

# Implementation Digital Supply Chain Management System as a Reflection of Digital Transformation in New Normal Era: Study of System Crash and Fraud Prevention Analysis

Fauzia Putri Wahyu Permana, Gede Sri Darma

*\*Corresponding Author, Master of Public Administration, Pendidikan Nasional University, Denpasar, Bali Indonesia  
Pendidikan Nasional University, Denpasar, Bali, Indonesia*

**Abstract-** This study aims to evaluate the implementation process of digital supply chain management on Bali branch of PT. Airnav Indonesia. Digital supply chain management system in this research location is relatively recent, thus, this study focuses on the hindrance factors by providing guidance of crash system and fraud analysis. 8 informants as the samples of this research were put to the test, accordingly, 4 staffs of digital supply chain management organizers, 2 providers of goods and services as well as 2 users of goods and services. Data, those deriving from interviews, perpetual observations, and documentations were scrutinized by software Nvivo 12 Plus. Results achieved from the analysis determined 7 main nodes namely System, Fraud, Procurement, Vendor, Package, Goods, and Data. Two nodes, in particular, System and Fraud overlooked the research data signifying hindrance gaps arising from the crash system and fraud in the course of digital supply chain management. 11 hindrances happening as a consequence of fraud and 4 from that of crash system are applied as Denpasar, Bali branch of PT. Airnav Indonesia's evaluation basis to improve and mend the implementation of digital supply chain management

**Keywords:** E-Government, E-Procurement, Digital Supply Chain, Fraud, Implementation

## 1. Introduction

Modern supply chains are more vulnerable to fraud due to their global reach, the depth of supplier networks, the sheer number of transactions or volume of financial activity, the increasing resource needs to combat fraud, and the complexity of information technology systems. Every link in a supply chain represents opportunities for fraud or misconduct. Globalization marks technological advances hence contributes to free market trend with extremely intense competition among a great number of companies, specifically those from the sector of goods and services. They strangle one another to maintain their image before consumers by giving out their utmost effort to refine their quality and quantity as to remain their position to compete with other companies [1-3]. Information exchange is getting faster and easier in this era, the existence of internet rules in every life aspect. What is more, this advancement prompts human needs to be getting more complex ([4], Out of many sectors that are influenced by this digital era, procurement process of goods and services becomes one of them.

To cover up flaws of the conventional process of procurement and to better up the efficiency and affectivity, taking advantage of information technology should be emphasized even larger, that is to apply digital supply chain management or described as procurement of goods and services by the assistance of online or electronic means [5]. To establish good governance in e-government is developed within the value of digital supply chain management. This is a form of change, a solution to the majority of problems happening in conventional procurement of goods and services by the government [6]. E-procurement also very helpful during the pandemic outbreak of Covid 19, outdoor activities are being restrained according social distancing protocol [7]. AirNav Indonesia is among many enterprises that implements digital supply chain management system. State-owned enterprises BUMN serves the purpose of boosting flight navigation services in Indonesia, it runs its business process by Cost Recovery method. Kinds of service provided such as: air traffic services, aeronautical telecommunication services, aeronautical information services, aeronautical meteorological services, last but not least, search and rescue services [8].

To acquire goods and services, Denpasar branch of AirNav Indonesia according to [9] requires prospective providers. Chances are not limited only from domestic but they can also be reached overseas. However, weak points of digital supply chain management are often found in terms of transparency, inefficiency, and discrepancy of procurement function [10]. System failure indicates an error in digital supply chain management system and conflict of interest within the organization. There are 2 influential factors causing defect or failure in the system, internal factor is an error due to the software, on the other hand, external factor is outside the system or procedural. Former researchers claimed that internal factor that hamper during procurement executions is crash system where in this point website server goes through an inaccessible issue and hinders the organizers or the committees to receive data uploaded by the vendors [11-13]. External factor outside the system revolves around fraud within the procedures of digital supply chain management such as transparency that remains vaguely observed, constant revisions of regulation, inadequate facilities and lack of adept human resources who are not yet skilled in mastering the system [14-20]. This issue is similar to that of supply chain network of goods and services, pointing the obstacles in investigating the one who is responsible and involved in carrying out the illegal activity. This has been the ultimate answer to the

question of why the world cannot move on from the problem of counterfeiting, forced labor, and poor factory conditions.

Declared by Corruption Eradication Commission [21], the number of corruption cases in Indonesia specifically in the cases of procurement goods and services up to the year 2019 has been recorded approximately 206 cases and ranked number 2 after the cases of bribery and has increased for the last 5 years. It proves fraud cases in procurement field do not have a rest and still linger despite the fact that digital supply chain management system has been performed simultaneously by the government since 2008. On several studies, fraud practices discovered in the digital supply chain management process to mention a few such as: miscalculation of price per item and accidentally giving more money during the payment [22], inadequate field committee capacity, inattentive monitoring. Besides, error from the system such as: crash or down server can be stimulated from bandwidth limitation, firewall, corrupt files, and hacking [23]. Although it remains solid that digital supply chain management system can inspire efficiency, transparency, and accountability compared to conventional system of procurement, nevertheless, it is saddening to understand that gaps existed in this new way of procurement are misused by unreliable parties to commit fraud practices to occur in the implementation of digital supply chain management.

This study concentrates on the implementation analysis of digital supply chain management on Denpasar branch, AirNav Indonesia. It is expected that this research might disclose new patterns that have never before identified by a considerable number of previous studies, and might also uncover new perspectives in terms of issues regarding website system, and fraud that overwhelms digital supply chain management system. Hopefully, research results in this study are put to good use in perfecting digital supply chain management system in any aspects especially in procurement division of Denpasar branch of AirNav Indonesia.

