Risk Mitigation Strategy for Spend Management in Strategic Procurement Through Automation of Processes

Mian Wasim Layaq, Alexander Goud, Bernd Noche

[1,2,3]*Department of Transport and Logistics, University of Duisburg Essen, Germany*

[1]wasim391@yahoo.com

[2]alexander.goudz@uni-duisburg-essen.de

[3]bernd.noche@uni-duisburg-essen.de

***Abstract*— The digital revolution is currently shaking every sector of the industry especially the supply chain and procurement industry. Concepts like "IoT", "Industry 4.0" and "Procurement 4.0" are floating all around which is making the industry more competitive. The digital revolution is compelling the businesses to work in collaboration to achieve their targets because it is getting almost impossible for companies to survive independently, while on the other hand these collaboration lead to the complexities of the processes which can result in-transparencies in the process flows and spend management. A proper, clear and transparent spend management is the key to the success of any organization and an uncontrolled, unclear spend management can lead the companies to bankruptcies. The purpose of this research paper is to show how strategic procurement perform their spend management with conventional methods and how the digitization and automation concepts can be used to improve the whole spend management process and how to mitigate the risks associated with spend management. Emerging literature, case studies, blogs, expert opinions, market knowledge, practical business experiences and citations are used to fulfil this task. This paper could further contribute to the strategic management sector in terms of spends management via automation of processes.**

***Keywords*—** procurement, strategic procurement (P2S), procurement 4.0, spend management, spend cube, SCRM, IoT (Internet of things), Industry 4.0, automation, risk management

1. Introduction

With the current growth in technology the world is changing with a rapid speed, the companies cannot survive in the industry all alone, collaboration and cooperation are the need of time and because of this the supply chains are becoming more complex than ever which makes the supply chain more prone to risks. The world is heading towards automation and worlds like "IoT", "Industry 4.0" the hot topics; experts believe that supply chains must invest in the right technologies, people and processes to stay in the digital race [1].

The presence of the human factor necessarily means the possibility of errors, and these errors naturally have accumulations that may reach even the furthest point in the organization and this leads to an increased possibility of accidents and fluctuations in product quality and waste of time.[27]

The digital revolution is influencing every industry, but its greater impact is on the supply chain industry because supply chain of today is not possible without collaboration, more collaboration means involvement of more parties, more parties mean more processes, more processes means more complexity and more complexity means more risks. Procurement is an important part of the supply chain and it involves collaboration between many parties, so this impact of digital revolution is also hitting the procurement industry and is making the procurement processes prone to risks. Procurement is divided into 3 levels i.e. Operational Procurement, Tactical Procurement and Strategic Procurement. The focus in this research is to deep dive in the Tactical procurement processes and to analyse which are the risks associated with tactical procurement, how huge the impact of this risk can be to any organization and what could be possible risk mitigation strategies to deal with these risks. Risk management is all about identifying, analysing, evaluating and mitigating possible risks, which could affect the business processes.

In recent times it is crucial that business have clear visibility of what they are buying and how much they are spending, still many organizations don't have a good understanding of their spend visibility [2]. In the scope of this research, we will see that how automation of processes can play a vital role mitigate the risks in tactical procurement. Four main research questions to investigate in this research

1. What is procurement and its main types?
2. How important is spend management in strategic procurement?
3. What are the potential risks associated with spend management processes?

4. How automation can have an impact to mitigate risks associated with spend management?

2. Methodology

In our research here, we have shown how automation concepts can contribute to mitigate the risks associated with spend management. In order to achieve our target, we have started broader by identifying the procurement processes, further we have explained the conventional spend management processes in procurement in details and at the end we have compared the conventional / manual spend management processes with our proposed automated concept and have defined which benefits could be achieved by our proposed concept.

2.1. Procurement and its types

Procurement is the action of acquiring goods, services or works from an external source. It is a process in which two or more parties find and agree on terms, how these goods, services and works are going to be executed to achieve a certain goal. Typically, procurement can be divided into 3 types.

