flexibility in facing risks for the Libyan case study appears to be normal. The second most important sub-criterion in this category is number of employees. As interpreted from the results, the Libyan SME experts believe that increasing the number of employees would increase the success chances for SMEs in Libya. Nonetheless, company's age and ease of technological update have scored 21.89% and 15.50%, respectively.

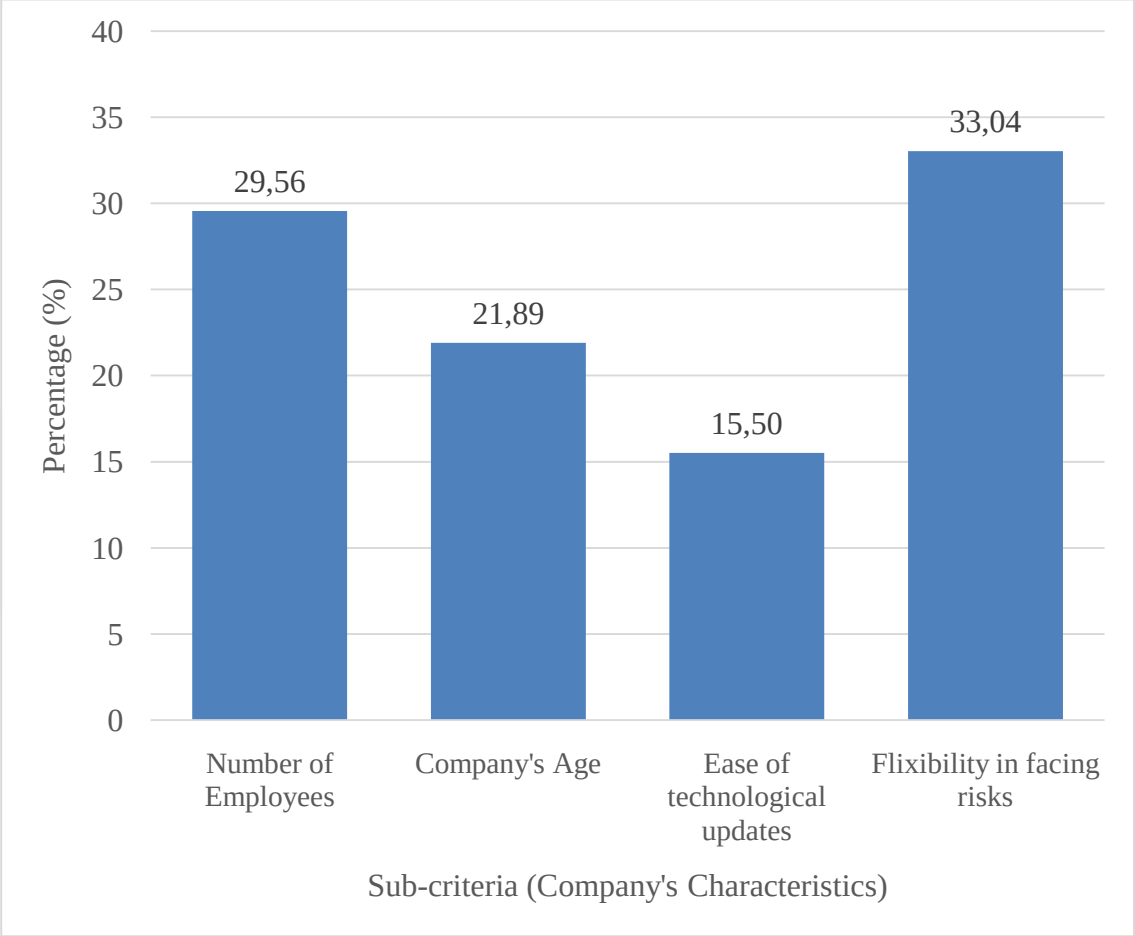

Figure 4.9: Normalized weights for Company's characteristics criteria for Libya

Under the operational performance criterion, the Libyan SME experts have ranked understanding customer and market conditions as the most important sub-criterion with 37.34%, as shown in Figure 4.10. This result was followed by customer satisfaction with a score of 18.48%. It was discussed earlier that Gary, Saunders, & Goregaokar (2012) Verbano & Venturini (2013) and Wu (2009) have stressed the importance of understanding the customer needs and ensuring customer satisfaction on the success of SMEs, generally. The results come to confirm that this case applies to the Libyan SMEs. Efficient planning, economic added value, sales growth, productivity rate, and organizational relations and effective supply chain strategies have scored 14.32%, 9.45%, 7.98%, 6.94% and 5.49%, respectively.

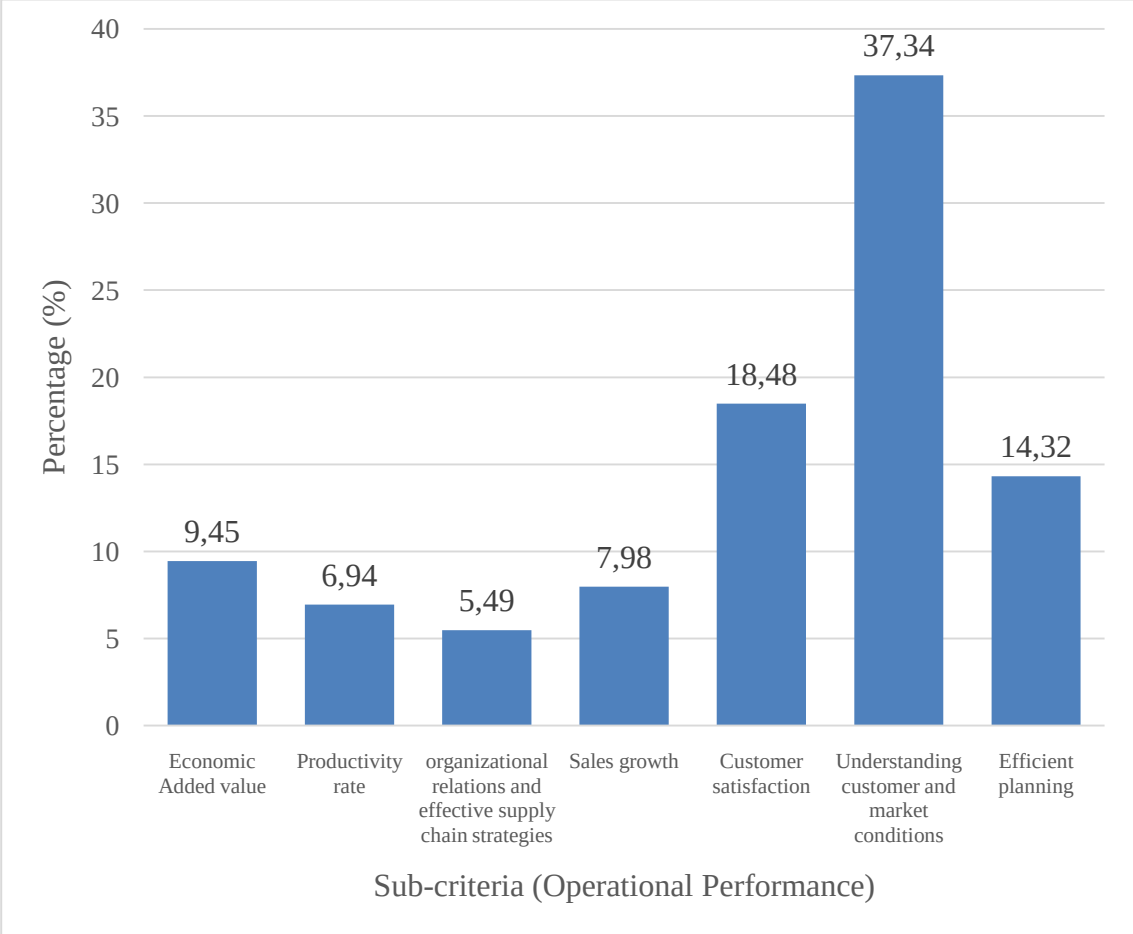

Figure 4.10: Normalized weights for operational performance criteria for Libya

Under the innovation main criterion, the Libyan SME experts have reached a near consensus that patents is the sub-criterion that would drive the innovation in the Libyan SMEs. The results show a score for patents of 67.93%, as illustrated in Figure 4.11. In the contrary to the literature focus on R&D as the most important criterion for innovation (Mbizi, Hove, Thondhlana, & Kakava, 2013; Verbano & Venturini, 2013), the Libyan case study reflect a lack of awareness of this category and its impact on SMEs' success. These results contradict the Turkish case study results, which showed that a focus on R&D is the main success factor for innovation in SMEs. Furthermore, efficient business opportunity identification, technology adopted, and R&D focus have scored 16.40%, 10.37% and 5.30%, respectively.

