

## **Designing a model for measurement of sustainable supply chain with Meta study qualitative approach and impact of them on organization performance (the case of Sirjan Golgohar co.)**

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### **ABSTRACT**

*Designing a model for measuring the stable supply by qualitative approach and its effect on the function of organizations. Supply chains have grown in recent years and only focusing on economic performance for optimizing the costs or returning the investment can't cause development and stability in the supply chain. The purpose of this research is qualitative Analysis the results of previous researches about stable supply chain and its effect on the Sirjan golegohar factory's function. This research approach in term of*

*functional goal is descriptive correlation. The tool for collecting data include library resources, expert opinions and questionnaire. For this purpose we investigate 40 articles in qualitative phase. In this research 295 cods were identified by referral MAXQDA10 software. For analyzing data in qualitative phase, the structural equation modeling was used. Measuring the factory's function by balanced concession card showed that financial dimension and customer effect on golegohar factory performance. The innovations of this research include identification of indexes and dimensions of stable supply chain by utilizing the qualitative approach and run away and MAXQDA software in stable supply chain area. Keywords: stable supply chain, performance evaluation, balanced, concession, Meta study*

## **Introduction**

The ascendancy of globalization and the rise of global competition has had a tremendous impact on industries around the world, in recent decades and as management science experts have focused their efforts on creating expanding and implementing tools during these decades that they can be used to improve the level of productivity and product quality resulting in lower cost. It seems too many thin kernels to achieve the goals of moving to the stability of the supply chain is one of the inevitable and necessary requirements of companies. Today, many of the leading manufacturing companies have embraced the supply chain sustainability as a strategy to increase their global competitive power.

The supply chain is the key loop that connects the inputs or the organization to its outlets. In fact, there is a network that involves supplying Suppliers to consumer Consumers. The challenges the network faces are reducing costs, ensuring timely delivery and reducing shipping time in order to respond better to business environment. But in one way

increasing the environmental costs of these networks and the consumers' pressure to provide a standardized environmental Product and on the other hand the knowledge of the external community and the company's employees about the social issues associated with the organizations and the creation of groups in support of society and individuals and increasing the social responsibility of organizations and companies, have led many organizations to move towards Sustainability in the supply chain and consider new criteria in their operations. These criteria, in addition to the company's Profitable requirements, also consider social and environmental issues but many companies lack a comprehensive view of sustainability issues and benchmarks that can measure them. Many of the research related to the supply chain in a variety of issues have been conducted independently organizational social responsibility and sustainability.

So that there is a little understanding of these issues and the relationships between them. Environment, diversity, human rights, altruism, Security are components of the broad and overall sense of organizational and sustainability social responsibility that are being implemented for supply chain management. Now considering the need and necessity of sustainable supply chain management in organizations. It is important to carry out combined research that examines the results of research on a specific topic in a systematic and scientific way for researchers to go ahead also indexes and sub-indexes of sustainable supply chain are indispensable. Therefore this research has tried to introduce a sustainable supply chain and also identify its dimensions and indicators using a forward-looking approach. In the follow up to the present study theoretical literature has been reviewed. Then the methodology of the research is discussed. Section 4 deals with research output. In the end, the results and practical and scientific proposals for the development of sustainable supply chain have been presented.

## **Theoretical literature and research background**

The supply chain is a vital business process, including the outsourcing of raw materials and components, the production and assembly of Products, Storage. Registration and follow-up of distribution orders from different channels and even tally delivery to the customer, The supply chain includes suppliers, Vendors manufacturers and retailers that they have interactions with information and financial transport in Fra structure (Shin and Robinson 2002). And all activities are related to the flow of goods from the material Stage to the final consumer (Hand field and Nicolas 1999). Participation in the supply chain structure, including foreign supplier's domestic activities and foreign distributors, plus customers. In the Past, the

supply chain was used as a physical channel for the movement of raw materials with Parts and distribution of products today, the supply chain has become a network of transformations.

Companies must interact and participate in order to increase their competitive edge, thus, the old concept of a static supply has been transformed into a complex network of dynamic relationships. Management in such a supply chain should operate in a more strategic and wider manner. Supply chain areas should include call business process which speeds up and accurately Performs Customer expectations.

These processes extend from Product development to relationship management (At the beginning of the 21<sup>st</sup> Century following a globalization era, out sourcing of key activities, Stakeholder dialogue and engagement, reverse logistics, development of Social responsibility of the organization timeliness of completion of order, advanced information technology development, ...) one of these recent concepts, the concept of supply chain management, as an important part of sustainable supply chain management should focus on issues such as the evolution CR supply chain and the development of management. (Dake and Navko 2008) In the last 20 years, more research on the sustainable supply chain has focused on its environmental aspect. Environment is one of the Key elements of a three-way sustainability policy and an intermediary for issues such as climate change and rising energy prices. Somewhat, the terms Sustainability and the environment are instead of each other used by researchers.

of managers. This misunderstanding has become very common in recent years. The environment, although as a Start of a vision for the start of sustainable supply chain, has now developed an understanding of the same application of the term Sustainability as a tripe Policy (economy, environment, Society) that is expanding (Carter and Easton 2011) Many supply chain researches have been conducted on various issues of organizational and sustainability Social responsibility, independently so there is little knowledge of these issues and the relationships between them. Environment; diversity, human rights, altruism, security are components of a large concept and the overall corporate Social responsibility and sustainability that are implemented for supply chain management.