## 2. LITERATURE REVIEW

### A. E – Procurement

The incurrence of digital supply chain management is government's innovation in the sector of procurement goods and services that prioritizes transparency and accountability. It fulfills information access needed by the public related to the procurement process of goods and services. The implementation of electronic procurement in regions is administered by the procurement service unit organization and Electronic Procurement Services (LPSE) [24].

[25] asserted that the implementation of digital supply chain management should be regarded as an attempt to enhance the purpose of procurement virtually such as: quality, punctuality, cost, minimum business risk and technic; optimization of competition and integrity. Digital supply chain management refers to the use of integrated communication system (web-base) to perform half or the overall process of purchase, a kind of process that integrates the initiation stage from need identification by users to auction, negotiation, ordering, reception and post-purchase process / monitoring and evaluation. On the whole, it transforms the conventional environment of procurement. In the public sector, it emphasizes the advantage of digital

supply chain management to make efficiency and effectiveness of savings; it reduces the costs proceeded by the transaction process.

Digital supply chain management is defined as an act of procuring goods and services through a system that operates under the basis of computer network and internet. It does the overall procedure of purchasing and selling to create effectiveness and efficiency. Meaning that digital supply chain management reduces several procedures in the conventional way of procurement. Practically, digital supply chain management saves paper use, time, and effort.

### B. The purpose of Digital supply chain management

Extensively, these are the purposes behind the implementation of digital supply chain management in the sector of procurement of goods and services in a government sector as proposed by [26]:

1. Ameliorates the level of effectiveness and efficiency in the goods/services procurement
2. Promotes the level of transparency and accountability
3. Eases the sourcing process of finding data and information concerning the procurement of construction services.
4. Enables quicker and precise process of procuring government goods/services
5. Provides opportunities, accessibility, and rights for providers of goods and services
6. Establishes a healthy environment and stimulates fair competition among providers of goods and services
7. Inspires convenience for the government's officers and encourages the use of online communication as to lower the frequency of face-to-face meetings between construction service providers and procurement committees. Hopefully, it will prevent the practices of corruption, collusion, and nepotism.
8. Optimizes inventory levels by adopting efficient procurement practices.
9. Makes efficiency by limiting human resources during the procurement process.
10. Reduces contract expense through the use of technology with the purpose of increasing users' awareness of the available contract facilities, and eases the evaluation process.
11. Reduces transaction costs through the use of automatic processes in technology that replaces paper-use, and to reduce and standardize the processes and documentation.

### C. Implementation of E-Procurement

[27] define the implementation of public policy as acts performed by individuals (or groups) from either the government or private sector that are redirected to the visions set up within verdicts which were formerly established. Acts, in this matter, include the endeavors to bring these verdicts to be operational acts in the specified period of time for the sake of effort continuity in making big or small changes as arranged by policy verdicts. In respect of policy implementation as stated by [27] it is said that there are six influencing variables, in particular:

- 1) Policy standards and objectives,
- 2) Policy sources
- 3) Communication among organizations and reinforcement of activities
- 4) Characteristics of the executing agents

- 5) Economic, social, and political environment
- 6) Attitudes of the executing agents.

In general, it is understood that the model of policy implementation process centralizes the 6 variable groups affecting the delivery of public services, further: demonstrates the relevance of policy standards and objectives, sources, communication among organizations, characteristics of the executing agents and attitudes of the executing agents to observe the governing policies.

Aligning the implementation of digital supply chain management, significant numbers of study probed by [12, 20, 27], affirmed the findings of 2 leading factors that halt the success of digital supply chain management in its implementation, those are failure in website system or server (Crash System) and scam pulled by internal parties (Fraud).

#### D. Crash System in Digital supply chain management Implementation

In reference to [28], online auction system of goods and services procurement by the government is starting from the document input process, description of auction process, proposal input process by supply providers, proposal review by the committees, winner announcement, objections, and winner confirmation. Overall process is done via website in administering each requirement concerning auction documents until the auction winner announcement process. Server in the online auction system supports and facilitates data input process sent by the supply providers and notifies every activity during the auction. Web-based online auction system eases the information delivery to auction participants about the auction package to be held, to prevent fraud practices during the process and to create transparency among auction participants as well as data accountability.

Studies by [29] verified the issues in digital supply chain management system have not been solely caused by the system capability but also the poor quality of human resources, the beginning observation denoted that crash system in the procurement of goods and services on Denpasar branch of AirNav Indonesia is determined by the internal and external factors, as follows:

1. Internal
  - Bandwidth Limitation
  - Firewall / Security Intervention
  - Corrupt Files
  - Down Server
  - Lack of Staff Integrity
2. External
  - Hacking

#### E. Fraud Prevention in Digital supply chain management Implementation

[3] explains fraud as a wrongdoing and is irresponsible in the manner of conducting every way possible to gain advantage for the sake of personal interest before others and could not care less of the harms it caused to others. For [4], fraud is a mischieving act or misdeed with the purpose of benefitting themselves or their group that upset others in the process. While [16] elucidates fraud as an act against law that is committed on purposely by either internal or external parties to obtain welfare for themselves or their group by sacrificing others' needs.

Discussion section in these studies accentuates the definition of fraud notably internal fraud that happens all

the time in the procurement of goods and services in government sector that induces state loss. [12] explains fraud in the practices of goods and services procurement can be classified in the following:

1. Discrepancy of the goods and services written in the contract with the needs of instances or/and the society, in terms of type, quality, and quantity of the goods and services.

2. Discrepancy of technical specifications of goods / services submitted by the providers with technical specifications of goods/services dealt in the agreement/contract.

3. Discrepancy of the volume (quantity) of goods and services submitted by the providers with the number or the amount that has been agreed upon the agreement/contract.

4. Price impropriety of goods/services as set within the contract/agreement. As an illustration, the procurement of computer equipment that is far more costly compared to the price circulating in the regular markets due to mark-up.