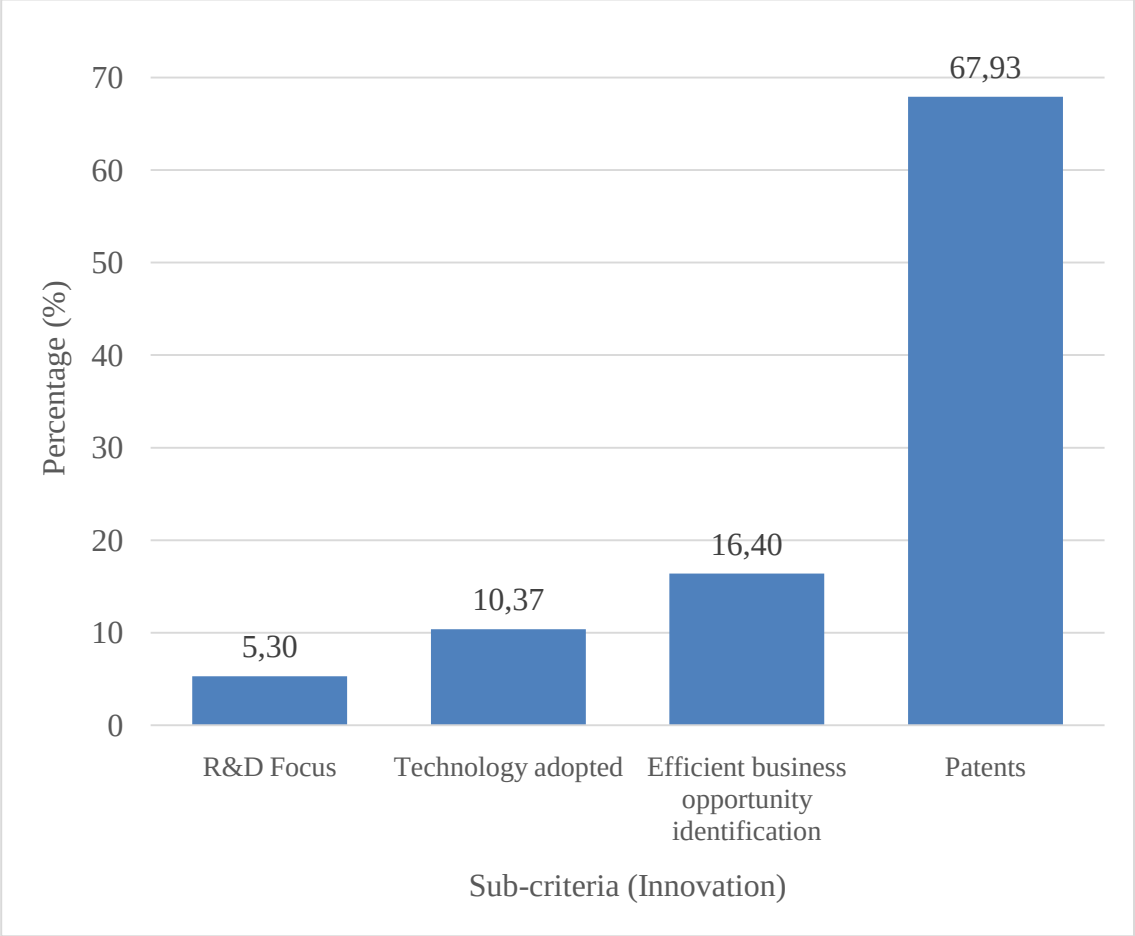

Figure 4.11: Normalized weights for innovation criteria for Libya

Moreover, the results under the management and human resources category shows knowledge competency and manager's strategy as the most influential sub-criteria with 33.13% and 29.03%, respectively, as shown in Figure 4.12. These results confirm the recommendations of the literature, where Abu Zarim (2013) and Mbizi, Hove, Thondhlana, & Kakava (2013) have stressed that the personality and management strategies of the manager, as well as the competencies that are included in the company would highly affect the SME competency in the market.These criteria were followed in importance with accessible workforce (11.53%), owner qualifications (11.71%), empowering marketing strategies (8.56%), and gender participation (6.03%).

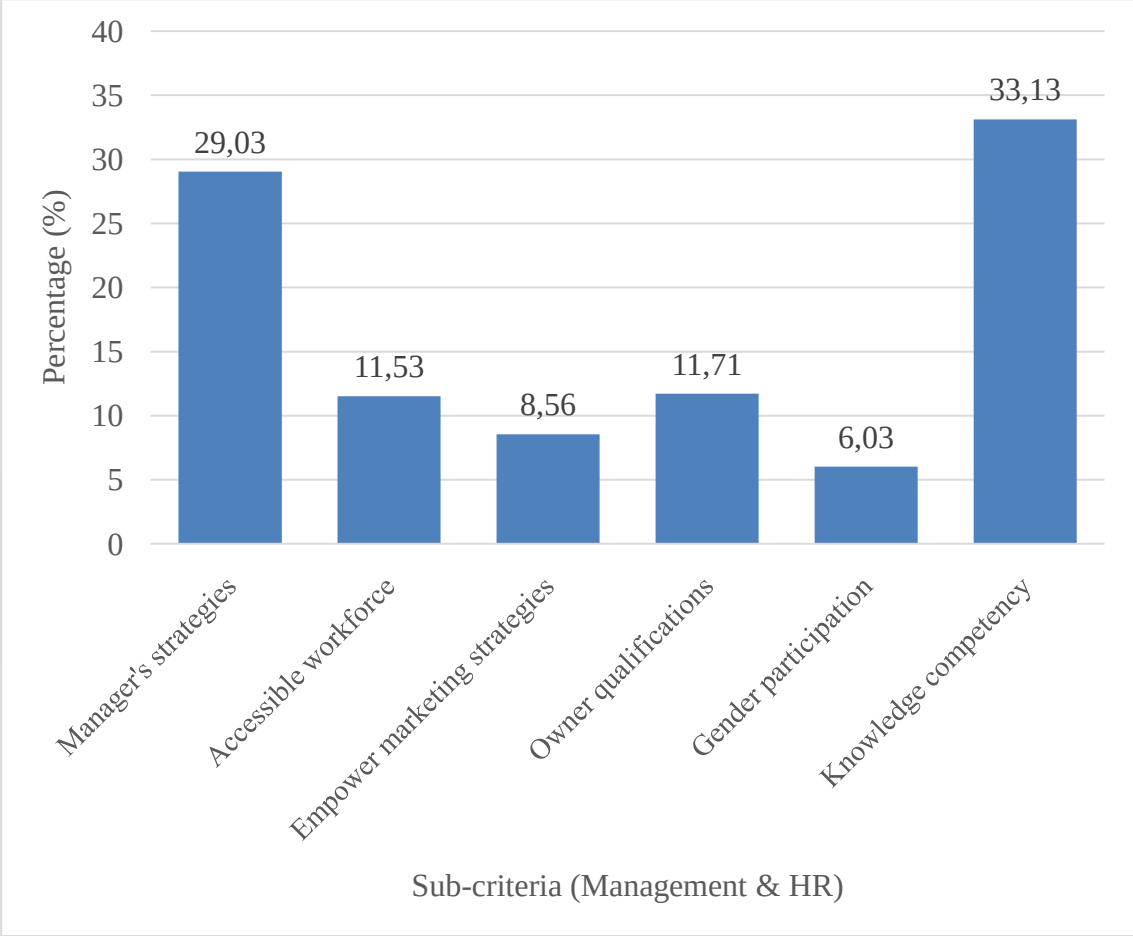

Figure 4.12: Normalized weights for management and HR criteria for Libya

Financial performance is considered an important main criterion by the Libyan SME experts, as shown earlier in Figure 4.8. On indicating the most effective sub-criterion under this category for the Libyan SMEs, purchasing power have been rated with 44.70%, which indicates an issue in the country with this factor. It is known that Libya has been passing through a tough political and economic period following the revolution in 2012, which could be the source of concern by the experts. Furthermore, accessible cashflow and liquidity is ranked as the second most important sub-criterion under the financial performance, which confirms the study of Verbano & Venturini (2013) on risks of SMEs, as well as the Turkish case study results. Profitability, efficient ROI in comparison with competition and gross earnings have scored 14.35%, 10.29% and 7.81%, respectively, as shown in Figure 4.13.