2.1.1 Operational Procurement

Operational procurement commonly known as P2P (Procure to pay) or R2P (Requisition to pay) is the process of requisitioning, Purchasing, receiving, paying for the good or services needed. The name comes from the ordered sequence of procurement and financial processes, starting with the first steps of procuring goods or services to the final steps paying for it [13]. Operational procurement deals with the orders after a contract has been set, and it works for the daily purchasing needs of an organization, it involves buying goods and services for an organization, managing deliveries and contract and finally dealing with complaints if any [14].

2.1.2 Tactical Procurement

Also known as S2C (Source to contract), this refers to the short-term plans (up to 1 year) and transactional activities to keep the business running smoothly [3]. This type of procurement also a vital part of procurement and involves steps: Requirement specification, Invitation of tenders, Negotiation (auctions), contract creation, contract management, supplier evaluation, Supplier master data management and claim management. This type is the focus of our research and is discussed in detail in the next chapters.

2.1.3 Strategic Procurement

It is also known as P2S (Plan to Strategy), it refers to long term organization wide plans to ensure timely supply of goods and services those are critical for the business [4], on the other hand it focuses to reduce suppliers, identifying critical suppliers and maintaining long term relationships with Strategic suppliers [5]. This type of procurement is the most important type of procurement, it deals with the overall strategic topics and has the biggest impact on cost saving. The typical steps of a P2S process are: Spend analysis and management**,** Demand management, Market analysis, Material group strategy, Supplier qualification, Supplier risk analysis, Supplier development Spend analysis and management. Spend analysis is the process of identifying, gathering, cleansing, grouping, categorizing and analysing your organizations spend data with a goal of decreasing procurement costs and improving efficiencies. [6]

2.2 Types of Spend

It is important in any business to identify where the spend is taking place, controlling the spend is an art which brings organizations to achieve its targets. Spend is normally divided into two types which makes it easy to track and trace.

2.2.1 Direct Spend

Also called indirect procurement, it refers to the purchase of good and services which are directly related and incorporated to a product being manufactured i.e. raw materials, components, hardware etc. [7]. Normally these procurements are done in large quantities and are acquired from the best possible suppliers at the best prices with the right quality and quantity.

2.2.2 In Direct Spend

Also called in-direct procurement, it refers to the purchase of goods and services which are not directly related and incorporated into a product being manufactured i.e. computers, software, office supplies, equipment etc. [7]. The indirect spend is prone to many risks, one of the important one is Maverick buying, which can lead to uncontrolled and In-transparent spend.

2.3 Supply Chain Risks

While reviewing the risk management literature, the query is what is supply chain risk? It becomes sometimes difficult to distinguish between supply chain risk and the uncertainty in supply chain operations. In previous days risk used to be simply linked to unexpected events but with the passage of time and continuous interest of researchers shown in the risk management, different researchers

define risks in different ways. [8]. define risk in their research as the “effect of external events such as wars, strikes or terrorist attacks and impact of changes in business strategy”. [9] Relate risk to natural disaster, strikes, earthquakes, economic disruptions terrorism and political instability. [10] Categorize the risk into 9 categories in their research, which include disruptions, delays, systems, forecast, intellectual property, procurement, receivables, inventory and capacity. According to [11], Risk is the "level of exposure to uncertainties that the enterprise must understand and effectively manage as it executes its strategies to achieve its Business objectives and create value". "Risk is a painful reality in every business today. Strategic initiatives like low-cost-country sourcing and supplier rationalization programs only increase manufacturer's exposure and vulnerability to the risk of supply chain disruptions, the recent studies have shown that even the most sophisticated companies need a reminder for the different types of risk, and how to mitigate each" [12]. Anything in supply chain that disturb the flow of information or material from base supplier to end customer is considered as risk in supply chain [13]. Risks in supply chain can be categorized into two main types, **a.** External risks **b.** Internal risks.

Examples of external risks are supply risks, in-transparent spend, geopolitical risks, business risks, environmental risks, demand risks, economic risks etc.