5. A delay in the work completion by the chosen partner by postponing the timeline set within the agreement/contract.

#### A. Quality of Procurement Committees

Supposedly the activity of goods/services procurement involves a third party, that is suppliers of goods and services, and then it is imperative for the process to be sustained through committees or procurement organizers. Committee is one of the subjects in the procurement goods and services by the government. Thus, activities and decisions made by the committees would totally determine the running of procurement process. Entire activities and decisions taken by the committees are extremely crucial because they are dealing directly with the content of interests of various other goods / service procurement subjects.

#### B. Quality of Goods and Services Providers

The quality of goods and services providers is also one of the most important elements in a procurement system of goods/services. Consistent with [5], supposedly a goods and services procurement is not joined by providers with decent quality, as a consequence, there will be a great deal of misunderstanding between the committees and the providers that might incur a loss to both parties, such as:

- 1) Disparity in the understanding governing regulation used in the procurement process, therefore procedures that should have been completed by the providers are far from perfect. When this remains occurring, many documents from the provider candidates of goods/services are to be rejected/returned, whereas providers have goods/services supply with better quality and relatively more economical compared to other provider candidates.

- 2) Provoke complains/objections deriving from the tender participants, thinking that the procurement system has not been fair enough and only benefitting certain tender participants.

- 3) Users of goods and services are not satisfied with what they acquire and what has been promised by the provider seemingly the goods and services presented does not accommodate the agreed criteria or specifications.

- 4) Instigate gaps in the procurement process that could as well make it prone for fraud practices to take place.

#### C. Incomes of Procurement Committees

Aside from the quality of procurement committees and providers of goods and services, another aspect to keep in mind in establishing objective process of procurement is the incomes earned by the committees. Procurement committees are utterly part of government's officers and earn their incomes as civil servants based on the governing regulation, in addition to honorarium for their services as procurement committees. Along their way to acquire more money, they could in every possible way do everything it takes, including exploiting their position and authority. Take for example, committees who "let loose" their authority and somehow manage to arrange the winning of a tender participant for a considerable amount of money.

#### D. Goods/Services Procurement System and Procedures

Other aspects that denote significant importance in the running of procurement system are general requirements and procedures of goods and services procurement. It is claimed that well-entrenched system and procedures reduce the possibility of fraud practices to be at large in procurement sector. [14] distinguish well-entrenched system and procedures in several criteria, those are transparency, economy principal, efficiency, timeliness, fairness, and equity. Those should also allow feedback mechanism signifying an attempt to improve and upgrade existing system and procedures. Complaint handling mechanism is also vital to strengthen the attempt in observing general requirements that have been settled.

#### E. Ethics in Goods/Services Procurement

Procurement ethics has the same weighted value as others that should be taken into account to create a sustainable procurement in the government sector. It is associated with the prevalence in the business world that is considered to exhibit a fair-play business competition system. It relates to a prevention act of authority exploitation or collusion for personal or group gains that directs to a state loss [17]. Based on Government Goods and Services Procurement Institute it is explained that the procurement of goods and services must oblige and put to use ethics in procuring goods and services. Observing procurement ethics is viewed as a way to maintain a sustainable procurement of goods and services. The more it is abandoned, then it can be ascertained that the visions and purposes of procurement as published by [8] cannot be realized, and the consequences are listed as follows:

1. Inefficient and ineffective goods and services procurement.
2. Closed and uncompetitive competition.
3. The provision of great quality in a favorable price goods and services is unrealizable.
4. An increase of providers' capacity and capability since a healthy environment in market competition is getting more difficult to achieve.
5. In turn, public service quality is also difficult to boost.

#### F. Environment in Goods/Services Procurement

System and procedures of procurement will constantly interact with the environment whereupon the system is employed [17]. In conformity with [14] a decent work condition for the government's officers is to reward them with incentive once they successfully show their capability as an honest officer, at the end, it will lower the number of corruption cases. The application of law-abiding internal controlling system is believed to have the potential in

suppressing fraud practices. In goods and services procurement sector, it may be enforced from the launching of the procurement plan-building until the due date of procurement as to lessen the fraud potency in the goods and services procurement activity.

In line with the theoretical basis above, the framework in this study can be viewed in the figure 1 below.

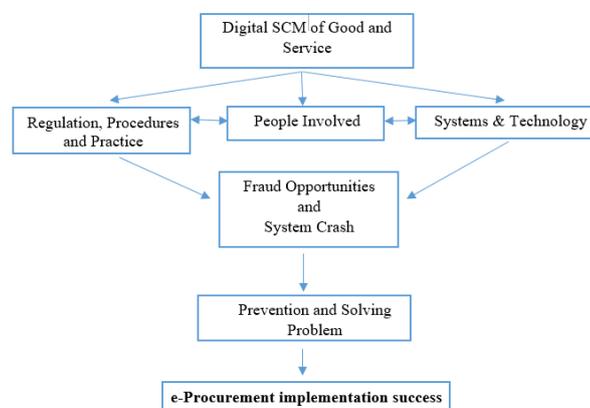


Figure 1. Conceptual Framework

### 3. METHODOLOGY

Modern supply chains are more vulnerable to fraud due to their global reach, the depth of supplier networks, the sheer number of transactions or volume of financial activity, the increasing resource needs to combat fraud, and the complexity of information technology systems. Every link in a supply chain represents opportunities for fraud or misconduct. Research location for the observation activity in this study is on Denpasar Branch of AirNav Indonesia located at Gusti Ngurah Rai Street, Tuban, Kuta, Badung Regency, Bali Province. Rationale for picking this location is concerning to AirNav Indonesia as State-owned enterprises BUMN that serves the provision of boosting flight navigation services in Indonesia, one of the branches is in Denpasar City, Bali.