For this reason, supply chain executives manage and implement projects in this area independently without having a clear overall strategic vision of how to fit these components together to build a sustainable organization Situation. Managers often look at opportunities for learning to succeed or defeat a domain for example in the environmental field and they carry out this knowledge for future projects in their organizational units and in sustainability areas such as diversity and safety issues (carter and Jennings 2002). Sustainability in addition to protecting the environment, also boosts corporate profits. The sustainable supply chain means a lucrative supply chain of all three dimensions of sustainability, namely economic, social and environmental. In general, the supply chain focuses solely on the flow of products or services from the supplier to deliver the product to the customer through all intermediaries, but in the sustainable supply chain, focus is on reverse logistics, which has a framework for material retrieval at the end of the product cycle: which all endorses the importance and position of the sustainable supply chain in Sustainable development Karter and Rogers (2008) argue that economic transaction can Provide insight into the development of a sustainable supply chain. Hall (2000) suggests that while economic transactions are a useful theory to start with but it cannot fully describe innovation in the Sustainable supply chain and discuss supply chain literature about Partnership and trust based views. He suggests that the use of sustainability especially SSCM, is not a voluntary, but a requirement. The SSCM includes a long-term improvement of the organization's economic Policy and helps managers answer that question, which should be done, not for spending time, but for progress and success, not for next one year, three years or five years but for ten years, twenty years and distant future: Hence, this is a prominent conceptualization that can convince managers to take triple measures. In 2008 carter and Rogers conducted a comprehensive conceptual frame work for sustainable supply chain management. In addition to the three main dimensions of sustainability of the dimensions of the economy, the environment and the community, to which we have more explicitly explained, the four other aspects that play the supporting role of the three main concepts of sustainability are added in this frame work. These four aspects are summarized on the basis of an extensive research in the scientific literature on organizational sustainability and interviews with 35 senior executives and chief executives of 28 successful international companies.

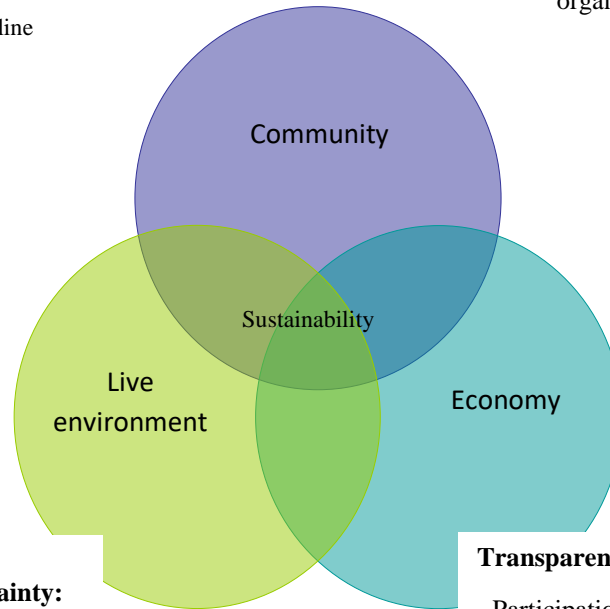
1) Strategy 2) Management and uncertainty 3) Transparency 4) organizational culture

**Prospects, cultures and values:**

- Deepening of organizational culture has its roots in Sustainability
- Prospects a values are in line with

**Strategy:**

- Sustainability as a core part of the strategy and integrated with the supply chain and organization strategy.



**Sustai Management and certainty:**

- Contingency planning (probable)
- Disruption management and supply chain Risks

**Transparency:**

- Participation and commitment of stake holders
- Transparency in supplier operations
- Transparency in organizational processes

**Figure 1: Sustainable supply chain comprehensive framework (Karter and Raggars 2008)**

**Performance appraisal**

Institutions, organizations and executives agencies, with any missions, goals and visions that have, ultimately act on a national or international basis and are required to respond to customers and stake holders so that they can answer to a company whose goal is profitability and customer satisfaction and an organization that aims to fully and precisely fulfill its legal duties and assist in the research of the country's development goals. Therefore, the study of performance results is considered an important Strategic process. The quality and effectiveness of its management and operation is a decisive and critical factor in the realization of community development and welfare programs. Providing services. And production of multiple products and providing costs From Sources of resources has created a sensitivity to the realization of goals, continuous improvement of quality. Customer satisfaction and citizen and Performance of organization, management and staffs.

Executive agencies and public confidence in the performance of organizations and the efficiency and effectiveness of the government. In the non-governmental sector, it also promotes re source management, customer satisfaction, helping national development, creating new capabilities, sustaining and promoting the global class of companies and institutions over the past two decades, organizational performance

management has become one of the most appealing issues and this tendency has led to many innovations in both research and applied fields (Li, 2001) Each organization has a critical need to assess the desirability and quality of its activities, especially in complex and dynamic environments on the other hand, the lack of a system of evaluation. And control in a system means that it is not communication with the environment inside and outside the organization, which implies that it is aged and ultimately the death of the organization. The phenomenon of organizational death may not be felt by top executives of organizations because it's not occurred suddenly. However, studies show that the lack of feedback system makes it to make the necessary reforms for the growth development and improvement of the organization's activities, eventually this phenomenon is an organizational death. (Adele, 2005)

### Conceptual model of research

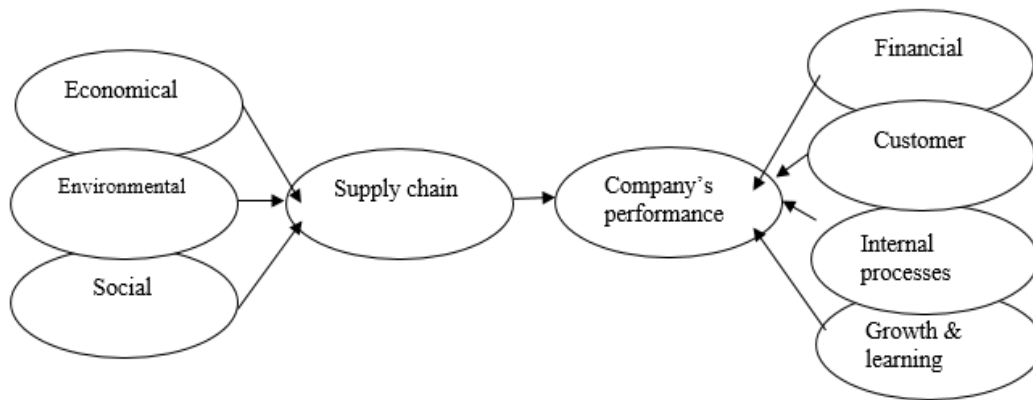


Figure 2: conceptual model of research

### Research hypotheses

In this research, the hypotheses are questioned in the qualitative phase due to the exploration of the research.