Internal risks examples are manufacturing risks, Material flow risks, process risks, technological risks, cultural risks, control risks etc. [14]

2.4 Risk Impact on any Organization

Figure 2.1 shows a risk matrix which illustrates that how the supply chain risk has an impact on the overall Business. The probability of the supply chain risk is directly proportional to the impact of on the Business, it means that higher the probability of the supply chain risk, higher the impact on the Business.

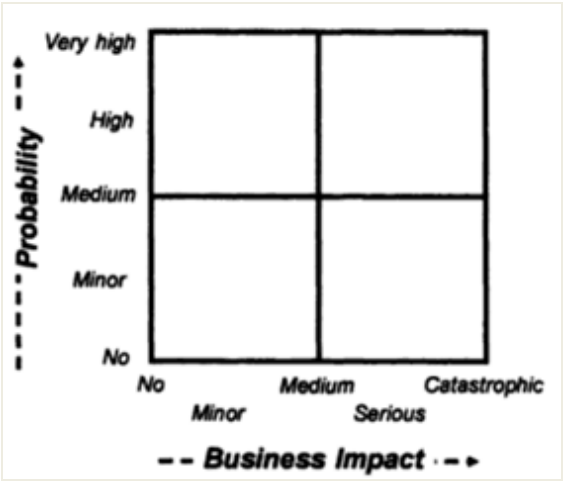

Figure 2.1. Supply chain risk matrix

The firms and Businesses can reduce or limit the impact of the Supply Chain disruptions by identifying the risks within their supply chains and developing the right ways and strategies to mitigate them. It is important to identify the disruptions within the supply chains in order to excel in the Business market. This process should be documented in the risk management plan, which is part of the overall business plan [15]

2.5 Supply Chain Risk Management Process

The supply chain risk management process is the process which shows how the risks associated to the supply chain can be properly managed.

[16] Define supply chain risk management as “the ability of a firm to understand and manage its economic, environmental, and social risks in the supply chain”, which could be materialized by the adoption of contingency planning and having a resilient and agile supply chains [17].

The supply chain risk management process consists of 2 elements; supply chain risk analysis and supply chain risk control. Figure 2.2. shows the supply chain risk management process.

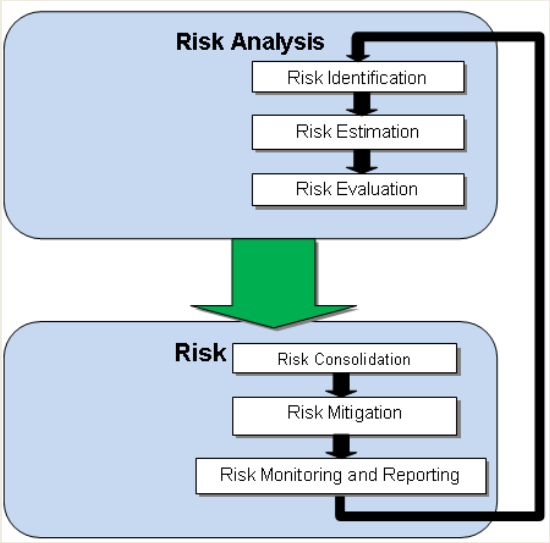

Figure: 2.2. Supply Chain Risk Management Process.

2.6 Risk of Improper Management

A proper spend management is the key to the success of every organization and this can work as a door opener for costs savings, but still many big companies don't invest time and effort in this area, below are some of the prominent risks associated with spend management.