This study adopts a descriptive-qualitative kind of research. Informants were divided in four groups, those are: government group or Denpasar branch of AirNav Indonesia in this point as the organizer of digital supply chain management, private sector group represented by the vendors, and user of goods and services group. In detail, the informants are illustrated in table 1.

Table 1. Research Informant

Informant Type	Item
Airnav Denpasar Employee	4
Goods and Services Vendor	2
Goods and Services User	2
Total 8	

Data collection in this study was obtained utilizing in-depth interview method with the informants, combining the interview results with observation results by studying documents available on research objects. Data analysis was reviewed by applying Content Analysis approach. It is a type of analysis relying on codes disclosed in written records during interview session carried out with the field subjects. Content Analysis is remarkably useful in both qualitative and quantitative approach. Data analysis was also performed by QSR NVivo 12 owing to rich qualitative

research data. They were attained from various sources piled by applying various techniques as well. Moreover, to measure accuracy or consistency is a primary concern that requires greatest attention of every qualitative researcher.

Software NVivo 12 assists the researcher in data analysis, enabling data coding and main category formation in consonance with the data source, it made the processes become more feasible. Coding, in this study, is in the form of thematic or pattern coding, by labeling texts and categorizing information as specified by the main topic. Second step of coding in this study was putting to use theories and scientific concepts, results from coding analysis would be the reference for the third step in analyzing the coherence of location (characteristics, internal and external supports), situated knowledge, and work division (productive and reproductive roles) in relation with the implementation of digital supply chain management system in Badung Regional Government. To identify the reliability level of this research, software QSR NVivo 12 specifically on the feature Coding Comparison Query should do the work just fine.

4. RESULT AND DUSCUSSION

A. Demographist Analysis

For many companies, supply chain performance affects 100 percent of company revenue but only part of the income statement. Supply chain problems have a significant impact across the rest of the business, as do supply chain successes. If you could improve the health and visibility of your supply chain and your business through digitalization. Informants involved during the in-depth interview sessions can be estimated as many as 8 persons with a total of 6 males at the age ranging from 25 to 30, 1 person at the age of 32, and the other one is 39 years of age. The demographist analysis can be seen in figure 2 below.

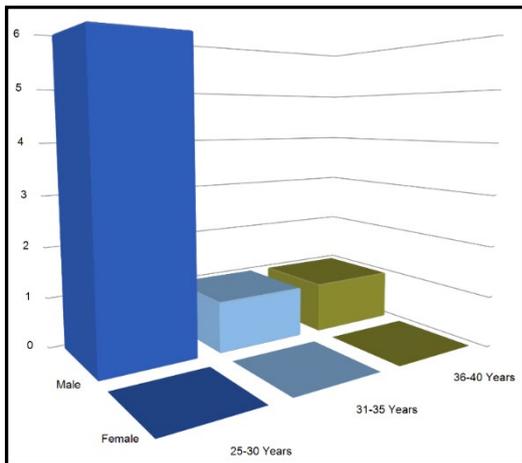


Figure 2. Comparison of Gender to Age

It can be grasped that one informant at the age range of 25-30 has spent 1-2 years working period, 2 informants with 3-5 years of working period, 3 persons with 6-10 years of working are between 31-35 years of age, and one with 6-10 years of working period is between 36-40 years of age as portrayed in figure 3 below. Informant characteristics following their education background and working period included Diploma Degree (D3) with 3-5 years working period is approximately 2 persons, 6-10 years working period reaches 2 persons. Furthermore, Bachelor Degree with 1-2 years of working period is marked by one person,

and 3 persons with 6-10 years of working period depicted in figure 4 below.