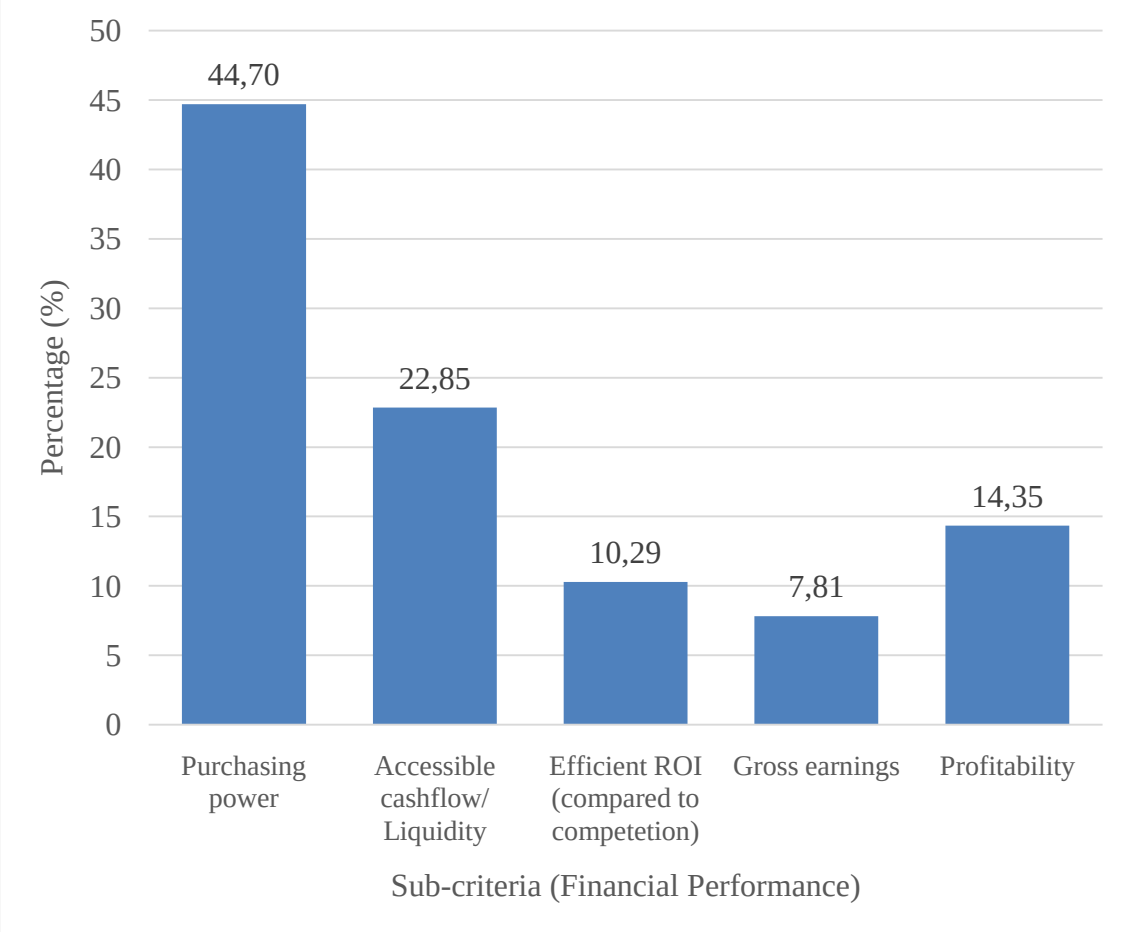

Figure 4.13: Normalized weights for financial performance criteria for Libya

Finally, the Libyan SME experts have evaluated six sub-criteria under the governmental agenda criterion, as shown in Figure 4.14. The most important criteria were found as tax incentives, and laws and regulations with 27.26% and 23.75%, respectively. Tax incentive have been recommended in Ng & Kee (2012) as a strategy that motivates growth in SMEs through increasing their profitability margin. Similar to the Turkish case study and as discussed from the literature, laws and regulations are key drivers to encourage SMEs and increase their support. Furthermore, suitability of interest rate, promoting SMEs in higher education, accessible financing and suitable infrastructure have scored 15.88%, 14.21%, 12.26% and 6.65%, respectively.

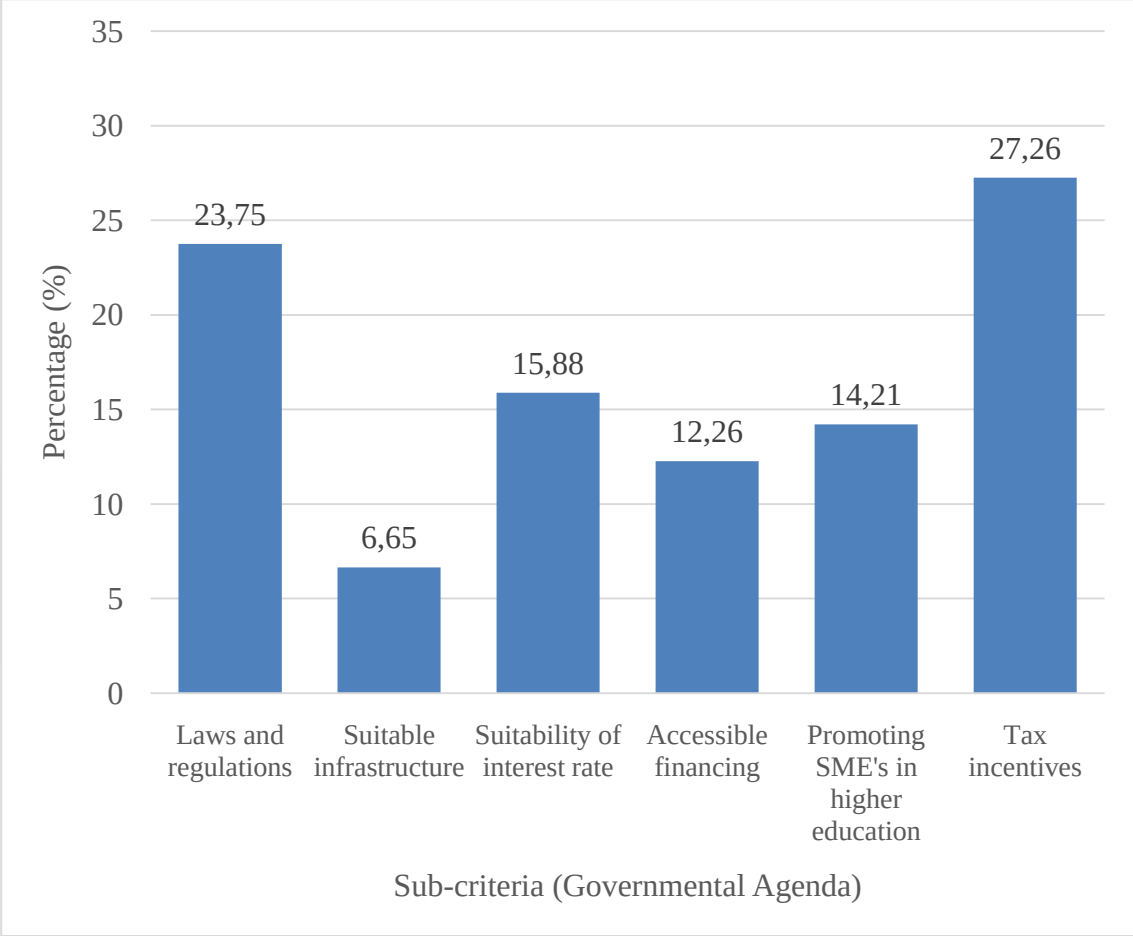

Figure 4.14: Normalized weights for governmental agenda criteria for Libya

5. CONCLUSIONS

This chapter compares the results of the two case studies in terms of importance of different criteria, based on the expert's feedback, and the differences in the results. Moreover, the researcher provides recommendations that highlight the most important strategies to be followed for SMEs in Turkey and Libya.

5.1Case Studies Comparison

In order to be able to compare the results of the two case studies in an effective manner, Figure 5.1 is provided, which shows the scoring of each of the case studies on the main criteria and subsequent sub-criteria. Based on the main criteria, the Turkish SME experts have given a highest importance to innovation for SME strategy in Turkey, while the Libyan experts have given the highest importance to management and human resources, and financial performance.

Under the company's characteristics the highest importance for Turkey is assigned to flexibility in facing risks then number of employees in the company, which are similar results to the Libyan case study. Furthermore, the Turkish case study have shown that customer satisfaction, followed by understanding customer and market conditions, are the most important sub-criteria under the operational performance. Nonetheless, the highest priority was assigned to understanding customer and market conditions for the Libyan case study followed by customer satisfaction. The results of both case studies are close to each other in this category.

The biggest difference is observed in the innovation main criterion, where the Turkish experts indicated R&D focus as the most important sub-criterion and in line with the literature recommendations, while the Libyan experts believe that patents are the most important for SME development in Libya. These results reflect the low awareness level of the Libyan SME experts in the innovation domain, which would require further education and research to empower it. For the management and human resources strategies, the Turkish case study showed owner's qualification as the most important

criterion, and distributed the importance closely to manager's strategies, accessible workforce, and empowering marketing strategies. Nevertheless, the Libyan case study have indicated that the manager's strategies are the most influential factor, which is confirmed by the literature.

Moreover, under the financial performance main criterion, the Turkish experts gave the highest importance to profitability, which is key for SMEs to grow especially in their first years of operations. However, the Libyan experts have chosen the purchasing power as the most important sub-criterion in this domain reflecting on the political and economic issues suffered currently in Libya. The last main criterion, governmental agenda, has shown that the Turkish SMEs are in need for laws and regulations that support the survival and growth of SMEs, similar to the Libyan SME's. Nevertheless, the Libyan experts believe that more tax incentives shall be applied to SMEs in Libya in order to simulate better growth and performance.

5.2 Recommendations

Following the study of the different factors impacting the SMEs' growth and performance in Turkey and Libya, the researcher provides recommendations for both case studies. For the Turkish case study, it is evident that the main focus shall be drawn to innovation in developing SMEs in the country. As discussed earlier in the literature, encouraging innovation could be one of the key strategies that was proven successful in several countries in Asia, Europe and America. A special attention shall be paid to risk management skills, tools and strategies for the Turkish and Libyan SMEs. As they are often founded on an unstable financial foundation, risk management could be vital for survival of the SMEs. The government could encourage SMEs to engage in workshops, seminars and conferences, where such skills are acquired.