2.6.1 Maverick Buying

One of the biggest risks to in-transparent spend management process is the "Maverick Buying", it means that when someone within an organization buys/source a product or service without involving the procurement. Maverick Buying is one of the biggest threats to any Procurement organization, because maverick buying simply bypasses the procurement processes and procedures, contracts, negotiations, price comparisons, contract agreements etc. [18]. Maverick Buying refers to a procurement, which is uncontrolled and unplanned and is executed without the consultation of procurement department; this process does not compliance with the standard purchase practices, framework agreements, price comparison and negotiation [19]. Maverick buying causes spend "leakage", it impacts the spend transparency because of the usage of non-contracted standard suppliers [20]. Maverick buying have adverse effects on any organization and can push any company closer to the brink, because it costs you time, money, manpower to perform the purchasing tasks and if you don't have total spend visibility, you cannot perform effective spend analysis, organization money is wasted, proper data management is compromised and above all the risk of non-compliance increases [21].

2.6.2 Low Transparency

One of the major risks of improper spend management is the low transparency of spend, it means that the organizations don't have the correct overview of where they are spending how much and why, this low transparency could lead the businesses to heavy losses and even to bankruptcies.

2.6.3 Increase Overall Spend

The non-managed spend will result into an increased overall spend of any organization. As there will be low visibility of spend there are high possibilities of incurring wrong spends which automatically will increase the overall spend.

2.6.4 Poor Supplier Management

The spend is directly related to suppliers, if there is no visibility of the spend it will directly impact the supplier management process, which can increase the risk of poor organizational performance.

2.6.5 Frauds, Misuse, non-compliance

The unmanaged spend can be a door opener to frauds, misuse and non-compliance, there are many incidents observed in recent years that the managers have misused the money of their organization. This can have a huge impact on the company's overall savings as well reputation.

2.6.6 Poor Claim Management

Claims are directly related to spend, an improper and in-transparent spend management can results into poor claim management.

2.6.7 Low Transparency

One of the major risks of improper spend management is the low transparency of spend, it means that the organizations don't have the correct overview of where they are spending how much and why, this low transparency could lead the businesses to heavy losses and even to bankruptcies.

3. Explanation and Results

In this section we have explained the spend analysis processes and have explained our proposed automated spend management solution and have also shown the benefits which can be achieved by implementing our proposed solution

3.1. Spend Analysis Process

The spend analysis process works in a systematic way, all the data is collected to a master database and the steps are below:

Data Collection: Data collection is the base for developing the best result, the stronger the base the better the result.

The data is collected from different sources and is arranged in a standard pre-defined format depending on the requirement of the company, where the scope and focus area of the business is defined, and all the important open questions related to the data are answered.

Data Cleansing: The data is cleaned and any typos, misspellings etc. are eliminated

Data Categorization: The data is classified and divided into different categories which are related to the business

***Benchmarks assessment*:** The data is compared against the benchmark

3.2. Proposed Automated Spend Management Process

In the proposed concept, we have tried to achieve an automated spend management process which will provide more visibility of the spend of any organization, the data will be properly analysed and automated reports for management will be processed. This solution will contribute to the overall performance of any supply chain. Our proposed concept is embedded with an automated P2P process, an automated P2P process is the prerequisite to implement an automated spend management process, because the actual spend takes place in the P2P process.

Below figure shows a typical automated process, the exchange of documents across all nodes are electronic,

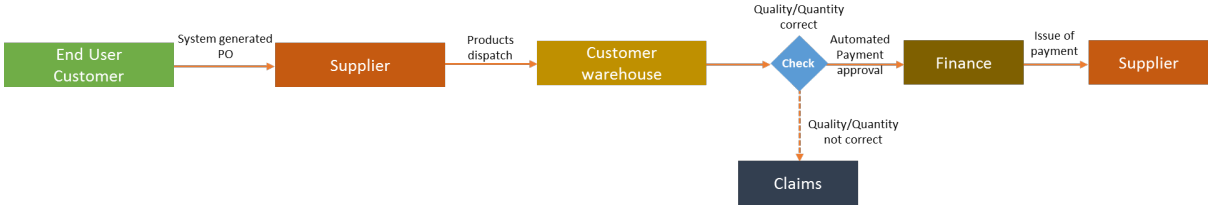

Figure. 3.1 Automated P2P process execution cycle

the invoices are automated, and the payment are done electronically.