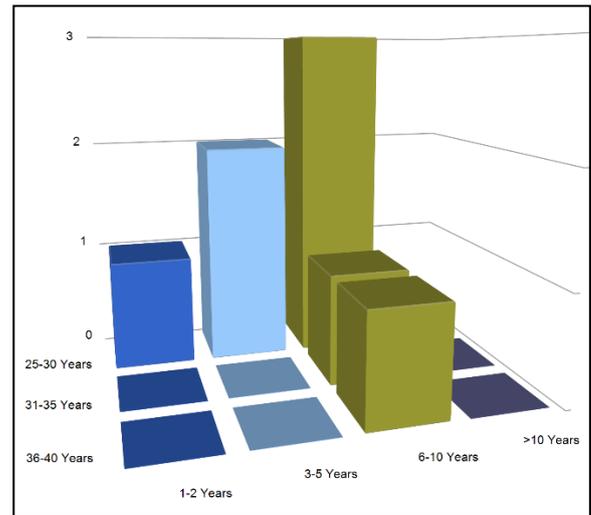


Figure 3. Comparison of age to working period

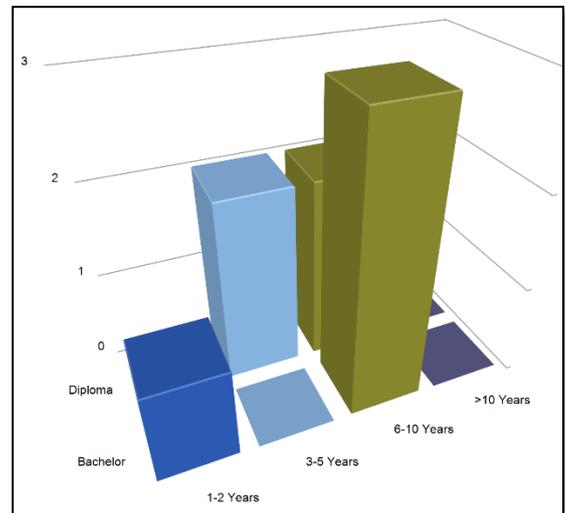


Figure 4 Comparison of education background to working period

B. Matrix Coding Query (Attribute VS Nodes)

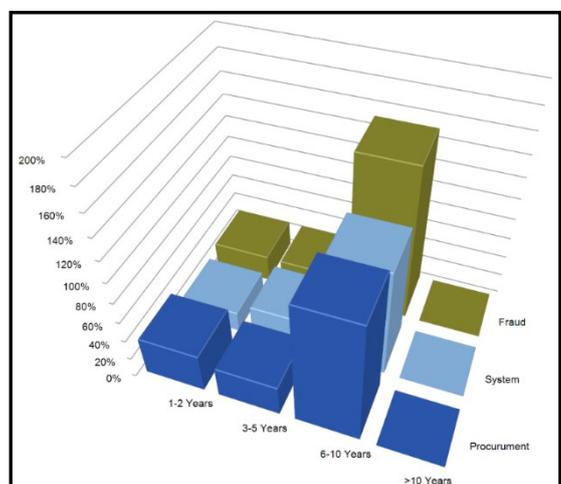


Figure 5. Comparison of working period to nodes system, fraud, and procurement

Figure 5 above indicates that informants with longer working period above 5 years have prominent encounters in the field and spoke their mind more frequently regarding procurement, system, and fraud. This is pretty common and comprehensible as more years spent in the field bring in effect the experiences of dealing with the issues in connection with the three nodes as the focal points in this research. Based on figure 5, we can infer that fraud is discussed as much, if not, equals to the node procurement and afterwards the node system. It is convinced that those who do not yet taste the working journey above 5 years as illustrated in figure 5 showing that their knowledge and experiences are not quite sufficient to speak on those three nodes confidently. All in all, fraud and procurement process remain a burning question and worry from either the organizers/committees of goods and services procurement or providers in this case the vendors.

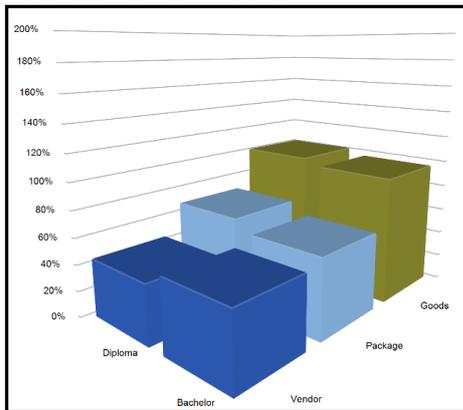


Figure 6. Comparison of education background to nodes vendor, package, and goods

We can draw from figure 6 that informants with diploma and bachelor degree background perceived and apprehended the issues on nodes Vendor, Package, and Goods fairly even. What is being addressed that grabs much attention such as: technical matter, needs, quality, and quantity or volume of the goods demanded in digital supply chain management.

C. Hierarchy Analysis

Results gathered from in-depth interview sessions and observation data in the field as well as supporting data were examined by QSR Nvivo 12 program, subsequently, after thematic coding step hereafter the researcher eliminated nodes that did not significantly hold much value and meaning. In figure 7 the hierarchy can be witnessed representing the nodes.



Figure 7. Hierarchy Diagram by nodes

Relying on the hierarchy chart above, we can deduce that pieces of information and data collected by the researcher put emphasis on System approximately 24%, in sequence, nodes Fraud 18%, Procurement 16%, Vendor 14%, Package 11%, Goods 9%, and Data 7%.

D. Content Analysis (Word Frequency Query and Word Cloud)

In keeping with the word frequency result, it is found 7.549 words altogether, the researcher removed words that did not correlate to the topic. This shows that informants accentuated matter of importance in this research.



Figure 8. Word Cloud

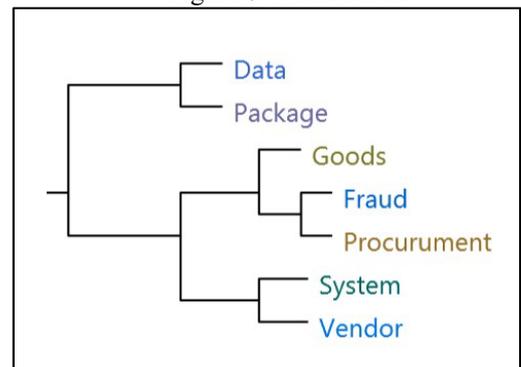


Figure 9. Word Frequency Query



the vendors with the initials AB and AD, as well as 2 references each from 1 website and 1 from scientific article.

In addition to the node system, information related to the main node fraud is also disclosed. The data was taken from various sources, particularly with respect to 5 staffs of PT. Airnav Indonesia, Denpasar branch with initials MW, FK, BH, RAP, NS, and 2 vendors with initials AB and AD, apart from those, the data cited 4 scientific articles and 1 website. Merely 1 person GR did not speak of the matter, fraud in the implementation of digital supply chain management, in this case. This can be illustrated in figure 13 in the following.

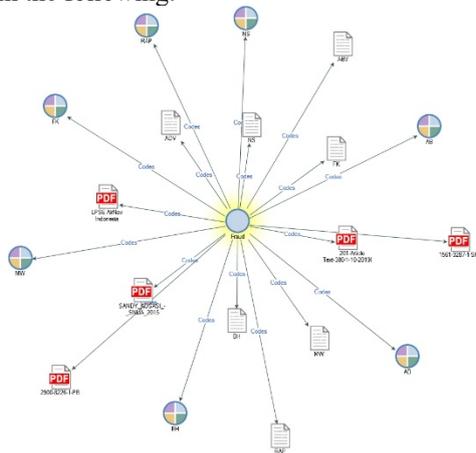


Figure 13. Explore Diagram by Fraud nodes

H. Cluster Analysis (Pearson Correlation Coefficient)

In the following, the correlation between the two main nodes that influence the implementation of digital supply chain management on Denpasar branch of PT. Airnav Indonesia can be explicated in figure 14, that is, the output model of cluster analysis to determine the Pearson Correlation Coefficient.