Furthermore, SMEs in Turkey and Libya are required to focus on customer satisfaction in order to increase the retention rate, as well as acquire better skills in anticipating the customers' needs and the market conditions. The latter skill is mainly acquired through experience. Therefore, an advisory program, in addition to a quarter and annual reports that highlight the upcoming opportunities and challenges in the domestic and

international markets, can serve as beneficial tools to mitigate any issues related to these challenges.

There shall be a focus on R&D in SME development and competitiveness. As confirmed by the literature and the Turkish case study, this factor is highly influential in driving the growth and the competitive edge of the SMEs. However, in a developing country like Libya, the focus shall not be given to patents, as indicated by the Libyan experts. It is commonly known that patents are a highly innovative tools and indicators that are achieved through an efficient R&D. Furthermore, higher education, as well as various training programs can empower the qualifications and competency of the SME owners and managers. In both case studies, this factor has shown its influence on the SMEs' growth and development.

The purchasing power issue shall be solved in the Libyan market, through solving the causing political and economic issues. Moreover, the results of the financial performance criterion for the Turkish case study shows the necessity to orient the SMEs towards increasing profitability and achieving better financial records. The government role in supporting SMEs is apparent in both case studies. Therefore, laws and regulations have to adapt in order to provide a better environment for the SMEs' survival and growth. Successful models around the world, such as Malaysia, can be used to enhance the laws that support developing SMEs for a better economy. Furthemore, financing facilities and tax incentives can serve as good simulators for SMEs in both case studies.

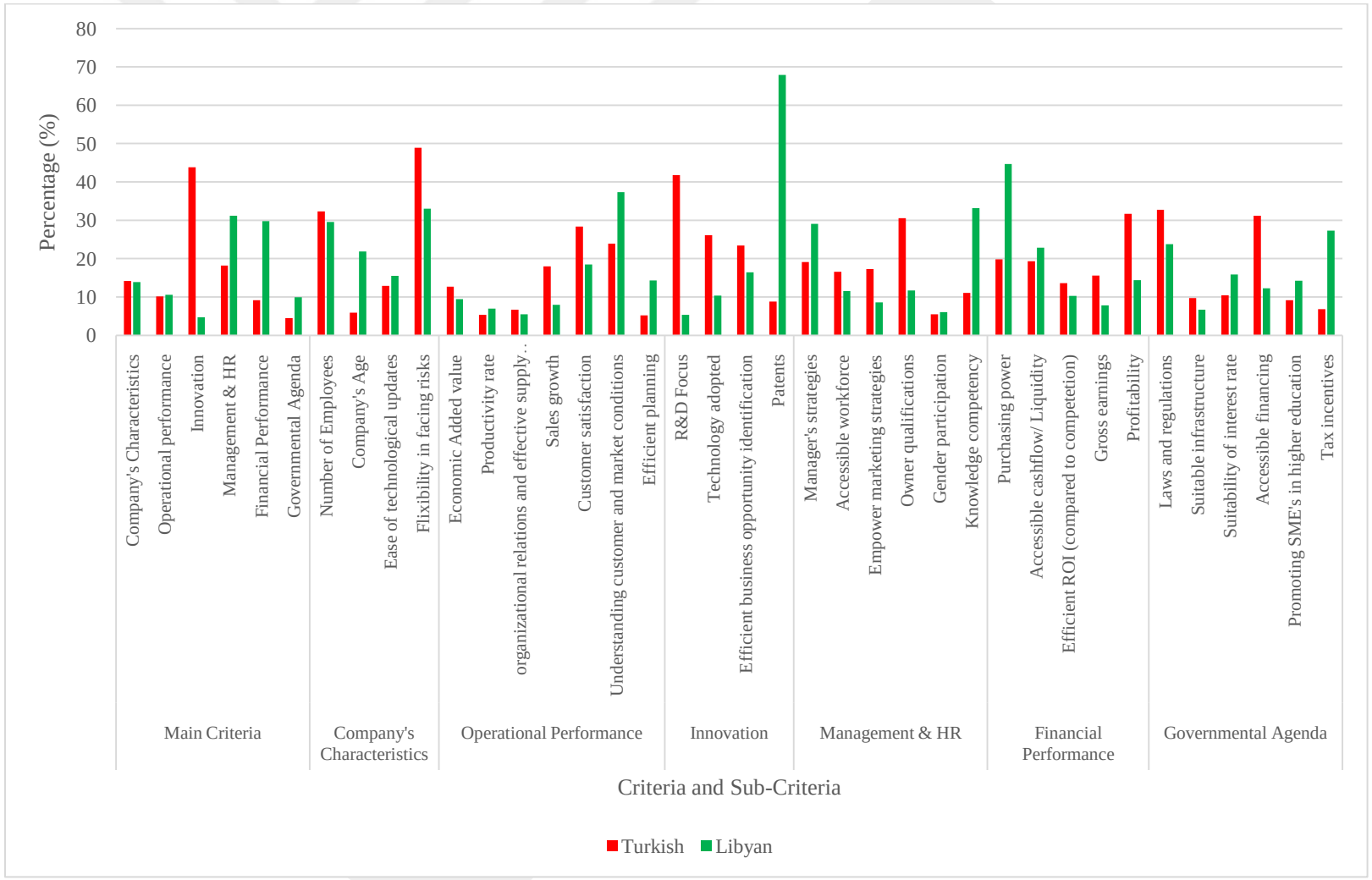

Figure5.1: Weights' comparison between the Turkish and Libyan results

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APPENDIX A: QUESTIONNAIRE FORM

Study Title

STRATEGY DETERMINATION OF SMALL AND MEDIUM ENTERPRISES A COMPARISON OF TURKISH AND LIBYAN ENTERPRISES

Dear Sir/ Madam,

As part of our research that aims to determine the most efficient strategy for SME's in Turkey and Libya, we have adopted an AHP method by developing a set of criteria and sub-criteria for pairwise comparison. Kindly provide us with your assessment on the coming categories to indicate the importance of each criteria in comparison with its counterpart. Moreover, providing us with your personal information below adds credibility to our study. Therefore, please indicate the requested professional and personal information below.

Best Regards,

Walid Elhadi

Expert's Personal and Professional Information

	Answer
Name	
Organization	
Position Title	
Years of Experience in SMEs	
Publications	
Please provide us with any additional professional information	

MAIN CRITERIA COMPARISON

Criteria	More important than								=	Less important than								Criteria
Company's Characteristics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Operational Performance
Operational Performance	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Innovation
Innovation	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Management and Human Resources
Management and Human Resources	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Financial Performance
Financial Performance	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Governmental Agenda
Company's Characteristics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Innovation
Operational Performance	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Management and Human Resources
Innovation	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Financial Performance
Management and Human Resources	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Governmental Agenda
Company's Characteristics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Management and Human Resources
Operational Performance	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Financial Performance
Innovation	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Governmental Agenda
Company's Characteristics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Financial Performance
Operational Performance	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Governmental Agenda
Company's Characteristics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Governmental Agenda

SUB-CRITERIA COMPARISON (Company's Characteristics)

Criteria	More important than								=	Less important than								Criteria
Number of Employees	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Company's Age
Company's Age	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Ease of technological updates
Ease of technological updates	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Flexibility in facing risks
Flexibility in facing risks	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Number of Employees
Number of Employees	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Ease of technological updates
Company's Age	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Flexibility in facing risks

SUB-CRITERIA COMPARISON (Operational Performance)

Criteria	More important than								=	Less important than								Criteria
Economic added value	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Productivity rate
Productivity rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Organizational relations and effective supply chain
Organizational relations and effective supply chain	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sales growth
Sales growth	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Customer Satisfaction
Customer Satisfaction	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Understanding customer and market conditions
Understanding customer and market conditions	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient planning
Economic added value	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Organizational relations and effective supply chain
Productivity rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sales growth
Organizational relations and effective supply chain	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Customer Satisfaction
Sales growth	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Understanding customer and market conditions
Customer Satisfaction	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient planning
Economic added value	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sales growth
Productivity rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Customer Satisfaction
Organizational relations and effective supply chain	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Understanding customer and market conditions
Sales growth	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient planning
Economic added value	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Customer Satisfaction
Productivity rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Understanding customer and market conditions
Organizational relations and effective supply chain	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient planning
Economic added value	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Understanding customer and market conditions
Productivity rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient planning
Economic added value	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient planning

SUB-CRITERIA COMPARISON (Innovation)

Criteria	More important than								=	Less important than								Criteria
R & D Focus	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Technology adopted
Technology adopted	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient business opportunity identification
Efficient business opportunity identification	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Patents
R & D Focus	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient business opportunity identification
Technology adopted	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Patents
R & D Focus	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Patents

SUB-CRITERIA COMPARISON (Management & Human Resources)

Criteria	More important than								=	Less important than								Criteria
Manager's Strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Accessible workforce
Accessible workforce	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Empower marketing strategies
Empower marketing strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Owner's Qualifications
Owner's Qualifications	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Gender Participation
Gender Participation	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Knowledge competency
Manager's Strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Empower marketing strategies
Accessible workforce	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Owner's Qualifications
Empower marketing strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Gender Participation
Owner's Qualifications	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Knowledge competency
Manager's Strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Owner's Qualifications
Accessible workforce	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Gender Participation
Empower marketing strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Knowledge competency
Manager's Strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Gender Participation
Accessible workforce	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Knowledge competency
Manager's Strategies	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Knowledge competency