1. What are the factors and indicators in the sustainable chain?
2. What are the economic Pillars of a sustainable supply chain?
3. What are the environmental pillars of a sustainable supply chain?
4. What are the social pillars of sustainable supply chain?
5. What are the ways to improve these indicators?

Hypothesis in quantitative phases:

Sustainable supply chain has an impact on the performance of GolGohar Iron ore industry.

### Research Methodology

In general, research methods in the Social Sciences can be categorized according to the two criteria of the research purpose and the method of data collection. The purpose of applied research is the development of applied knowledge in a particular field. In other words, applied research is directed toward the scientific use of knowledge (Sarmad, Bazargan and Hejazi, 2001). In this research, a mixed approach is used. One of the characteristics of sequencing mixed researches is the use of quantitative and qualitative methods. Accordingly, three approaches can be taken in this regard:

1. A quantitative approach then qualitative.
2. A qualitative approach the quantitative
3. Both quantitative and qualitative data are simultaneously implemented. . (Bazargan, 2008).

This research is used two approaches: first qualitative next quantitative. In the qualitative phase, firstly using the ultra-studying and in quantitative phase, Structures equation moding is used for analyzing the

data. It can be said that the present research in quantitative phase according to the data gathering method is geodesic-correlation and specifically, the analysis is a type of structural equation model.

#### Society and statistical sample

Qualitative phase: Statistical Society: The statistical population of this research is comprised of published scientific papers from 1990 to 2015 at credible databases such as [www.google.com](http://www.google.com), [www.sciencedirect.com](http://www.sciencedirect.com). In the field of Sustainable supply.

The criterion of the Statistical sample size in this study is the criterion of sample size: The theoretical adequacy.

This means that, with a further review of other article, there would be no new benchmark or indicator in this area. Therefore, the criterion of the adequacy of the sample is theoretical Saturation. Sampling in the Meta - composition method of the selected Samples has a non- random nature. The selective scientific selection tool is CASP's critical relationship matrix. Therefore, the process of sampling in meta-combination begins with higher priority articles in the CASP methodology and ends with the achievement of theoretical competence.

Quantitative phase: In this research, the literature was first studied using library resources, then the research variables were measured by a 35 - item questionnaire with a five-point Likert scale. The statistical Population of this research are the experts of the country's iron ore industry. The size of the community is about 100 people. To determine the sample size according to Cochran formula with  $t = 1.96$  and  $d=0.05$ . The maximum variance among the research variables was 84 Samples. A total of 97 questionnaires were distributed in the Statistical population 85 questionnaires were collected (responsiveness rate OR 80%) and the analysis of this research was based on the results of the responses. To determine the formal and content validity of the questionnaire, the opinions of the university professors and managers and experts in the iron ore industry who were familiar with the topic, were used. According to the collected ideas, the validity of the questionnaire was confirmed. The validity of the questionnaire was also evaluated by two convergent and divergent validity criteria, which is specific to structural equation modeling.

#### **The method of analyzing information and Statistical method**

The CASP has been used to select articles. A tool usually used to evaluate the quality of a qualitative research primary study is CASP's critical skills assessment program. According to the CASP index, the research objectives, research logic, research design, sampling, data collection, reflection, ethical considerations, accuracy in analysis, clear explanation of the findings, research Value are reviewed. Article filtering process: Accordingly, the first priority, those articles and reports that have a different title have been removed from the research process.

In the second priority with the review of the abstracts and management summaries , the reports and reports without the author's title are Filtered.

In the quantitative phase of the data processing Steps, we used PLS and SPSS software's SPSS software was used for descriptive part and for inferential part for partial least squares method, PLS Software was used.

#### **Statistical description**

Table 1 shows age, years of service, the employee's gender and the education of the employees of the GolGohar iron ore industry in Sirjan.

**Table 1. Frequency distribution of subjects**

Employees gender status`				Average age and years of service			
Male		Female		Average of service		Average of age	
84	67	16	13	14 years	38	80	

Education status							
PHD and higher		MA/ms degree		Bachelor degree		Associate Degree	
percent	number	percent	number	percent	number	percent	number
15	12	60	48	25	20	0	0

**Reliability and validity of research**

Validity and reliability are among the commonly used terms in the research methodology but the nature and definition of these terms differ in qualitative and quantitative research methodology. Basically, some researchers believe that in qualitative research the concepts of validity and reliability are not relevant (Asgharizadeh, ghasemi and maleki, 2011). However, some others have provided different definitions of validity and reliability. The word credit of ten means the outcome of the measurement tool. However, the reliability points to the extent to which the measuring instrument has the capability of obtaining results in the repetition of the test. In qualitative research, the term credibility means reliability and trust in the considered results. It should be noted that, in principle, qualitative researchers do not claim the validity of tools and research results.