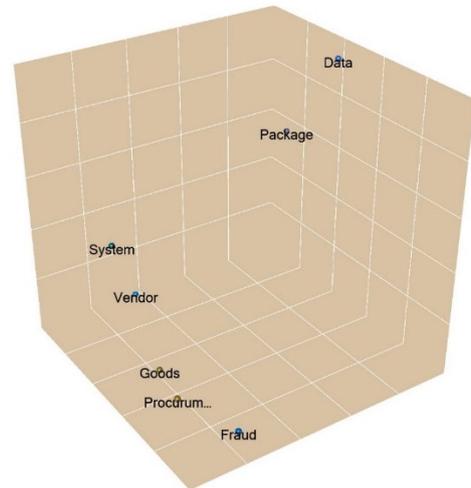


Figure 14. Cluster Analysis

Table 2. Pearson correlation Coefficient

Nodes Code A	Nodes Code B	Pearson correlation coefficient
Nodes\\Selective Code\\Procurment	Nodes\\Selective Code\\Fraud	0,912089
Nodes\\Selective Code\\Procurment	Nodes\\Selective Code\\Goods	0,817784
Nodes\\Selective Code\\Package	Nodes\\Selective Code\\Data	0,813563
Nodes\\Selective Code\\Goods	Nodes\\Selective Code\\Fraud	0,811602
Nodes\\Selective Code\\System	Nodes\\Selective Code\\Goods	0,774112
Nodes\\Selective Code\\Vendor	Nodes\\Selective Code\\System	0,746332
Nodes\\Selective Code\\Vendor	Nodes\\Selective Code\\Goods	0,727728
Nodes\\Selective Code\\System	Nodes\\Selective Code\\Procurment	0,641914
Nodes\\Selective Code\\System	Nodes\\Selective Code\\Fraud	0,558866
Nodes\\Selective Code\\System	Nodes\\Selective Code\\Package	0,529356
Nodes\\Selective Code\\Vendor	Nodes\\Selective Code\\Package	0,486177
Nodes\\Selective Code\\Vendor	Nodes\\Selective Code\\Fraud	0,4771
Nodes\\Selective Code\\Vendor	Nodes\\Selective Code\\Procurment	0,476007
Nodes\\Selective Code\\Package	Nodes\\Selective Code\\Goods	0,382495
Nodes\\Selective Code\\System	Nodes\\Selective Code\\Data	0,375055
Nodes\\Selective Code\\Vendor	Nodes\\Selective Code\\Data	0,269456
Nodes\\Selective Code\\Procurment	Nodes\\Selective Code\\Package	0,266653
Nodes\\Selective Code\\Package	Nodes\\Selective Code\\Fraud	0,264465
Nodes\\Selective Code\\Goods	Nodes\\Selective Code\\Data	0,229658
Nodes\\Selective Code\\Procurment	Nodes\\Selective Code\\Data	0,166434
Nodes\\Selective Code\\Fraud	Nodes\\Selective Code\\Data	0,163328

Corresponding to the coefficient value in table 2 above, relation strength between the main nodes generates diversity of relations from the weakest to the strongest. Three nodes are extremely weak; especially the relation between the node Fraud upon the value of 0,163328, the relation between the nodes Procurement and Data are marked by 0,166434, the nodes Goods and Data are of 2,229658. 8 relations suffice, furthermore 5 relations are

deemed strong and the other 5 are the strongest. The results above prove that for the most part, the relations are regarded to be sufficient, later followed by the strong relations and the strongest ones, relations with the fewer amounts are the weakest..

#### 4. FINDINGS AND DISCUSSION

By combining the interview and observation results, certainly, fraud and error system give rise to gaps during the implementation of digital supply chain management on Denpasar branch of PT. Airnav Indonesia. By taking Fraud into account, on the basis of output Nvivo 12 on Project Map Analysis, the findings strengthen the facts that might trigger fraud practices such as:

##### 1. Constant revisions on existing regulation.

Revisions on director regulation are unceasingly published, moreover in the middle of auction; this brings about pressure coming from additional assignment to review every little piece of work. Wherein PER Perum LPPNPI has undergone three times of amendments since 2008, and alterations made were so contrast that it can be said that the regulation went through a major change or "a total change" that it obstructs the performance of digital supply chain management.

##### 2. A specification change in goods/services.

As the modification of regulation carries out, it sometimes affects a sudden specification change of goods/services, therefore it might alter their type and quality.

##### 3. A decline in goods/services quality.

Misbehavior of certain vendors by deceiving and lowering the quality of a product necessitates extra monitoring from the staffs of PT. Airnav Indonesia, Denpasar branch to prevent from scam by the swindlers in the digital supply chain management process.

##### 4. Lack of adequate staffs that master the procedures.

It is pretty common that staffs of the digital supply chain management organizers are not certified in running digital supply chain management. Likewise, PT. Airnav Indonesia, Denpasar branch needs to hire more people since the lack of the staffs restrains digital supply chain management system in every auction that is on progress under surveillance. Unlike the headquarters known for their abundant sources, each only focuses on a single procurement of goods and services.

##### 5. Face-to-face still remains even today.

Digital supply chain management takes pride in its online system but sadly there is never a chance missed in vendor direct meetings in order to describe the assignment to complete or do within the timeline set in digital supply chain management.

##### 6. Little attention on communication between the vendors and Airnav's staffs.

Miscommunication is ineluctable between the vendors and digital supply chain management's staffs for not recognizing the whole procedures by the vendors and for not being ready and prepared with the knowledge of digital supply chain management process by the staffs of PT. Airnav Indonesia, Denpasar branch.

##### 7. Indecency of item price.

Numerous vendors have proposed a price that is somewhat beyond the regular price for their items and that is to say, very costly. Vendors claimed that it is to anticipate negotiation that is positive to happen during the auction.

