Global Journal of Computer Sciences: Theory and Research

Volume 06, Issue 2, (2016) 54-66

www.gjcs.eu

A comprehensive analysis on the adaption of Big Data in e-commerce: Overview of small to midsized enterprises-smes in Australia

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Suggested Citation:

Gide, E. & Karim, S. (2016). A comprehensive analysis on the adaption of Big Data in e-commerce: Overview of small to midsized enterprises-smes in Australia, *Global Journal of Computer Sciences: Theory and Research*. *6*(2), 54-66.

Received June 15, 2016; revised August 10, 2016; accepted September 05, 2016.
Selection and peer review under responsibility of Prof. Dr. Dogan Ibrahim, Near East University, Cyprus.

Abstract

Big Data contains every part of aspects of existence, as well as personal actions, disciplines and corporations. Big Data promises to make the world more demanding and helps to take the prompt decisions not only on the basis of limited knowledge of expertise but also on the huge quantity of data from the realism. The gathering, exercise, distribution and networking of Big Data associates economic, legal, social, ethical and political issues may result possible positive and negative results. This report provides a primary analysis of economic, legal, social, ethical and political issues in e-commerce contents-SMEs in Australia that are relevant to the consequences formed by Big Data. Identifying the subjects can help in an improved and clear perceptive of extents for prospective development and advance within the Big Data industry and support e-commerce sector of Australia. This paper mainly has used secondary research method to provide an extensive investigation of the positive and negative consequences of issues relevant to Big Data, the architects of the consequences and those exaggerated by the consequences. The secondary study is subject to journal articles, reports, media articles, corporation based documents and other appropriate information. The study found that Big Data and e-commerce are steadily transforming the way businesses to be conducted and changing the small to midsized enterprises in Australia. Big Data and e-commerce can provide quicker and trustworthy services to the potential and happy clients. They not only can develop new competitive advantages, also can improve relationships with customers and make better the economy by increasing effectiveness and behind the small to mid-sized new business models and innovation.

Keywords: big data, economic, ethical and political ıssues, e-commerce, small to midsized enterprise-smes.

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1. Introduction

Big Data contains each and every aspect of life, personal activities, disciplines and corporations. "E-commerce is a modern business methodology that addresses the needs of organizations, merchants and the consumers to cut costs while improving the quality of products and services and increasing the speed of service delivery with high quality check".

"Computer crime is a term that encompasses a variety of offences associated with the use of information and communication technology. It includes offences where a computer is used as a tool in the commission of an offence".

Big Data and e-commerce promise to make the world more demanding and help to take the prompt decisions not only on the basis of limited knowledge of expertise but also on the huge quantity of data from the realism. The gathering, exercise, distribution and networking of Big Data associates economic, legal, social, ethical and political issues result in potential positive and negative consequences [1].

1.1 Research Purpose and Scope

This research shuts in itself to particular business and will concentrate on the service industry. This research focuses on the significant numbers of multiple sectors in Australia such as trade, wholesale, housing, transportation, roads and traffic, investment and banking, real estate services etc. It is hypothesised that if Australian consumers and businesses are satisfied with Big Data and e-commerce security and privacy measurements:

- E-commerce business and Big Data will more develop and more Australians will use it.
- Small to Mid-Sized Businesses will also enter into it.
- Australian Government will make more financial budget for Internet infrastructure and new legislations to save e-commerce consumers from cybercrime.
- E-commerce will help Australia's economic development as internet will level the playing field [2].
- Australia is the selected country for this research because it is the developed country with a well-built in IT and e-commerce industries:
- Huge number of educated workforce in Australia including potential young generation.
- Australian Professionals who are working overseas can be encouraged to share the knowledge and contribute to the economy.
- Australian educational institutions have the capacity to provide more quality graduates in IT, e-commerce and security related courses every year.
- Australian students will be more interested to do research in this sector [3].

1.2 Objectives

- Identifying and describe the features of Big Data and e-commerce technology and discuss their business significance in Australia.
- Finding out the background and current status of Big Data and e-commerce in Australia.
- To explain the evolution of e-commerce in Australia from its early years to today.
- To identify the challenges and opportunities of e-commerce implementation in Australia.
- Finding out the reasons of the vast development in IT and e-commerce in Australia.
- Learning how Big Data and e-commerce can assist in financial development of Australia.

- Analyzing economic, legal, social, ethical and political issues in the Big Data and e-commerce SMEs in Australia that are relevant to the consequences formed by Big Data.
- Identifying the assistant issues can assist in a improved and plain understanding of Big Data industry and e-commerce sector of Australia [3, 4].