SUB-CRITERIA COMPARISON (Financial Performance)

Criteria	More important than								=	Less important than								Criteria
Purchasing Power	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Accessible cashflow/ liquidity
Accessible cashflow/ liquidity	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient ROI (Compared to competition)
Efficient ROI (Compared to competition)	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Gross earnings
Gross earnings	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Profitability
Purchasing Power	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efficient ROI (Compared to competition)
Accessible cashflow/ liquidity	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Gross earnings
Efficient ROI (Compared to competition)	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Profitability
Purchasing Power	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Gross earnings
Accessible cashflow/ liquidity	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Profitability
Purchasing Power	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Profitability

SUB-CRITERIA COMPARISON (Governmental Agenda)

Criteria	More important than								=	Less important than								Criteria
Laws and regulations	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Suitable infrastructure
Suitable infrastructure	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Suitability of interest rate
Suitability of interest rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Accessible financing
Accessible financing	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Promoting SME's in higher education
Promoting SME's in higher education	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Tax incentives
Laws and regulations	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Suitability of interest rate
Suitable infrastructure	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Accessible financing
Suitability of interest rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Promoting SME's in higher education
Accessible financing	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Tax incentives
Laws and regulations	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Accessible financing
Suitable infrastructure	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Promoting SME's in higher education
Suitability of interest rate	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Tax incentives
Laws and regulations	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Promoting SME's in higher education
Suitable infrastructure	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Tax incentives
Laws and regulations	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Tax incentives

APPENDIX B: CALCULATIONS FOR TURKEY

Main Criteria

Expert A

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	3	0,2	2	3	4
Operational Performance	0,33333333	1	0,5	0,2	2	5
Innovation	5	2	1	5	4	6
Management and Human Resources	0,5	5	0,2	1	6	5
Financial performance	0,33333333	0,5	0,25	0,16666667	1	0,33333333
Governmental Agenda	0,25	0,2	0,16666667	0,2	3	1

Expert B

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	1	0,33333333	0,33333333	0,5	0,33333333
Operational Performance	1	1	0,25	0,33333333	0,25	5
Innovation	3	4	1	4	0,25	4
Management and Human Resources	3	3	0,25	1	0,25	0,33333333
Financial performance	2	4	4	4	1	4
Governmental Agenda	3	0,2	0,25	3	0,25	1

Expert C

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	3	0,25	0,33333333	1	5
Operational Performance	0,33333333	1	0,33333333	0,14285714	7	7
Innovation	4	3	1	7	5	8
Management and Human Resources	3	7	0,14285714	1	6	6
Financial performance	1	0,142857	0,2	0,16666667	1	0,25
Governmental Agenda	0,2	0,142857	0,125	0,16666667	4	1

Expert D

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	1	0,25	1	1	6
Operational Performance	1	1	0,16666667	0,16666667	3	4
Innovation	4	6	1	5	4	9
Management and Human Resources	1	6	0,2	1	4	5
Financial performance	1	0,33333333	0,25	0,25	1	7
Governmental Agenda	0,166667	0,25	0,11111111	0,2	0,142857	1

Expert E

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	2	0,33333333	3	3	5
Operational Performance	0,5	1	0,14285714	0,2	1	5
Innovation	3	7	1	7	7	9
Management and Human Resources	0,33333333	5	0,14285714	1	3	5
Financial performance	0,33333333	1	0,14285714	0,33333333	1	9
Governmental Agenda	0,2	0,2	0,11111111	0,2	0,111111	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1,000	1,783	0,268	0,922	1,351	2,885
Operational Performance	0,561	1,000	0,251	0,200	1,600	5,115
Innovation	3,728	3,987	1,000	5,471	2,687	6,892
Management and Human Resources	1,084	5,008	0,183	1,000	2,551	3,017
Financial performance	0,740	0,625	0,372	0,392	1,000	1,838
Governmental Agenda	0,347	0,196	0,145	0,331	0,544	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Company's Characteristics	1,09446793	0,141765591	14,18
Operational Performance	0,78272125	0,101385282	10,14
Innovation	3,38555687	0,438528581	43,85
Management and HR	1,4034135	0,181783073	18,18
Financial performance	0,70622354	0,091476593	9,15
Governmental Agenda	0,34788194	0,04506088	4,51
Total	7,72026503		

Company’s Characteristics

Expert A

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	5	4	0,33333333
Company's Age	0,2	1	0,16666667	0,16666667
Ease of technological updates	0,25	6	1	0,33333333
Flexibility in facing risks	3	6	3	1

Expert B

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	4	4	0,5
Company's Age	0,25	1	0,25	0,33333333
Ease of technological updates	0,25	4	1	0,16666667
Flexibility in facing risks	2	3	6	1

Expert C

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	6	3	0,33333333
Company's Age	0,16666667	1	0,5	0,2
Ease of technological updates	0,33333333	2	1	0,16666667
Flexibility in facing risks	3	5	6	1

Expert D

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	5	3	0,5
Company's Age	0,2	1	0,2	0,2
Ease of technological updates	0,33333333	5	1	0,2
Flexibility in facing risks	2	5	5	1

Expert E

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	5	5	1
Company's Age	0,2	1	0,25	0,14285714
Ease of technological updates	0,2	4	1	0,25
Flexibility in facing risks	1	7	4	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1,000	4,959	3,728	0,488
Company's Age	0,202	1,000	0,253	0,200
Ease of technological updates	0,268	3,949	1,000	0,215
Flexibility in facing risks	2,048	5,008	4,644	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Number of Employees	1,73343501	0,32284555	32,28
Company's Age	0,31777143	0,0591837	5,92
Ease of technological updates	0,69107352	0,12870976	12,87
Flexibility in facing risks	2,62695928	0,48926099	48,93
Total	5,36923923		

Operational Performance

Expert A

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	4	4	0,25	0,14285714	0,2	1
Productivity rate	0,25	1	0,333333	0,333333	0,166667	0,333333	0,25
organizational relations	0,25	3	1	0,2	0,166667	0,14285714	0,5
Sales growth	4	3	5	1	0,166667	0,2	5
Customer satisfaction	7	6	6	6	1	0,5	6
Understanding customer and market	5	3	7	5	2	1	5
Efficient planning	1	4	2	0,2	0,166667	0,2	1

Expert B

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	5	4	0,25	3	3	3
Productivity rate	0,2	1	4	0,25	0,33333333	3	2
organizational relations	0,25	0,25	1	0,25	0,33333333	0,33333333	0,5
Sales growth	4	4	4	1	3	3	4
Customer satisfaction	0,333333	3	3	0,333333	1	3	3
Understanding customer and market	0,333333	0,333333	3	0,333333	0,33333333	1	2
Efficient planning	0,333333	0,5	2	0,25	0,33333333	0,5	1

Expert C

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	7	4	0,14285714	0,14285714	0,14285714	4
Productivity rate	0,142857	1	0,16666667	0,16666667	0,16666667	0,16666667	3
organizational relations	0,25	6	1	6	0,16666667	6	7
Sales growth	7	6	0,16666667	1	0,125	0,2	6
Customer satisfaction	7	6	6	8	1	0,2	7
Understanding customer and market	7	6	0,16666667	5	5	1	7
Efficient planning	0,25	0,333333	0,14285714	0,16666667	0,14285714	0,14285714	1

Expert D

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	4	3	0,25	3	3	3
Productivity rate	0,25	1	4	0,5	0,16666667	0,33333333	2
organizational relations	0,333333	0,25	1	0,2	4	0,125	1
Sales growth	4	2	5	1	0,25	0,25	5
Customer satisfaction	0,333333	6	0,25	4	1	2	7
Understanding customer and market	0,333333	3	8	4	0,5	1	5
Efficient planning	0,333333	0,5	1	0,2	0,14285714	0,2	1

Expert E

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	3	3	0,2	0,142857	0,2	1
Productivity rate	0,333333	1	0,33333333	0,33333333	0,142857	0,33333333	0,33333333
organizational relations	0,333333	3	1	0,2	0,142857	0,14285714	1
Sales growth	5	3	5	1	0,2	0,2	5
Customer satisfaction	7	7	7	5	1	1	7
Understanding customer and market	5	3	7	5	1	1	5
Efficient planning	1	3	1	0,2	0,142857	0,2	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1,000	4,416	3,565	0,214	0,483	0,552	2,048
Productivity rate	0,226	1,000	0,784	0,297	0,186	0,450	1,000
organizational relations	0,280	1,275	1,000	0,413	0,351	0,348	1,118
Sales growth	4,678	3,366	2,422	1,000	0,315	0,359	4,959
Customer satisfaction	2,071	5,387	2,853	3,170	1,000	0,903	5,729
Understanding customer and market	1,810	2,221	2,874	2,782	1,108	1,000	4,453
Efficient planning	0,488	1,000	0,894	0,202	0,175	0,225	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Economic Added value	1,09086169	0,12647299	12,65
Productivity rate	0,46076756	0,05342075	5,34
organizational relations	0,57247027	0,06637141	6,64
Sales growth	1,54949671	0,1796465	17,96
Customer satisfaction	2,44472562	0,28343809	28,34
Understanding customer and market	2,06201055	0,23906664	23,91
Efficient planning	0,44492193	0,05158363	5,16
Total	8,62525433		