The End user is provided with a software-based catalogue platform, which includes information regarding the preferred suppliers, products, prices, product availability, expected delivery dates etc. This will give the end user the freedom to choose which product and supplier fits his/her requirements the best. The user will select his/her choices, which suit him/her the best and once he/she orders the products an automated purchase order (PO) will be sent to the selected supplier, while on the other hand the same information in a predefined structure will be stored in a Master Database as data points. Master database is part of our solution and it is the database where all the information is stored which are associated with the complete purchasing process.

As a next step the supplier will receive the automated POs and will dispatch the required products/items to the end customer along with an automated electronic invoice, as soon as the goods leave the warehouse of the supplier the dispatch information will be automatically uploaded to the master database in form data points. As a next step the goods / products will be received at the customer warehouse, upon the receipt of the goods, the exact arrival dates, quality and quantity information will be recorded in the automated P2P software, while on the other hand the same information will be uploaded to the master database as data points.

As next step if the quality, quantity and any other variables, which are set by the business as product acceptance criteria, are fulfilled,

an automated payment approval will be sent to the finance department and the finance department will issue the payments to the suppliers, the same information will also be recorded at the master database as data points.

By now, an automated successful P2P cycle is executed, and all the related information are recorded in the master database as data points. The master database will store every small data point related to the spend, as data is power so the master database in our solution is the powerhouse.

The master database will have the ability and capability to store all the information in a user-defined structure. The master database with all the

information is connected to the actual automated spend management solution which will provide us the basis for spend analysis and to find answers to the questions **like "what am I spending", "where am I spending", "why am I spending"** etc. Our proposed concept is shown in the below figure, along with the explanation of the automated spend management process.

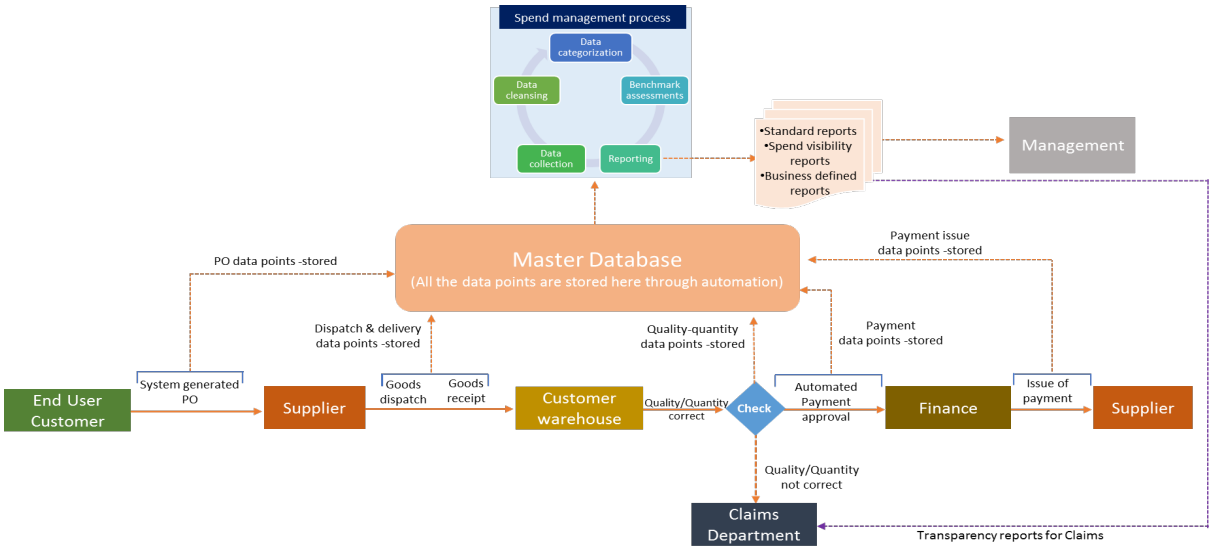

Figure 3.2. Proposed automated spend management process

This solution will be capable to perform all the spend management steps in an automated way and will be performed in the following steps:

Step 1: Data collection/ data acquisition: The first step is the data collection; in the conventional methods, the raw data is collected from different sources, but as in our concept, the single source of information is our master database, so the data will be collected from the master database and this process will be an automated process.