1.3 Aim of the Research

The aim of this research is identifying the issues can assist in a better and clear understanding of extents for prospective development and advance within the Big Data industry and support e-commerce sector of Australia.

1.4 Research Questions

This research aims to try answering the following Research Questions about E-commerce and Big Data in Australia:

- What is the conditions and current position of Big Data, e-commerce systems in Australia?
- What are the motivations of the fastest development in IT and e-commerce industry in Australia?
- What is the current position of e-commerce using in service SMEs in Australia?
- What are the evaluating satisfaction with Big Data and e-commerce in SMEs in Australia?
- How Big Data and e-commerce can help in the financial development of Australia?
- How could Australia make the occasion to extend e-commerce approval for its trade and industry enlargement?

1.5 Importance of the Research Study

This study is extremely important for Australian people and able to reach the strategy makers for Australia and forward the concerns in relation to financial development through Big Data and e-commerce sector. Big Data and e-commerce are being widely used and moving speedily to become the widespread fixture of current socio-economic life. They are opening the occasions and new opportunities for scores people internationally. In addition,

- This study is very significant for e-commerce users and businesses of Australia.
- Government agencies will be benefitted because they will learn from the outcomes. So they can develop legal and ethical policy and procedures.
- It will help Big Data and e-commerce to move speedily to help becoming the widespread fixture of Australian current socio-economic life style [5].

2. Literature Review

This part delivers the definition and obtainable understandings on Big Data with e-commerce.

2.1 The Technological Dimensions of Big Data and E-commerce

Big Data refers to a “huge set of data too complex to be handled by traditional database management tools” [6].

The data is being driven by new social networks, mobile devices, web sites or CRM databases where the value it produces can be turned into useful insights that can be help executives in decision-making on

a day-to-day basis. Big Data can be used to enhance awareness (e.g. capturing population data), understanding (e.g. explaining changes in food prices), and/or forecasting (e.g. predicting human migration patterns) [6].

E-commerce refers to "the buying and selling of products and/or services over electronic systems through internet and other computer networks" [7].

- E-commerce comes together a range of course of actions such as:
- World Wide Web (WWW)
- Internet Applications
- Electronic Data Interchange (EDI),
- Shopping cart software
- Online shopping and order tracking
- Electronic Mail (E-Mail)
- Enterprise content management
- Online banking
- Teleconferencing
- E-tickets
- Domestic and international payment systems
- Instant messaging
- Network Applications
- Newsgroups etc [7].

Big Data and e-commerce impact on different sectors:

- Public administration
- Legal: privacy, security, liability, cybercrime, Intellectual Property Rights (IPR)
- Healthcare and social care
- Utilities
- Education & Skills
- Transport and logistics
- Retail and Trade
- Application and services
- Technical
- Social [8].

2.2 The Existing Circumstances and Prospective of E-Commerce

Internet usages and services for e-commerce by the producers to export as well as to contact inputs are rely on their motivation and have capability to use standards as well as that of the consumers of transitional products and services [9].

2.3 E-commerce Industry and Internet Tradition in Australia

The communication sector in Australia, including Internet facilities has considerably improved within last couple of years including countryside and rural areas. The encouragement both from government and public sectors has encouraged this sector significantly. With an estimated $37.1billion in sales projected for the year, the e-commerce industry in Australia becomes more exciting by the day. 94% of Australian population has full access to internet. Out of which everyday 79% go online on a daily basis and 60% go multiple times a day [10].

In addition, the below tables and statistics give more real view and data about the internet users and total population of Australia.

Table 1. Estimated Australian Users on Popular Social Networks [11]

Social Networks	Estimated Number of Users
Facebook	10,968,120
Twitter	1,800,000
LinkedIn	2,200,000
Tumblr	12,00,000
Pinterest	510,000
MySpace	420,000

Table 2. Gender Breakdown [11]

Male	Comparison	Female
2,996	Page Viewed per Month	2,681
81	Number of Sessions	76
82:00	Time Spent Online per Month	73:05