In qualitative research methods the researcher often does not seek to prove the validity of his results. In this research, the kapocouhen coefficient is used for reliability. If this coefficient is greater than 0.16, its value is valid and acceptable. The parameters d and a represent the agreement and b and c represent a disagreement between the two teats / respondents. The observed agreement parameter  $p_0=a+d$  and the probability percentage of the expected agreement of the following equation:

**Table 2: Agreement Table for calculation of kappa Statistics (Qasemi 2013 )**

		first respondent		
		Yes	No	Total
Second respondent	Yes	a	b	m1
	No	c	d	m0
	Total	n0	n1	n

$$P_e - [(n_1/n) * (m_1/n)] + [(n_0/n) * (m_0/n)]$$

$$Kappa = \frac{(p_0 - p_e)}{1 - p_e} \tag{1}$$

In the quantitative phase, the AVE (mean extracted variance) and CR (compound reliability) were used to valuate convergent validity. Composite reliability higher than 0.7 and mean of variance higher than 0.5 are two prerequisites for convergent validity and Structural correlation (chi Hang and Qing Lin 2009).

In the divergent narrative, the degree of difference between the indices of a Structure with other structures indices in the model are compared. This work is calculated by comparing the root of AVE of each structure with the values of the correlation coefficients between the structures. To do this, a matrix must be constructed that the main diameter values. Are the matrix of the root of the AVE coefficients of each structure and the values of the lower and uppermost diameters are the coefficients of correlation between each structure with other structures. This matrix is shown in Table 3:

**Table 3: evaluation of diagnostic validity (divergent)**

	Econ	Social	Env	SSC	Perfor	Custom	Finance	Int-p	G-L
Econ	0/800								
Social	0/705	0/781							
Env	0/186	0/087	0/851						
SSC	0/379	0/724	0/057	0/719					
Perfor	0/694	0/514	0/098	0/463	0/804				
Custom	0/392	0/227	0/107	0/251	0/264	0/862			
Finance	0/427	0/296	0/119	0/276	0/625	0/225	0/891		
Int-p	0/681	0/511	0/030	0/457	0/777	0/199	0/313	0/740	
G-L	0/631	0/686	0/054	0/463	0/552	0/397	0/363	0/503	0/803

As can be seen from the table above, the root of the AVE of each construct has increased its correlation coefficients with other structures, which suggests the acceptability of the divergent validity of structures.

### Reliability

To verify the reliability of the questionnaire, the PLS method has also used. In this method, the index reliability is used (Huff and Rivard 1988). Indicator reliability is also calculated by measuring the factor loads by Calculating the correlation between the indices of a Structure with another structure, which, if this value is equal to or greater than 0.4 (Holland 1999), confirms that the reliability of that model of measurement is acceptable. But if the factor load between a question and the corresponding dimension is less than 0.4, then the question can be eliminated from the model and next analyzes. Of course, deleting the questions should be carefully considered, and it is necessary to study the theoretical foundations and to do this if the research process was not interrupted after the questions were removed. In the present study, after calculating coefficient of factor loads, a number of coefficient of less than 0.4 were deleted after ensuring that the research process was not distorted. As shown in Table 4, all values of factor loads among structures and questions are greater than 0.4 which shows a high correlation.

**Table 4: factor load coefficients of research item**

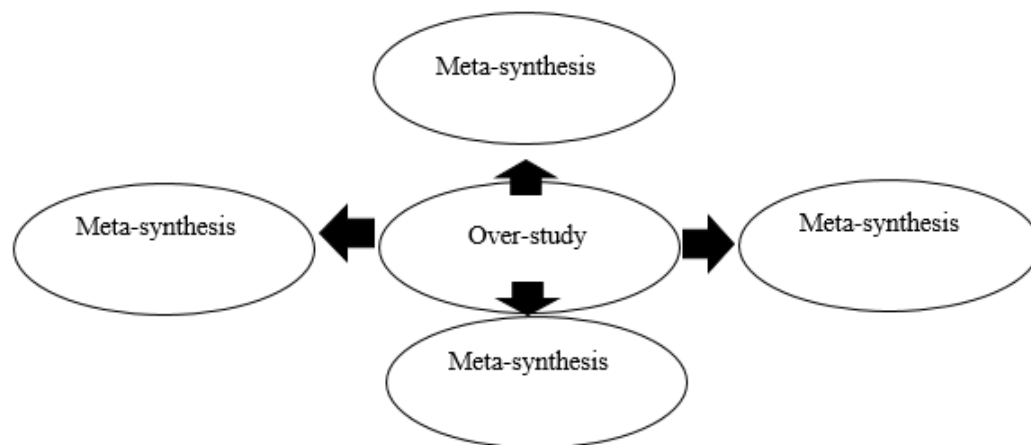
Factor load	Item	Structure	Factor load	Item	Structure
0/825	P1	operation	0/896	E1	Economical
0/783	P2		0/621	E2	
0/780	C1		0/703	E3	
0/659	C2	customer	0/869	E4	
0/710	C3		0/861	S1	
0/806	C4		0/736	S2	
1/000	F1	financial	0/658	EN1	Environmental
0/839	F2		0/640	EN2	
0/826	F3		0/813	EN3	
0/969	IN1	Inner processes	0/741	EN4	
0/836	IN2		0/722	EN5	
0/771	IN3		0/725	EN6	
0/991	GL1	Grows & learning	0/901	SSC1	Stability
0/700	GL2		0/692	SSC2	

### Over-study method



In recent years with the growth of research in various Fields of Science and the confrontation of the scientific Community with the explosion of information, thinkers in practice have come to the conclusion that knowing and mastering all aspects of a course and being up to date in this field is far from possible, so doing combined research has grown exponentially from the research findings of a particular subject in a systematic and scientific way to the researchers. One of the methods that has been introduced to instigate, combine and the pathology of past researches over the past few years is over, study.