Step2: Data cleansing: it is the most important step of the spend management, here all the data will go through a cleansing process where all the errors and unwanted information will be eliminated. The data quality is very important to be achieved and can be measured with criteria like **validity of data**, **accuracy of data**, **consistency of data** and **completeness of data**.

Data cleansing is a repetitive process, will be performed every time when a new data point enters the solution, this step is fully dependent on the business's requirement, and can vary from business to business because every business has its own priorities in terms of spend.

Step 3: Data categorization or data classification: In this step the data/spend is categorized according to products, items, spend categories etc. it means, which spend, belong to which product or category? This step already is a deep dive in the data visibility; again, the outcome of this step can vary from business to business.

Step 4: As next step, the benchmark assessment of the data will take place; analysis against the benchmark will be done.

Step 5: in the final step, different automated reports, dashboards, analysis, saving opportunities etc. will be sent to management for their decision-making. These reports could be defined by the businesses themselves and will vary from business to business.

Our proposed automated solution will bring effective and efficient spend visibility to the overall spend of any organization. The P2P process will be automated, and all the data will be stored in the master database, which is the single source of truth that is why the chances of errors are reduced, and above all the solution will provide automated monthly, quarterly, yearly spend reports to the management for better decision-making. This process will also save a lot of time, will bring value, transparency and will reduce the risks.

3.3 Possible Risk Mitigation benefits of Proposed Solutions

As procurement automation is the need of time, the companies who wouldn't automate will remain far behind or would run out of systems [22]. Benefits of the automation which will mitigate the risks are discussed below.

3.3.1 Improved Spend Transparency and Visibility

The automation of the send management processes will increase the transparency level of the spend, if information is considered as power, then the transparent information could be considered as superpower. All these questions like what are we buying? Who are we buying from? Why are we buying? Who is buying what at which cost? Are we getting what we have been promised for? How are we performing in compare to previous years?

3.3.2 Reduced Maverick Buying

If you don't have total spend visibility, you cannot perform effective spend analysis, organization money is wasted, proper data management is compromised and above all the risk of non-compliance increases [21]. As the automation of S2C processes increase the transparency level of spend, thus the maverick buying could be significantly reduced. By automation of the spend management processes, the transparency level of spend increases, it becomes clear who is buying what from whom at which price, thus the maverick buying could be significantly reduced. Many buyers as well as suppliers who use spend analytics solutions and transactional purchasing systems associate maverick spend

reduction as the benefit of their solution [20]. There are certain ways to stop the maverick buying, some organizations prohibit maverick buying as a company policy, some establish clear processes, some arrange trainings to educate the offenders, but all the above are nothing without automation, if you want to achieve better results you need to automate all the processes [23].

3.3.3 Saving Opportunities and Cost Reduction

The prime goal of any procurement is to generate more savings, and the automation of the processes will achieve this direct as it has a direct impact on savings, costs reductions, cost avoidance. The automation of process can make the business to save in millions by reducing maverick buying, long processes, waiting times, reworks, manual tasks [24].

3.3.4 Optimized workflow

The automation of the S2C processes will optimize and streamline the existing workflows, as the S2C processes requires a lot of collaboration and cooperation between the teams, so optimization of workflows will ensure the success of the procurement processes. This will enable the procurement to trace and track the approved suppliers, the SRM, prices, the agreed terms and conditions and bottlenecks. On the other hand, it will also enable the stakeholders including suppliers to view the process flows in real time, which will lead to better cooperation between all departments [25].

3.3.5 Improved Supplier Relationship Management and Performance

The automation of this process will provide the basis to identify you ABC suppliers in terms of spend, based on that the supplier management strategy should be established. A good supplier relationship management is the key to success of any procurement organization, and this is considered as a top priority in the strategic procurement. The automation of the supplier management will provide the basis to work with the right suppliers. By having the right suppliers in the system, the overall trust level will be increased which will result into best results.