8. Legality during the registration leaves a big question mark.

Unsatisfactory vendor qualification makes the tender winner seem to be indicated from a similar company, plus, several are indeed coming from outside of the Bali island, the reason behind this circumstance is the fact that quality

certification of local vendors compared to ones from outside of Bali are very short in availability. Therefore, document forgery is very likely to befall by skipping the prerequisite certification from the prospective vendors.

##### 9. Integrity by the auction committees is missing.

Poor knowledge from the staffs of PT. Airnav Indonesia, Denpasar branch results in repeated auction winner. It is done through letting pass the vendor in verification stage in which its certification does not match the criteria.

##### 10. A delay in auction work completion.

Tardiness in executing the auction process by the vendors, disobeying the schedule agreed formerly has been complained many times. By the late auction report, it will also mean a lagging behind in using the goods/services.

11. An under 10million purchase is made without undergoing an auction beforehand

Purchasing goods or services less than 10 million by breaching the auction procedures is very dangerous; it is pretty common to happen. However, without knowing the consequence it takes, it makes the processes vulnerable in terms of the goods/services selection, the vendor, and the quality with minimum watch or control.

On the question of crash system, by the results retrieved from the interviews and output Nvivo 12 on project map analysis, there are several matters worth mentioning with respect to auction system, those are:

1. The company's auction system at present is contained in 2 sub websites: <https://eproc.airnavindonesia.co.id/eproc/> and <https://eproc.airnavindonesia.co.id/vms/web/index.php>. Denpasar branch of PT. Airnav Indonesia depends their system on a website belong to LKPP, and at the moment is still working on their own system that is very specific on the procurement field by AirNav wherein the system is far more complex and exclusive than what they are relying on today in which the stages from prospective providers uploading their files or documents up to the winner announcement are dependent on one system.

2. Meager bandwidth causes an error on the system or down server, in this point; it does not allow the vendor to upload the required documents for the auction.

3. Corrupt files from the uploaded documents are somewhat received in a notification saying successfully uploaded while the truth is the documents are not entirely uploaded in a proper way. By the time the verifiers are to check the uploaded documents based on the demand or requirement, looking up to the situation, it may fail the vendors to be verified.

4. In quite a few cases, on LKPP website, desynchronization is quite usual whereupon the website address for vendors to register is seemingly error and not valid. This leads to miscommunication to the vendors that attempt at joining the auction.

The findings in this research are favored by the data coding results shown by Nvivo 12 noting the most indicated nodes are inferring the cases of fraud and crash system on the implementation of digital supply chain management on Denpasar branch of PT. Airnav Indonesia. This supports the researchers conducted by [6].

#### 5. CONCLUSION

In a nutshell, digital supply chain management system has been well-anchored by PT. Airnav Indonesia on

Denpasar branch and has adapted well on the visions of bureaucracy reformation those are to achieve greater efficiency, effectiveness, and transparency and to cut off complicated bureaucracy. Taking notes on the digital supply chain management process that has just been applied quite recently on Denpasar branch of PT. Airnav Indonesia, there are things to take into consideration for the improvement. It is vital for this research to discover that crash system is owing to the raw if not yet perfect digital supply chain management system. Currently it is on development and refinement stage. Unclear digital supply chain management website that confides with LKPP server is to be refined and in turn is expected to be a more comprehensive single server to accommodate all features and criteria of digital supply chain management in essence.

Other hindrances rooted on the poor knowledge and proficiency of the staffs in the Denpasar branch could stimulate gaps that would ultimately spark off fraud practices, whether it is related to the staff integrity or violation on the procedures in the implementation of digital supply chain management. An increase in competence is mandatory for all staffs of PT. Airnav Indonesia, Denpasar branch to cope with the issue. One way to accomplish this goal is by the provision of special trainings to reinforce human resources and expert certification. The trainings could be in the form of seminar on digital supply chain management especially in the topic of handling the vendors that is extremely substantial to diminish miscommunications between the vendors and the digital supply chain management organizers. Lastly, it is directed to the central government regarding one of the factors that should be noticed and put forth is consistency in regulation that becomes the benchmark and standard guidelines for the implementation of digital supply chain management, otherwise stated, not to endlessly revise that it may intervene digital supply chain management in practice and consequently will not meet the visions of bureaucracy reformation.