Innovation

Expert A

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	1	6	7
Technology adopted	1	1	4	6
Efficient business opportunity identification	0,16666667	0,25	1	7
Patents	0,14285714	0,166667	0,14285714	1

Expert B

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	3	1	5
Technology adopted	0,33333333	1	0,16666667	0,33333333
Efficient business opportunity identification	1	6	1	3
Patents	0,2	3	0,33333333	1

Expert C

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	5	1	5
Technology adopted	0,2	1	3	4
Efficient business opportunity identification	1	0,333333	1	3
Patents	0,2	0,25	0,33333333	1

Expert D

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	4	0,5	3
Technology adopted	0,25	1	4	0,33333333
Efficient business opportunity identification	2	0,25	1	6
Patents	0,33333333	3	0,16666667	1

Expert E

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	0,33	5	3
Technology adopted	3	1	5	7
Efficient business opportunity identification	0,2	0,2	1	7
Patents	0,33333333	0,142857	0,14285714	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1,000	1,817	1,719	4,360
Technology adopted	0,549	1,000	2,091	1,796
Efficient business opportunity identification	0,582	0,478	1,000	4,836
Patents	0,229	0,557	0,207	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
R&D Focus	1,92088715	0,41763424	41,76
Technology adopted	1,19840838	0,260554805	26,06
Efficient business opportunity identification	1,07701544	0,23416187	23,42
Patents	0,40313745	0,087649085	8,76
Total	4,59944842		

Management and HR

Expert A

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	5	3	0,5	6	5
Accessible workforce	0,2	1	4	0,33333333	5	6
Empower marketing strategies	0,333333	0,25	1	0,2	3	5
Owner qualifications	2	3	5	1	7	4
Gender participation	0,166667	0,2	0,33333333	0,14285714	1	0,2
Knowledge competency	0,2	0,166667	0,2	0,25	5	1

Expert B

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	0,33333333	0,33333333	0,33333333	3	0,33333333
Accessible workforce	3	1	0,33333333	0,5	3	0,33333333
Empower marketing strategies	3	3	1	1	3	3
Owner qualifications	3	2	1	1	3	0,25
Gender participation	0,333333	0,33333333	0,33333333	0,33333333	1	0,25
Knowledge competency	3	3	0,33333333	4	4	1

Expert C

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	6	0,14285714	0,25	0,33333333	0,16666667
Accessible workforce	0,166667	1	5	0,14285714	0,5	0,14285714
Empower marketing strategies	7	0,2	1	5	4	2
Owner qualifications	4	7	0,2	1	0,25	3
Gender participation	3	2	0,25	4	1	0,2
Knowledge competency	6	7	0,5	0,33333333	5	1

Expert D

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	0,33333333	2	2	7	5
Accessible workforce	3	1	5	0,33333333	4	6
Empower marketing strategies	0,5	0,2	1	0,2	4	5
Owner qualifications	0,5	3	5	1	8	5
Gender participation	0,142857	0,25	0,25	0,125	1	0,33333333
Knowledge competency	0,2	0,16666667	0,2	0,2	3	1

Expert E

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	5	3	1	7	5
Accessible workforce	0,2	1	5	0,33333333	5	5
Empower marketing strategies	0,333333	0,2	1	0,2	3	7
Owner qualifications	1	3	5	1	9	5
Gender participation	0,142857	0,2	0,33333333	0,11111111	1	0,33333333
Knowledge competency	0,2	0,2	0,14285714	0,2	3	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1,000	1,755	0,970	0,608	3,117	1,473
Accessible workforce	0,570	1,000	2,782	0,305	2,724	1,537
Empower marketing strategies	1,031	0,359	1,000	0,525	3,366	4,020
Owner qualifications	1,644	3,277	1,904	1,000	3,277	2,371
Gender participation	0,321	0,367	0,297	0,305	1,000	0,257
Knowledge competency	0,679	0,651	0,249	0,422	3,898	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Manager's strategies	1,29675178	0,190780682	19,08
Accessible workforce	1,12474764	0,165475093	16,55
Empower marketing strategies	1,17524308	0,172904083	17,29
Owner qualifications	2,07446226	0,305198984	30,52
Gender participation	0,37406302	0,055032891	5,50
Knowledge competency	0,75181336	0,110608267	11,06
Total	6,79708113		

Financial Performance

Expert A

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	2	4	0,5	1
Accessible cashflow/ Liquidity	0,5	1	3	2	0,33333333
Efficient ROI (compared to competition)	0,25	0,33333333	1	1	0,25
Gross earnings	2	0,5	1	1	1
Profitability	1	3	4	1	1

Expert B

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	3	4	3	0,25
Accessible cashflow/ Liquidity	0,333333	1	2	0,25	0,25
Efficient ROI (compared to competition)	0,25	0,5	1	2	0,25
Gross earnings	0,333333	4	0,5	1	0,25
Profitability	4	4	4	4	1

Expert C

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	0,16666667	0,2	0,25	0,33333333
Accessible cashflow/ Liquidity	6	1	0,25	5	4
Efficient ROI (compared to competition)	5	4	1	5	6
Gross earnings	4	0,2	0,2	1	0,14285714
Profitability	3	0,25	0,166667	7	1

Expert D

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	3	4	2	0,33333333
Accessible cashflow/ Liquidity	0,333333	1	2	0,5	1
Efficient ROI (compared to competition)	0,25	0,5	1	0,5	0,33333333
Gross earnings	0,5	2	2	1	0,25
Profitability	3	1	3	4	1

Expert E

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	1	3	1	1
Accessible cashflow/ Liquidity	1	1	3	1	1
Efficient ROI (compared to competition)	0,333333	0,33333333	1	0,33333333	0,33333333
Gross earnings	1	1	3	1	1
Profitability	1	1	3	1	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1,000	1,246	2,074	0,944	0,488
Accessible cashflow/ Liquidity	0,803	1,000	1,552	1,046	0,803
Efficient ROI (compared to competition)	0,482	0,644	1,000	1,108	0,530
Gross earnings	1,059	0,956	0,903	1,000	0,389
Profitability	2,048	1,246	1,888	2,569	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Purchasing power	1,03563913	0,198273354	19,83
Accessible cashflow/ Liquidity	1,0089657	0,193166719	19,32
Efficient ROI (compared to competition)	0,71141424	0,136200422	13,62
Gross earnings	0,81335189	0,155716409	15,57
Profitability	1,65391856	0,316643096	31,66
Total	5,2232895		

Governmental Agenda

Expert A

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	8	6	2	3	5
Suitable infrastructure	0,125	1	0,3333333	0,1428571	0,3333333	2
Suitability of interest rate	0,166667	3	1	0,2	6	2
Accessible financing	0,5	7	5	1	7	4
Promoting SME's in higher education	0,333333	3	0,1666666	0,1428571	1	5
Tax incentives	0,2	0,5	0,5	0,25	0,2	1

Expert B

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	3	3	2	4	4
Suitable infrastructure	0,333333	1	3	0,3333333	3	0,3333
Suitability of interest rate	0,333333	0,333333	1	0,3333333	4	0,25
Accessible financing	0,5	3	3	1	3	3
Promoting SME's in higher education	0,25	0,333333	0,25	0,33333333	1	0,3333
Tax incentives	0,25	3	4	0,3333333	3	1

Expert C

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	4	0,25	0,5	7	0,3333
Suitable infrastructure	0,25	1	6	6	5	5
Suitability of interest rate	4	0,166667	1	0,2	0,3333333	0,25
Accessible financing	2	0,166667	5	1	0,3333333	3
Promoting SME's in higher education	0,142857	0,2	3	3	1	4
Tax incentives	3	0,2	4	0,3333333	0,25	1

Expert D

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	4	7	2	2	5
Suitable infrastructure	0,25	1	0,3333333	0,2	0,3333333	4
Suitability of interest rate	0,142857	3	1	0,1428571	3	4
Accessible financing	0,5	5	7	1	6	7
Promoting SME's in higher education	0,5	3	0,3333333	0,1666666	1	3
Tax incentives	0,2	0,25	0,25	0,1428571	0,3333333	1

Expert E

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	9	7	1	3	5
Suitable infrastructure	0,111111	1	0,3333333	0,1428571	0,3333333	3
Suitability of interest rate	0,142857	3	1	0,1428571	5	3
Accessible financing	1	7	7	1	7	7
Promoting SME's in higher education	0,333333	3	0,2	0,1428571	1	3
Tax incentives	0,2	0,333333	0,3333333	0,1428571	0,3333333	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1,000	5,102	2,942	1,320	3,471	2,782
Suitable infrastructure	0,196	1,000	0,922	0,382	0,889	2,091
Suitability of interest rate	0,340	1,084	1,000	0,194	2,605	1,084
Accessible financing	0,758	2,616	5,165	1,000	3,117	4,460
Promoting SME's in higher education	0,288	1,125	0,384	0,321	1,000	2,268
Tax incentives	0,359	0,478	0,922	0,224	0,441	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Laws and regulations	2,40036556	0,327395855	32,74
Suitable infrastructure	0,71033991	0,096886218	9,69
Suitability of interest rate	0,76575515	0,104444534	10,44
Accessible financing	2,28492866	0,311650936	31,17
Promoting SME's in higher education	0,67006277	0,091392652	9,14
Tax incentives	0,50023991	0,068229805	6,82
Total	7,33169196		