Over–study is a deep analysis of the research work carried out in a particular field. In recent years, it has been named more than Meta - analysis. But it must be said that over- Study is different in terms such as meta-analysis, meta- Synthesis, meta theory and meta method. The over- Study includes all of these concepts (Peterson and Colleagues 2001) it can be said that Meta theory is analyzing the theories of Past research, Meta method is analyzing the methodology of past research Meta. Synthesis is the qualitative analysis of the findings of previous research and meta-analysis is the quantitative analysis of the findings of past research (Bench and De 2010).

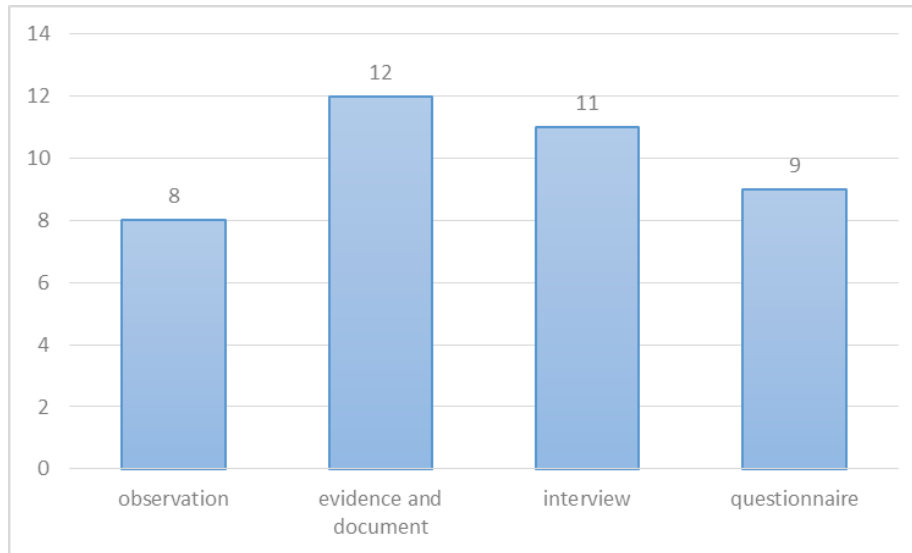


**Figure 3: different parts of an over-study (Bench and De 2010).**

In this research meta- Synthesis and meta-method have been used. The meta-method considers the proportionality and accuracy of research methods in the early studies. This includes analyzing the approach sampling methods the method of writing hypotheses, variables, society and examples, and all that is relevant to the methodological discussion the meta- Synthesis of the information and findings extracted from other qualitative studies examines, with related and similar issues. As a result, the considered Sample for meta-Synthesis is composed of selected qualitative studies and based on their relevance to the research question. Meta - synthesis is not an integrated review of the quality literature of the subject matter and the analysis of secondary and main data from selected studies, but also an analysis of the findings of these studies. In other words, Meta. Synthesis is a combination of the interpretation of the main data of selected studies.

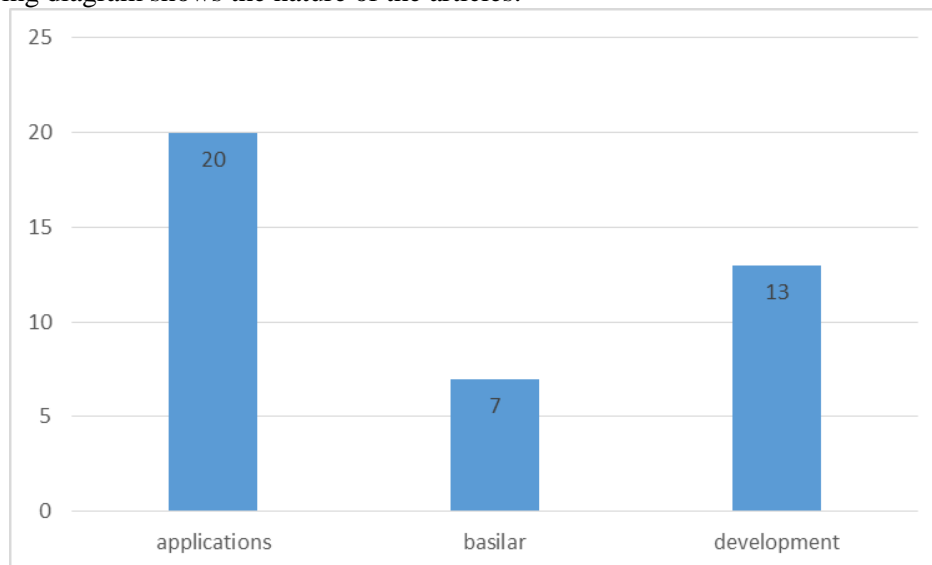
#### **Meta-method of a studied research**

The following diagram show the frequency of information gathering method in studies:



**Diagram 1: frequency of information gathering method**

The following diagram shows the nature of the articles:



**Diagram 2: frequency of the nature of the articles**

### **Steps to do Meta – Synthesis**

Meta-Synthesis requires that the researcher Carry out a careful review of the document being studied and combine the findings of previous research with each other. During this study, the dimensions and Components of the matter are presented in a better way. Therefore, Meta – synthesis helps to represent results more than any previous Studies Sandlowski and Barroso presented a seven-stage model for this purpose (sand low Ski and Barrow 2007).

#### **Step one: Setting up a research question**

The first question to start Meta – synthesis is what. In this research the dimensions and indices of sustainable supply chain have been questioned. Further questions like "who", "when" and " How" are planned.

### Step two: Review the tests in a systematic way

At this stage, the researcher focuses on systematic searches of articles published in various journals. He selects relevant keywords. Throughout the research, definitions of search terms of time frame are continuously reassessed. In the end, the researcher conducted a series of on-line searches to determine the selected studies. For each specific article, he will download a copy of the full text of the article along with a list of all sources. Then, he looks at other selections for review. He 0180 detects new search terms for searching on the internet.