3.3.6 Reduced Process and Communication Time

One of the most important part in procurement is the time, the more time you waste the more your procurement loses, this time could be the process cycle time or the communication time with suppliers or internal. The automation of S2C process will reduce the communication time between the procurement and supplier as well within the execution of processes, this will lead to the overall success of the organizations. When we talk about the communication with suppliers, some researches show that typical communication calls between the supplier and procurement takes an average of 6 minutes per call for basic interaction [26]. So, if this communication is reduced even to 3 minutes per call, it will have a tremendous impact on the performance of the procurement.

3.3.7 Transparent Cash Flow

With the manual process it is difficult to achieve efficient and effective results, but with the automation of the processes you can achieve transparent cash flows, it will bring clarity who is buying what at which prices under which term and conditions. The automation of this process can provide better cash management and impressive earnings growth for any organization.

3.4 Conclusion

Procurement is one of the most important part of supply chain management, if the procurement processes are properly executed the remaining steps of supply chain will be automatically improved which would produce better results in terms of cost savings and customer satisfaction. Strategic procurement is the most important part of procurement as it deals with the long-term strategies of the business, and most of these strategies revolve around the spend management processes. The digital transformation is considered as a threat by some people, but in fact it is not, rather It must be integrated throughout the supply chain to achieve the maximum results, it helps the businesses to improve their performance and savings opportunities but only if the digital transformation is implemented in the right ways.

The world is already progressing into the digital revolution, so most of the industries are moving toward digitization and supply chain management and procurement are also keeping their pace to remain in this race of digitization if not it will stay behind and will be vanished from the scene.

Spend management is considered as the most important part of strategic procurement as spend has impact on all the 3 types of procurement processes, improper and in transparent spend management can end in devastating consequences for any organization. It is the need of the time to automate every process of the supply chain procurement, so the automation of the spend management process will bring a lot of benefits for the organization. The automation of the spend management process will increase the visibility of spend, will bring spend transparency, will improve the supplier management and claim management processes and will improve the overall performance of the supply chain.

References

[1] Malvi Goyal, LET'S GET INTERNET OF THINGS (IOT) READY FOR PROCUREMENT!, https://www.zycus.com, Jan 4th, 2018.

[2] Claritum, "www.claritum.com," claritum., [Online]. Available: https://www.claritum.com/spend-visibility-why-is-it-so-important/. [Accessed 2019].

[3] Purchase Control, "https://www.purchasecontrol.com/," Purchase Control, 2019. [Online]. Available: https://www.purchasecontrol.com/uk/blog/tactical-purchasing/.

[4] Business Dictionary, "http://www.businessdictionary.com," Business Dictionary, [Online]. Available: http://www.businessdictionary.com/definition/strategic-procurement.html.

[5] CIPS (Chartered Institute of Procurement & Supply, "https://www.cips.org," CIPS (Chartered Institute of Procurement & Supply, [Online]. Available: https://www.cips.org/en/knowledge/procurement-topics-and-skills/strategy-policy/procurement-strategy-development1/strategic-procurement/.

[6] Jagger Staff, "https://www.jaggaer.com," 31 May 2016. [Online]. Available: /what-is-spend-analysis/.

[7] Charles Dominick, "NLPA - https://www.nextlevelpurchasing.com," 19 August 2019. [Online]. Available: https://www.nextlevelpurchasing.com/blog/direct-vs-indirect-spend.html.

[8] Martin Christopher and Hau Lee,, "Mitigating Supply Chain Risk Through Improved Confidence," *International Journal of Physical Distribution & Logistics Management,* vol. Volume 34, no. 5, pp. 388-396, (2004.

[9] Paul R. Kleindorfer and Germaine H. Saad, "Managing Disruption Risks in Supply Chains," *Production and Operation Management,* vol. Vol 14, no. Issue: 1, pp. 53-68, 2005.