APPENDIX C: CALCULATIONS FOR LIBYA

Main Criteria

Expert A

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	3	6	0,5000	0,5	4
Operational Performance	0,333333	1	1	0,3333	1	1
Innovation	0,166667	1	1	0,33333333	0,16666667	0,25
Management and Human Resources	2	3	3	1	2	5
Financial performance	2	1	6	0,5	1	6
Governmental Agenda	0,25	1	4	0,2	0,16666667	1

Expert B

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	1	2	0,25	0,25	1
Operational Performance	1	1	4	1	0,2	1
Innovation	0,5	0,25	1	0,2	0,14285714	0,333333333
Management and Human Resources	4	1	5	1	0,5	5
Financial performance	4	5	7	2	1	1
Governmental Agenda	1	1	3	0,2	1	1

Expert C

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	2	5	0,2	0,33333333	2
Operational Performance	0,5	1	5	0,33333333	0,2	0,5
Innovation	0,2	0,2	1	0,2	0,16666667	0,5
Management and Human Resources	5	3	5	1	1	4
Financial performance	3	5	6	1	1	4
Governmental Agenda	0,5	2	2	0,25	0,25	1

Expert D

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	5	7	0,2	0,2	3
Operational Performance	0,2	1	2	0,25	0,33333333	1
Innovation	0,142857	0,5	1	0,5	0,2	0,333333333
Management and Human Resources	5	4	2	1	1	3
Financial performance	5	3	5	1	1	3
Governmental Agenda	0,333333	1	3	0,333333	0,33333333	1

Expert E

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1	0,33333333	3	0,2	0,25	3
Operational Performance	3	1	2	0,5	0,33333333	2
Innovation	0,333333	0,5	1	0,33333333	0,2	0,25
Management and Human Resources	5	2	3	1	1	7
Financial performance	4	3	5	1	1	0,33333333
Governmental Agenda	0,333333	0,5	4	0,14285714	3	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Company's characteristics	Operational Performance	Innovation	Management and Human Resources	Financial performance	Governmental Agenda
Company's characteristics	1,000	1,585	4,169	0,251	0,291	2,352
Operational Performance	0,631	1,000	2,402	0,425	0,339	1,000
Innovation	0,240	0,416	1,000	0,295	0,174	0,322
Management and Human Resources	3,981	2,352	3,393	1,000	1,000	4,618
Financial performance	3,438	2,954	5,753	1,000	1,000	1,888
Governmental Agenda	0,425	1,000	3,104	0,217	0,530	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Company's Characteristics	1,021445956	0,138829373	13,88
Operational Performance	0,775864413	0,105451267	10,55
Innovation	0,343679106	0,046710993	4,67
Management and HR	2,29663587	0,312146243	31,21
Financial performance	2,189941523	0,297644928	29,76
Governmental Agenda	0,729996843	0,099217196	9,92
Total	7,357563711		

Company’s Characteristics

Expert A

	Number of Employees	Company's Age	Ease of Technological updates	flexibility in facing risks
Number of Employees	1	3	3	4
Company's Age	0,333333	1	1	5
Ease of technological updates	0,333333	1	1	0,5
Flexibility in facing risks	0,25	0,2	2	1

Expert B

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	0,5	3	0,2
Company's Age	2	1	0,5	0,2
Ease of technological updates	0,333333	2	1	0,25
Flexibility in facing risks	5	5	4	1

Expert C

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	2	3	0,33333333
Company's Age	0,5	1	3	0,5
Ease of technological updates	0,333333	0,33333333	1	1
Flexibility in facing risks	3	2	1	1

Expert D

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	0,5	4	3
Company's Age	2	1	2	2
Ease of technological updates	0,25	0,5	1	0,333333333
Flexibility in facing risks	0,333333	0,5	3	1

Expert E

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1	0,5	4	0,25
Company's Age	2	1	0,2	0,2
Ease of technological updates	0,25	5	1	1
Flexibility in facing risks	4	5	1	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Number of Employees	Company's Age	Ease of Technological updates	Flexibility in facing risks
Number of Employees	1,000	0,944	3,366	0,725
Company's Age	1,059	1,000	0,903	0,725
Ease of technological updates	0,297	1,108	1,000	0,530
Flexibility in facing risks	1,380	1,380	1,888	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Number of Employees	1,23190935	0,295607559	29,56
Company's Age	0,91244354	0,218948908	21,89
Ease of technological updates	0,64611182	0,155040255	15,50
Flexibility in facing risks	1,37691637	0,330403278	33,04
Total	4,16738107		

Operational Performance

Expert A

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	3	2	5	0,5	0,33333333	0,25
Productivity rate	0,333333	1	0,5	0,5	0,5	0,25	1
organizational relations	0,5	2	1	1	0,25	0,14285714	1
Sales growth	0,2	2	1	1	2	0,16666667	1
Customer satisfaction	2	2	4	0,5	1	0,2	5
Understanding customer and market	3	4	7	6	5	1	5
Efficient planning	4	1	1	1	0,2	0,2	1

Expert B

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	1	1	2	0,2	0,25	0,5
Productivity rate	1	1	1	0,25	0,25	0,2	1
organizational relations	1	1	1	0,5	0,2	0,2	0,25
Sales growth	0,5	4	2	1	0,25	0,2	0,2
Customer satisfaction	5	4	5	4	1	0,25	4
Understanding customer and market	4	5	5	5	4	1	1
Efficient planning	2	1	4	5	0,25	1	1

Expert C

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	0,5	3	1	0,2	0,2	0,33333333
Productivity rate	2	1	1	1	0,2	0,2	0,33333333
organizational relations	0,333333	1	1	0,5	0,2	0,2	0,5
Sales growth	1	1	2	1	1	0,2	0,2
Customer satisfaction	5	5	5	1	1	0,16666667	0,5
Understanding customer and market	5	5	5	5	6	1	6
Efficient planning	3	3	2	5	2	0,16666667	1

Expert D

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	3	2	2	0,33333333	0,2	1
Productivity rate	0,333333	1	1	1	0,25	0,2	2
organizational relations	0,5	1	1	0,16666667	0,16666667	0,2	0,5
Sales growth	0,5	1	6	1	0,14285714	1	0,333333333
Customer satisfaction	3	4	6	7	1	0,11111111	0,25
Understanding customer and market	5	5	5	1	9	1	0,2
Efficient planning	1	0,5	2	3	4	5	1

Expert E

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1	1	1	6	0,5	0,5	0,5
Productivity rate	1	1	2	0,33333333	1	0,2	1
organizational relations	1	0,5	1	0,5	0,2	0,2	0,5
Sales growth	0,166667	3	2	1	0,33333333	0,2	0,5
Customer satisfaction	2	1	5	3	1	0,16666667	5
Understanding customer and market	2	5	5	5	6	1	3
Efficient planning	2	1	2	2	0,2	0,33333333	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Economic Added Value	Productivity Rate	Organizational relations and effective supply chain strategies	Sales growth	Customer satisfaction	understanding customer and market conditions	Efficient planning
Economic Added value	1,000	1,351	1,644	2,605	0,320	0,278	0,461
Productivity rate	0,740	1,000	1,000	0,530	0,362	0,209	0,922
organizational relations	0,608	1,000	1,000	0,461	0,202	0,187	0,500
Sales growth	0,384	1,888	2,169	1,000	0,474	0,266	0,367
Customer satisfaction	3,129	2,759	4,959	2,112	1,000	0,173	1,657
Understanding customer and market	3,594	4,782	5,348	3,758	5,785	1,000	1,783
Efficient planning	2,169	1,084	2,000	2,724	0,603	0,561	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Economic Added value	0,81417176	0,0945109	9,45
Productivity rate	0,5981528	0,06943493	6,94
organizational relations	0,4728814	0,05489315	5,49
Sales growth	0,6876504	0,07982402	7,98
Customer satisfaction	1,59188894	0,18479008	18,48
Understanding customer and market	3,21661716	0,37339221	37,34
Efficient planning	1,2332177	0,14315471	14,32
Total	8,61458016		

Innovation

Expert A

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	0,33333333	0,2	0,2
Technology adopted	3	1	0,5	0,16666667
Efficient business opportunity identification	5	2	1	0,14285714
Patents	5	6	7	1

Expert B

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	0,25	0,25	0,11111111
Technology adopted	4	1	0,25	0,11111111
Efficient business opportunity identification	4	4	1	0,2
Patents	9	9	5	1

Expert C

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	1	0,33333333	0,11111111
Technology adopted	1	1	0,25	0,11111111
Efficient business opportunity identification	3	4	1	0,11111111
Patents	9	9	9	1

Expert D

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	0,25	0,2	0,25
Technology adopted	4	1	1	0,125
Efficient business opportunity identification	5	1	1	0,2
Patents	4	8	5	1