### Step three: Search and select the right articles

At the beginning of the search process, the researcher determines whether the finding articles are appropriate to the research question or not. For this purpose, selected articles are reviewed several times. In this step, the researcher rejects a number of articles in each review. A tool usually used to assess the quality of a qualitative research primary study is the CASP Critical assessment skills Program. According to CASP index, research objectives, research logic, research design. Sampling, data Collection, reflection, ethical considerations; accuracy in analysis, clear explanation of findings, research Value are examined. In the present study, after filtering the articles through CASP tools and based on the theoretical Saturation, the final number of papers reached 40.

### Step four: Extract of Results

After selecting the selected documents and reports, it is time to extract the codes from the texts. The research questions were requested to extract the codes. Questions are:

- What are the factors and indexes in the sustainable supply chain?
- What are the economic Pillar of the sustainable supply chain?
- What are the environmental Pillar of the sustainable supply chain?
- What are the Social Pillar of the sustainable supply chain?

It should be noted that in the present study, 295 codes were identified in reference MAXQDA software. With this in mind, according to frequency, a total of 1295 Codes were extracted with frequency. Among the identified codes, reverse logistics (35 referrals), corporate innovation (30 referrals), supply chain integration (26 referrals) were identified among the most important codes.

### Step five: Analyze and combine the Quality Findings

In the present study, all the extracted factors are considered first and the study is considered as code. Then considering the concept of each Code, they are categorized in the same sense. Consequently, the concepts of research themes are formulated. The basis for categorizing these codes is the degree of similarity of different codes. Below is an example of encoding. In each theme, a number of Code is given as an example.

**Table 5: classification of into themes and categories**

reference	Relative abundance	Code	Theme	Category
Harmez et al(2003), bajdoor et al (2014), karbon et al (2012), ahi et al(2014), rifk et al (2013), bekhroob et al (2014), agroon et al (2012), wersy et al (2014), karter et al (2008), azapajik et al (2003), wolf et al (2011), yakoolova et al (2010)	19	ISO standards (9000). Flexibility (distribution, operation), product development Corporate business performance upgrade, planning, role of NGOs (non-governmental organization), quality control and assurance, information flow , Services (quality management, infrastructure, after sales, laws, Financial, strategy, time, reliability, diversity, Continuity), leadership support (senior management), competitive advantage, market (development, leadership, advantage, Markets, interaction, retail, goal, tensional, survival share. position, pressure) and...	corporation	Economical

Azapajik (2003), azapajik et al (2003), karter et al (2008), karter et al (2002), wolva et al (2001), petnik et al (2015).	10	Return on investment, product value added, Financial performance, tax rate, Financial reports like Sabrina, increasing low-cost methods, cash flow, financial resources, willingness to pay for sustainability, profitability for company, etc.	Financial	Environment
Harmez et al(2013), agroon et al (2012), wistrok et al(2012), gimenz et al(2012), Masoumik et al(2014), Morali et al(2012), seoring et al(2008), wolf et al(2011), elzebi et al(2013)	8	supplier vendor reliability, supplier satisfaction, supplier training, supplier management, existence of second supplier, supplier incentives, supplier integration, supplier development, supplier ability, supplier relationship management, performance appraisal and supplier selection, supplier risk management, collaboration with supplier, and...	Supplier	
Hutchins et al(2008), eshbi et al(2011), ahi et al(2014), rifk et al(2013), Harmez et al(2003), tatichi et al(2013), agroon et al (2012), azapajik et al (2003), Boukherroub et al (2014), karter et al (2002).	7	Design for the environment, reducing the impact of production on the environment product and waste disposal, product end-of-life management identifying and finding non-hazardous alternative sources, designing products that can be , recycled, detective product rates, low consumption of rare resources of environment optimization for garbage reduction, and...	Product and services	
azapajik et al (2003), kelos(2010), yakoolova et al (2010), wolva et al (2001), ahi et al(2014), rifk et al (2013), wersy et al (2014),	9	Greenhouse gas emissions , climate change , global warming , carbon content of the product , renewable energy use , pollution control , reduction of transport Publications, reduction of greenhouse gas emissions, and...	Energy and radiation	
Morana et al(2014), Boukherroub et al(2014), azapajik et al (2003), wolf et al (2011), tatichi et al(2013), rifk et al (2013), karter et al(2002)	3/14	Transportation optimization, automation of loading and unloading processes, transportation, transport Safety, Selection of environmentally friendly vehicles, logistics (management, Strategy, design, integration), international transportation.	Transportation and logistic	
Helderson et al(2009), alzebi(2013), kelos (2010), azapajik et al (2000), eshbi et al(2011), wolva et al(2001), ahi et al(2014),	4	Network recycling, recycling and reproduction of the product, quantity and quality of returned goods, reverse logistics, closed loop supply chain, reverse supply chain, efficient design for recycling and reuse, recycling regulations, design for demounting, and ..	Invers logistics and closed loop supply chain	
wolf et al (2011), Morali et al(2012), karbon et al(2012), eshbi et al(2011), tatichi et al(2013), gimenz et al(2012)	4	Green marketing, Green shopping, Green Sales integrate the Green activities throughout the whole chain, Buying Technologies fit with environment, Green material management, green distribution, and...	Green activities	
Morali et al(2012), Harmez et al(2013), mesomic et al(2014), eshbi et al(2011), rifk et al (2013), tay et al(2015)	4/55	EMS environmental management system, Environmental Health and Safety management, Development of attitudes and environmental ideas in the whole chain, Attention to customer's environmental Needs, environmental commitment, Green supplier management, Select a Supplier Compatible with the environment, Environmental responsibilities , and ...	Management	
karbon et al(2012), rifk et al (2013), eshbi et al(2011), gimnez et al(2012), ahi et al(2014), mesomic et al(2014)	2/15	Environmental taxes, policies of governmental mental environmental, environmental regulations, compliance and environmental auditing programs.	Rules and politics	
yakolova et al(2010), azapajik et al (2000), Boukherroub et al(2014), Hutchins et al (2008), azapajik et al (2003),	8	Employee training, employee recruitment and retention, employee motivation, quality of life, conditions & Status of work, health and safety, work place safety, Voluntary activities, work-life balance, employee relationships, social participation, wages and benefits (fair) Job security, and..	Employment	
azapajik et al (2003), kelos (2010), karter et al (2008), ahi et al(2014), rifk et al (2013), zaylani et al(2012), wolf et al (2011), karter et al (2011),	4/1	Active engagement and being partner with stakeholders, Stakeholder involvement, Stakeholder integration, answering to Stake holders. Stake holder engagement and commitment, improved stake holder trust, raising awareness and stakeholder empowerment, providing a tool to encourage stakeholder participation in decision making, recognition of stakeholders, Stakeholder pressure and..	Stakeholders	
Hutchins et al (2008), karter et al (2008), wolva et al(2001), yakolova et al(2010), azapajik et al (2000), karbon et al(2012), alzebi (2013)	4/5	Demographic changes , amount of crime , living conditions , improvement , education level , access to health facilities , access to safe drinking water , Cooperation with the local community, industrial ecology, Social groups, and ...	Local community	Social