[10] Sunil Chopra and ManMohan S. Sodhi,, "Managing Risk to Avoid Supply-Chain Breakdown," MITSloan Management Review, (October 2004).

[11] Deloach J.W., "Enterprise Wide Risk Management: Strategies for linking Risks and Opertunities," Financial Times/Prentice Hall, London, (2000.

[12] Jim Lawton, "http://blog.sourcinginnovation.com/," 2007. [Online]. Available: http://blog.sourcinginnovation.com/2007/02/14/five-types-of-supply-risk-and-how-to-mitigate-them.aspx.

[13] Norrman, A. and Lindroth, B., "Supply Chain Risk Management: Purchasers´ vs. Planners´ Views on Sharing Capacity Investment Risks in the Telecom Industry.," in *11th International IPSERA conference*, Enschede, The Netherlands, 2002.

[14] Crefield, "Understanding Supply Chain Risk: A Self-Assessment Workbook Centre for Logistics and Supply Chain Management at the Cranfield School of Management," 2003. [Online].

[15] Queensland Government, "www.business.qld.gov.au," 2013. [Online].

Available: http://www.business.qld.gov.au/business/running/risk-management/managing-risks-supply-chains/identifying-supply-chain-risks.

[16] Carter C.R and Rogers D.S, "A framework of sustainable supply chain management:," *International Journal of Physical Distribution and Logistics Management,* pp. 360-387, 2008).

[17] Musa, S. Nurmaya,, "Supply Chain Risk Management: Identification, Evaluation and Mitigation Techniques," Linköping University, Department of Management and Engineering, SE 581 83 Linköping, Sweden, (June 2012.

[18] Linda Ashok, "https://www.zycus.com," Zycus, 15 July 2019. [Online]. Available: https://www.zycus.com/blog/procurement-technology/ways-to-identify-and-stop-maverick-buying.html.

[19] Abhishek Nannore, "https://www.beroeinc.com," Beroeinc, 25 March 2014. [Online]. Available: https://www.beroeinc.com/whitepaper/maverick-buying/.

[20] Paul Rogers, "https://www.scm-portal.net/glossary/maverick_purchasing.shtml," SCM Portal, [Online]. Available: https://www.scm-portal.net/glossary/maverick_purchasing.shtml.

[21] Rob Biedron, "https://www.purchasecontrol.com," Purchase Control, 20 November 2018. [Online]. Available: https://www.purchasecontrol.com/uk/blog/maverick-spending/.

[22] Amy Grassl, "https://blog.esker.com," Esker Blog, 22 October 2015. [Online]. Available: https://blog.esker.com/5-benefits-of-p2p-automation/.

[23] Charles Dominick,, "https://www.nextlevelpurchasing.com/articles/maverick-buying.php," NLPA, 2013. [Online]. Available: https://www.nextlevelpurchasing.com/articles/maverick-buying.php.

[24] myInvenio, "https://www.my-invenio.com/," 2019. [Online]. Available: https://www.my-invenio.com/p2p-roi-calculator/?utm_term=%2Bbenefits%20of%20%2Bp2p&utm_campaign=%5BSEARCH%5D+Procure+to+Pay&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd-424998589641&hsa_grp=54670286338&hsa_src=g&hsa_net=adwords&hsa_mt=b&hsa_ver=3&hsa_ad=2.

[25] K. Freer, "https://www.corcentric.com," 21 02 2017. [Online]. Available: https://www.corcentric.com/blog/the-transformative-power-of-p2p-automation/.

[26] Claritum , "https://www.claritum.com," https://www.claritum.com, 2018. [Online]. Available: https://www.claritum.com/challenges-traditional-procurement-process/.

27] H. L1, "The Relationship of Organization Failure Modes and Effects Analysis with the Safety Quality for Supply Chain Risk Management," Int. J Sup. Chain. Mgt, Vols. Vol. 9,, no. No. 2, p. 764, 2020.