Expert E

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1	0,2	0,33333333	0,125
Technology adopted	5	1	1	0,125
Efficient business opportunity identification	3	1	1	0,125
Patents	8	8	8	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	R&D Focus	Technology adopted	Efficient business opportunity identification	Patents
R&D Focus	1,000	0,334	0,257	0,150
Technology adopted	2,993	1,000	0,500	0,126
Efficient business opportunity identification	3,898	2,000	1,000	0,151
Patents	6,645	7,917	6,608	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
R&D Focus	0,33701332	0,053017635	5,30
Technology adopted	0,65934429	0,1037255	10,37
Efficient business opportunity identification	1,04220007	0,163954893	16,40
Patents	4,31806912	0,679301972	67,93
Total	6,35662679		

Management and HR

Expert A

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	5	5	4	7	1
Accessible workforce	0,2	1	1	0,33333333	2	1
Empower marketing strategies	0,2	1	1	0,33333333	4	0,16666667
Owner qualifications	0,25	3	3	1	4	0,14285714
Gender participation	0,142857	0,5	0,25	0,25	1	0,14285714
Knowledge competency	1	1	6	7	7	1

Expert B

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	3	5	6	8	0,5
Accessible workforce	0,333333	1	1	1	1	2
Empower marketing strategies	0,2	1	1	0,2	2	0,25
Owner qualifications	0,166667	1	5	1	2	0,11111111
Gender participation	0,125	1	0,5	0,5	1	0,11111111
Knowledge competency	2	0,5	4	9	9	1

Expert C

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	7	3	2	0,14285714	1
Accessible workforce	0,142857	1	4	0,5	2	0,25
Empower marketing strategies	0,333333	0,25	1	1	1	0,25
Owner qualifications	0,5	2	1	1	2	0,16666667
Gender participation	7	0,5	1	0,5	1	0,2
Knowledge competency	1	4	4	6	5	1

Expert D

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	1	0,5	5	5	5
Accessible workforce	1	1	1	0,25	5	0,5
Empower marketing strategies	2	1	1	0,5	1	0,25
Owner qualifications	0,2	4	2	1	0,5	0,33333333
Gender participation	0,2	0,2	1	2	1	0,16666667
Knowledge competency	0,2	2	4	3	6	1

Expert E

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1	3	1	2	5	2
Accessible workforce	0,333333	1	2	0,5	4	0,5
Empower marketing strategies	1	0,5	1	0,5	3	0,2
Owner qualifications	0,5	2	2	1	1	0,2
Gender participation	0,2	0,25	0,333333	1	1	0,11111111
Knowledge competency	0,5	2	5	5	9	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Manager's strategies	Accessible workforce	Empower marketing strategies	Owner qualifications	Gender participation	Knowledge competency
Manager's strategies	1,000	3,160	2,064	3,438	2,885	1,380
Accessible workforce	0,316	1,000	1,516	0,461	2,402	0,660
Empower marketing strategies	0,484	0,660	1,000	0,441	1,888	0,220
Owner qualifications	0,291	2,169	2,268	1,000	1,516	0,178
Gender participation	0,347	0,416	0,530	0,660	1,000	0,143
Knowledge competency	0,725	1,516	4,536	5,633	7,017	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Manager's strategies	2,11407035	0,290339265	29,03
Accessible workforce	0,83968799	0,115319905	11,53
Empower marketing strategies	0,62333462	0,085606667	8,56
Owner qualifications	0,85294679	0,117140825	11,71
Gender participation	0,43926758	0,060327522	6,03
Knowledge competency	2,4120721	0,331265817	33,13
Total	7,28137943		

Financial Performance

Expert A

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	1	3	6	5
Accessible cashflow/ Liquidity	1	1	2	1	3
Efficient ROI (compared to competition)	0,333333	0,5	1	0,5	0,33333333
Gross earnings	0,166667	1	2	1	0,25
Profitability	0,2	0,333333	3	4	1

Expert B

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	3	4	5	3
Accessible cashflow/ Liquidity	0,333333	1	3	2	1
Efficient ROI (compared to competition)	0,25	0,333333	1	1	0,5
Gross earnings	0,2	0,5	1	1	0,33333333
Profitability	0,333333	1	2	3	1

Expert C

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	5	0,5	8	8
Accessible cashflow/ Liquidity	0,2	1	2	3	5
Efficient ROI (compared to competition)	2	0,5	1	1	1
Gross earnings	0,125	0,333333	1	1	0,14285714
Profitability	0,125	0,2	1	7	1

Expert D

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	1	2	4	6
Accessible cashflow/ Liquidity	1	1	4	3	4
Efficient ROI (compared to competition)	0,5	0,25	1	3	1
Gross earnings	0,25	0,333333	0,333333	1	0,2
Profitability	0,166667	0,25	1	5	1

Expert E

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1	5	2	8	8
Accessible cashflow/ Liquidity	0,2	1	3	1	2
Efficient ROI (compared to competition)	0,5	0,333333	1	0,25	0,5
Gross earnings	0,125	1	4	1	0,2
Profitability	0,125	0,5	2	5	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Purchasing power	Accessible cashflow/ Liquidity	Efficient ROI (compared to competition)	Gross earnings	Profitability
Purchasing power	1,000	2,371	1,888	5,985	5,650
Accessible cashflow/ Liquidity	0,422	1,000	2,702	1,783	2,605
Efficient ROI (compared to competition)	0,530	0,370	1,000	0,822	0,608
Gross earnings	0,167	0,561	1,217	1,000	0,217
Profitability	0,177	0,384	1,644	4,618	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Purchasing power	2,72924327	0,446974093	44,70
Accessible cashflow/ Liquidity	1,39543689	0,228533727	22,85
Efficient ROI (compared to competition)	0,62842152	0,102917957	10,29
Gross earnings	0,47700686	0,078120449	7,81
Profitability	0,87593498	0,143453773	14,35
Total	6,10604353		

Governmental Agenda

Expert A

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	5	1	6	3	2
Suitable infrastructure	0,2	1	0,2	0,3333333	0,2	0,5
Suitability of interest rate	1	5	1	0,5	3	0,3333
Accessible financing	0,166667	3	2	1	0,3333333	0,3333
Promoting SME's in higher education	0,333333	5	0,3333333	3	1	0,2
Tax incentives	0,5	2	3	3	5	1

Expert B

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	3	0,5	5	1	2
Suitable infrastructure	0,333333	1	0,5	0,5	0,3333333	0,25
Suitability of interest rate	2	2	1	5	1	0,3333
Accessible financing	0,2	2	0,2	1	5	0,25
Promoting SME's in higher education	1	3	1	0,2	1	4
Tax incentives	0,5	4	3	4	0,25	1

Expert C

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	6	0,3333333	2	2	0,5
Suitable infrastructure	0,166667	1	1	0,3333333	1	1
Suitability of interest rate	3	1	1	0,5	2	0,3333
Accessible financing	0,5	3	2	1	0,25	0,2
Promoting SME's in higher education	0,5	1	0,5	4	1	0,25
Tax incentives	2	1	3	5	4	1

Expert D

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	3	2	0,2	5	1
Suitable infrastructure	0,333333	1	0,3333333	0,2	0,3333333	0,5
Suitability of interest rate	0,5	3	1	0,1666667	2	0,2
Accessible financing	5	5	6	1	0,25	0,2
Promoting SME's in higher education	0,2	3	0,5	4	1	0,3333
Tax incentives	1	2	5	5	3	1

Expert E

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1	3	0,5	4	2	1
Suitable infrastructure	0,333333	1	0,25	0,5	0,25	1
Suitability of interest rate	2	4	1	0,3333333	1	1
Accessible financing	0,25	2	3	1	0,2	0,5
Promoting SME's in higher education	0,5	4	1	5	1	0,2
Tax incentives	1	1	1	2	5	1

Resultant matrix is taken by calculating the geometric mean of the five matrices

	Laws and regulations	Suitable infrastructure	Suitability of interest rate	Accessible financing	Promoting SME's in higher education	Tax incentives
Laws and regulations	1,000	3,817	0,699	2,169	2,268	1,149
Suitable infrastructure	0,262	1,000	0,384	0,354	0,354	0,574
Suitability of interest rate	1,431	2,605	1,000	0,587	1,644	0,375
Accessible financing	0,461	2,825	1,705	1,000	0,461	0,278
Promoting SME's in higher education	0,441	2,825	0,608	2,169	1,000	0,422
Tax incentives	0,871	1,741	2,667	3,594	2,371	1,000

CR is checked for the resultant matrix. As shown in Table 4.1. Then, weights are calculated by taking the geometric mean of each criterion (the rows), summing them, and dividing them by the sum of the geometric means, as shown in the below Table:

Criteria	Geometric Mean	Weight	Percentage
Laws and regulations	1,57165979	0,237473067	23,75
Suitable infrastructure	0,4398004	0,066452518	6,65
Suitability of interest rate	1,0509787	0,158799721	15,88
Accessible financing	0,81114789	0,122562006	12,26
Promoting SME's in higher education	0,94074229	0,14214333	14,21
Tax incentives	1,80393635	0,272569356	27,26
Total	6,61826542		