azapajik et al (2003), wolva et al(2001), ahi et al(2014), rifk et al (2013), agroon et al (2012), witstrok et al(2012), Harmeiz et al(2003),	4/4	Customer satisfaction, long-term customer retention, interaction with customer, Customer loyalty, increasing the customer awareness, customer expectations, customer pressure, create a value for the customer, customer complaints route, and...	customer
wolf et al (2011), Morali et al(2012), azapajik et al (2003), Boukherroub et al(2014), Hutchins et al (2008), azapajik et al (2003), rifk et al (2013), tay et al(2015), karter et al (2008), wolva et al(2001), morana et al(2014).	4/2	Creating a culture of Social responsibility, equal opportunities and non-discrimination, humanitarian activities, helping charity, integrating the methods of corporate Social responsibility, humanitarian money assistance, and ...	Social responsibility
Morali et al(2012), witstrok et al(2012), Harmeiz et al(2003),morana et al(2014), azapajik et al (2003), karter et al (2008), karter et al (2011), karter et al (2002), bolva et al(2001).	5	Organization norms, social values, freedom of thought, advertising special Offers (weekends, celebrations), participation in community projects, Preservation of cultural values, freedom of association, creation, and...	Organization

Among the categories are economic with 37; environment with 33.84 social With 29.16 relative frequency and the most important references.

**Step Six: quality control**

In step six, in order to evaluate the quality, the results are presented to one of the experts to be examined by the Kappa index. Table Six represents the agreement table between coding of one the experts and author of one of the text s and with respect to the significant number of 0-000 and the Kappa coefficient (662.0), this index is acceptable. It is worth noting that the Kappa coefficient is also referred to as the criterion for assessing internal reliability. The researchers believe that if this coefficient is this coefficient has a good value. Also, a significant higher than 0.6 indicates that the coding correlation coefficient of less than 0.05 reel township between the two documents is investigated.

**Table**

Signification estimation sig	Estimation Tb	Deviation estimation a	Amount	
0/00	4/439	0/157	0/662	Kappa agreement grade
			45	Number of valid observations

**Step seven: provide findings**

At the end, the results of meta-synthesis are presented in Figure 4. In the Figure below, each theme is represented by its relative frequency. As you can see in the model, in order to achieve sustainability attention must be paid to all three dimensions of the economic, environmental and social aspects and focusing on one or two dimensions does not lead to sustainability.