## References

- [1] Ahaliki, B., Mohidin, I., & Naki, I. (2019a). Aplikasi Air Traffic Movement Bandar Udara Djalaluddin Gorontalo. *Jurnal Teknologi Informasi Indonesia (JTII)*, 1(1), 11–15. <https://doi.org/10.30869/jtii.v1i1.294>
- [2] Ahaliki, B., Mohidin, I., & Naki, I. (2019b). Application of Air Traffic Movement at Djalaluddin Airport, Gorontalo. *Jurnal Teknologi Informasi Indonesia (JTII)*, 1(1), 11–15. <https://doi.org/10.30869/jtii.v1i1.294>
- [3] Artantri, L. P. R. M., Handajani, L., & Pituringsih, E. (2016). The Role of Digital supply chain management in Fraud Prevention in the Procurement of Goods and Services for Local Government on the Island of Lombok. *NeO~Bis*, 10(1), 16–32.
- [4] Aulandri, T., & Wulandari, R. (2014). Study Of The Application Of Digital supply chain management System In The Procurement Process Of Pt Petrokimia Gresik [Universitas Airlangga]. <http://repository.unair.ac.id/id/eprint/5425>
- [5] Bandur, A. (2019). Penelitian Kualitaitaif (Studi multi disiplin keilmuan dengan NVivo12 Plus). Mitra Wacana, Jakarta.
- [6] Danuta, K. S. (2017). Crowe's Fraud Pentagon Theory in Fraud Prevention in the Procurement Process through Digital supply chain management. *Jurnal Kajian Akuntansi*, 1(2), 161–171. <https://doi.org/10.33603/jka.v1i2.826>
- [7] Government Goods and Services Procurement Institute. (2010). Module 1 Introduction to Procurement of Goods / Services in Indonesia: Basic / First Level Government Procurement Training. Jakarta: LKPP.
- [8] Hidayati, N., & Mulyadi, J. M. V. (2017). Factors Affecting Fraud in Goods and Services Procurement Activities. *Jurnal Riset Akuntansi Dan Perpajakan JRAP*, 4(2), 275–294.
- [9] Huda, S. N., Setiani, N., Pulungan, R., & Winarko, E. (2016). Potential fraudulent behaviors in digital supply chain management implementation in Indonesia. *Journal of Physics: Conference Series*, 755(1). <https://doi.org/10.1088/1742-6596/755/1/011001>
- [10] Jatiningtyas, N., & Kiswara, E. (2012). Analysis of Factors Affecting Fraud of Procurement of Goods / Services in Government Agencies in the Semarang Region (Vol. 66).
- [11] Jourdain, R., & Balgobin, N. (2003). Analyzing the public procurement process to identify and eliminate risks of corruption. *Controlling Corruption in Asia and the Pacific*.
- [12] Kosasi, S., & Informasi, J. S. (2015). Online Auction System Design in Procurement of Goods and Services. *Jurnal Sistem Informasi*, January.
- [13] KPK RI. (2019). TPK Based on Case Type. KPK RI. <https://www.kpk.go.id/id/statistik/penindakan/tpk-berdasarkan-jenis-perkara>
- [14] Latupeirissa, J. J. P., Gorda, A. A. N. O. S., & Subanda, I. N. (2020). Antecedents of intention to use e-wallet: The development of acceptance model with pls-sem approach. *Journal of Advanced Research in Dynamical and Control Systems*, 12(7 Special Issue), 1416–1429. <https://doi.org/10.5373/JARDCS/V12SP7/20202244>
- [15] Mahyuni, L. P., Adrian, R., Darma, G. S., Krisnawijaya, N. N. K., Dewi, I. G. A. A. P., & Permana, G. P. L. (2020). Mapping the potentials of blockchain in improving supply chain performance. *Cogent Business and Management*, 7(1). <https://doi.org/10.1080/23311975.2020.1788329>
- [16] Mokoginta, R., Karamoy, H., & Manossoh, H. (2017). Analysis of the Implementation of Digital supply chain management Policies in the Procurement of Goods / Services at Kotamobagu City Government. *Jurnal Riset Akuntansi Dan Auditing "Goodwill"*, 8(2), 343–354. <https://doi.org/10.35800/jjs.v8i2.18662>
- [17] Muhtarom, M., Murtianto, Y., & Sutrisno, S. (2017). Thinking process of students with high-mathematics ability (A study on QSR NVivo 11-assisted data analysis). *International Journal of Applied Engineering Research*, 12(17), 6934–6940.
- [18] Nayaka, K. W., & Darma, G. S. (2020). Assessing depth of optimization digital samsat program (e-samsat) in Bali province. *International Research Journal of Engineering, IT & Scientific Research*, 6(2), 24–31. <https://doi.org/10.21744/irjeis.v6n2.861>
- [19] Nisa Nurharjanti, N. (2017). Factors Related to Fraud of Procurement of Goods / Services in Public

- Institutions. *Jurnal Akuntansi Dan Investasi*, 18(2), 209–221. <https://doi.org/10.18196/jai.180284>
- [20] Nugroho, R., Alfi Haris, W., & Trisnawati. (2015). The Effect of the Implementation of the Electronic Procurement System (Digital supply chain management) on Fraud of Government Procurement of Goods / Services (Studies in Magetan Regency Regional Work Units). *None*, 3(11), 1905–1911.
- [21] Pandu Wicaksono, A., Urumsah, D., & Asmui, F. (2017). The Implementation of Digital supply chain management System: Indonesia Evidence. *SHS Web of Conferences*, 34(7), 10004. <https://doi.org/10.1051/shsconf/20173410004>
- [22] Presidential Decree No. 54, (2010).
- [23] Shauki, E. (2018). Research instruments in case study and the role of researcher. *Handout, Case Writing and Methodology, ECAM*, 809303.
- [24] Sugianto, Salman, M., & Suryanto, Y. (2019). Analysis and development of information security framework for distributed digital supply chain management system. *International Conference on Electrical Engineering, Computer Science and Informatics (EECSI)*, 211–216. <https://doi.org/10.23919/EECSI48112.2019.8976944>
- [25] Suprianto, A., Zouhar, S., & Haryono, B. S. (2019). Analisis Efektivitas Sistem Digital supply chain management dalam Pengadaan Barang/ Jasa Pemerintah (Studi pada Fakultas Ilmu Administrasi Universitas Brawijaya). *Jurnal Ilmiah Administrasi Publik (JIAP)*, 5(2), 251–259.
- [26] Vaidya, K., & Campbell, J. (2016). Multidisciplinary approach to defining public digital supply chain management and evaluating its impact on procurement efficiency. *Information Systems Frontiers*, 18(2), 333–348. <https://doi.org/10.1007/s10796-014-9536-z>
- [27] Van Meter, D. S., & Van Horn, C. E. (1975). The Policy Implementation Process: A Conceptual Framework. *Administration & Society*, 6(4), 445–488. <https://doi.org/10.1177/009539977500600404>
- [28] Wicitra, J. S., & Purwadi, I. (2020). Procurement of Construction Services Using E- Procurement System. *OSF*.
- [29] Yanavia, N. L. (2014). Analysis of the Factors that Drive the Fraud of the Procurement of Goods / Services in Government Agencies in West Sumatra Province. 18