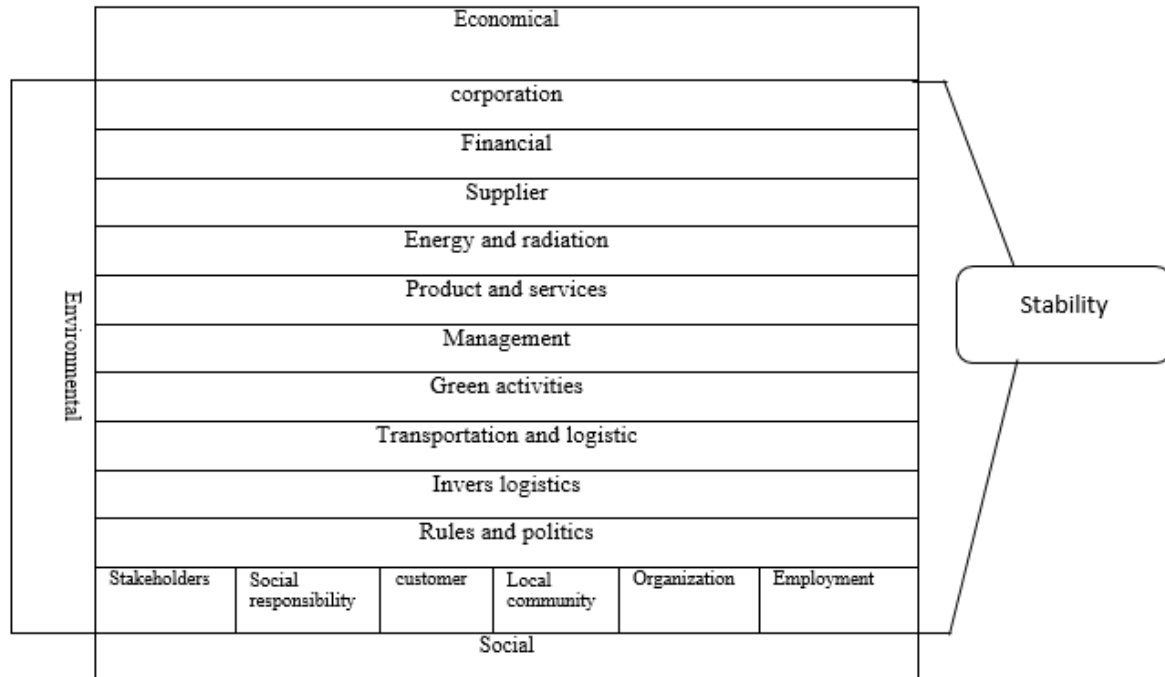


Figure 4: the proposed model for the sustainable supply chain

**Structural model and Hypothesis testing in quantitative phase**

A structural model test that is related to examining the hypothesis of research and the effect of hidden Variables on each other. To confirm the research hypothesis the Bootstrapping command used Smart PLS Software, which show the output of the coefficients t. when the values of t in the range is more than +1/96 and less than -1/96, indicate the relevance of the relevant parameter and subsequently confirm the research hypothesis (Spencioto Vincezi and colleagues 2010).

In order to test the research hypothesis (the sustainable supply chain has an impact on the performance of the iron ore industry in Golgohar Sirjan), the average of the three hidden economic, social and environmental variables are used as indicators of the sustainable supply chain Structure and the average of the four financial, customers, internal processes and growth and learning Variables as performance construct measures. The coefficient t of the main hypothesis, based on the effect of the sustainable supply chain on the performance is equal to 794/16 (more than 56.2), con firms the research hypothesis at the level of 0.01.

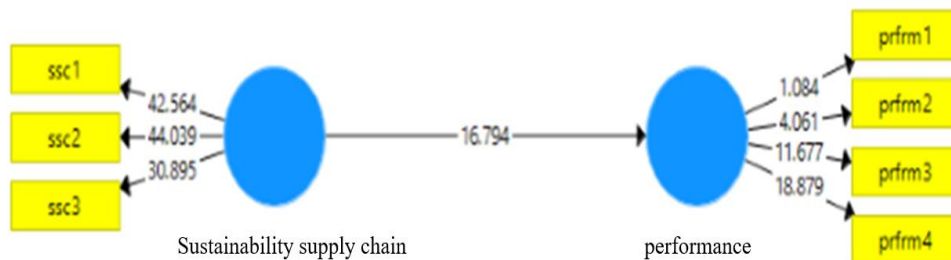


Figure 5: the coefficient of the hypothesis

Table 7 also depicts the results of the research. Due to the importance of the sustainability issue in the iron ore industry and the effect of sustainability on the performance of the Golgohar Sirjan plant, the main hypothesis of the research was presented to 7 sub results. The statistical tests were performed to determine

the measure and significance of the effect of each secondary result; and the results of the tests were observed in Table 7. The first column shows the relationship between Structures with sustainable supply chain and firm performance, the second column shows the amount of Statistics, the third column shows a significant level.

Meaningful	statistic t	
0/01	15/643	sustainability supply chain ← economical
0/01	9/437	sustainability supply chain ← social
0/01	3/290	sustainability supply chain ← environment
0/01	27/141	supply chain ← financial
0/01	19/183	performance ← customer
0/01	0/733	performance ← inner processes
0/01	0/396	Performance ← growth & learning
0/01	16/794	performance ← sustainability supply chain

### Discussion and conclusion

In this research, using the meta-combination method, the study of sustainable supply chain indices in the research background" and the study of 40 articles and the achievement of theoretical Saturation were studied.

In the present study, 295 codes were identified in reference MAXQDA software. It should be noted that some of the identified codes have several abundances. With this in mind a total of 1295 codes were extracted with abundance. Among the identified codes, reverse logistics (35 referrals) corporate innovation (30 referrals), supply chain integration (26 referrals) were identified among the most important Codes. After identifying the codes (variables), the researcher categorized the codes into the themes according to the research background of the subject and individual taste then categorized the codes into 19 themes. According to the research with the review of the subject's background, the sustainable supply chain has been comprised of three dimensions (economic, environmental, and social) and finally, a model for the sustainable supply chain was presented. In the quantitative phase, the effect of sustainable supply chain dimensions on the performance of GolGohar plant is Sirjan had been investigated the company's performance measurement was conducted using a balanced Scorecard approach. According to the results, the firm's Performance in the three dimensions of the Sustainable supply chain is at an acceptable level and the assumptions about these dimensions are confirmed, of course, the economic performance of GolGohar Sirjan plant in the sustainable supply chain is at a higher level and then social responsibility is in the second and next the environmental dimension.

#### Scientific and practical proposals for future research

- investigating the impact of sustainability in other country's mineral plants such as economical dimension on environmental, economic dimension on social , environmental dimension on social
- Customize the Scorecard and add other dimensions to improve the measurement of the organization's functions
- Research on the implementation of sustainability measures in the leading countries in the field of Sustainability and sustainable chain supply
- More attention is paid to the environmental and social dimensions of the organization's mission, in order to guarantee the company's access to success.
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- Establish quality management systems and set up necessary guidelines and provide specialized training.
- contribute to the quality and attention to environmental, safety, health and health of employees issues through the development of university Campuses, the education of managers, the development of Sports and altruism in the priority area of social responsibility,

- To improve social performance, much attention will be paid to improving communicating and Staff training.
- Conducting periodic conferences to introduce companies that have done their most to maintain their supply Chain and provide solutions for their use in other companies.
- Awareness of industry managers about the long-term benefits of implementing corporate Sustainability measures.

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