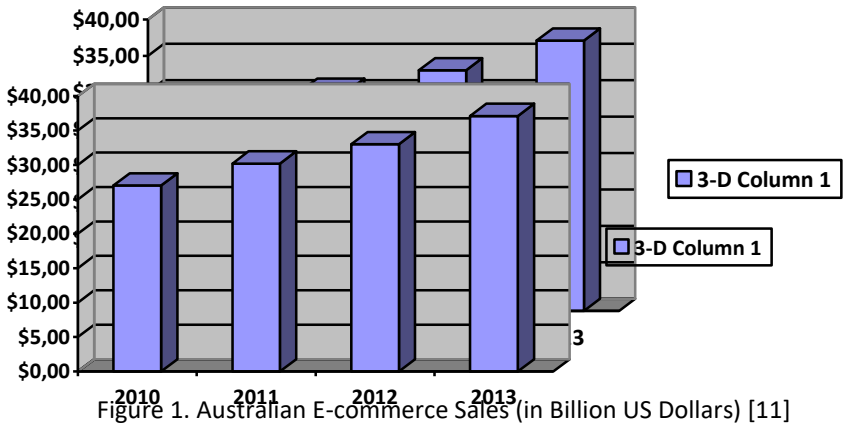

Figure 1. Australian E-commerce Sales (in Billion US Dollars) [11]

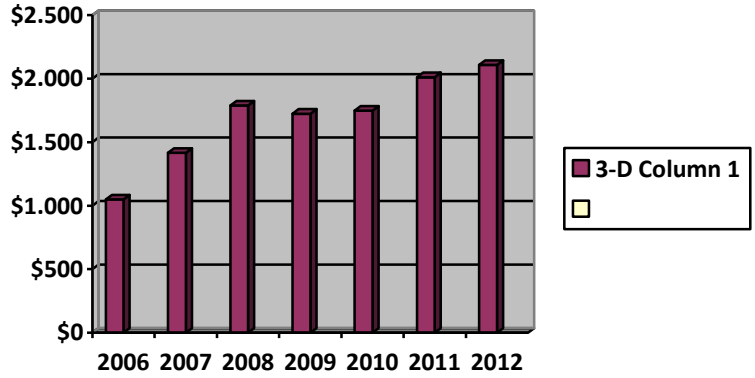

Figure 2. E-commerce Spending per Online Consumer in Australia [11]

Table 3. Age Group: 73% of Online Users from Age Group 35-44 have stopped online [11]

Female	Female	Male	Female	Male	Male
18-24	25-34	35-44	45-54	55-64	65+
61%	69%	73%	65%	52%	40%

Table 4. Popular Categories Purchased Online by Online buyers [11]

74% Travel/ Accommodation	45% CD/Music/DVD	34% Clothes/Jewellery	31% Computers/Software
29% Sport Equipments	21% Electrical Goods	21% Insurance	13% Food/Groceries
9% Lotteries/Betting	8% Home Furnishing	6% Medical Items	3% Others

Table 5. Frequency of Online Purchasers (per 6 months) [12]

Number of Orders placed	% of Online Consumers (Australia)	% of Online Consumers (Major Cities)	% of Online Consumers (Inner Regional)	% of Online Consumers (Outer Regional)	% of Online Consumers (Remote and Outer Regional)
1-5 Times	52%	52%	52%	52%	52%
6-10 Times	25%	26%	25%	25%	27%
11-15 Times	10%	10%	10%	6%	16%
16+ Times	13%	12%	13%	16%`	5%

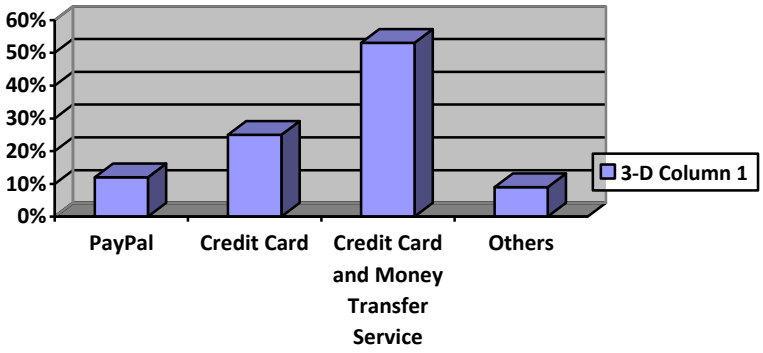

Figure 3. Most Popular Payment Methods [13]

2.4 E-commerce Sector of Australia in Future

E-commerce is incredibly essential and appropriate to the developed financial system of Australia and especially to the export marketplace. The Information Technology (IT) uprising has been too extraordinary to forecast its prospects and development and its use in an economy. Noticeably, e-commerce sector originates developing boosted by Internet access growth; and it's on the modest phase of development in Australia. It's important that online transactions increase the GDP expansion in Australia [14].

This below tables and figures give more close information on e-commerce in Australia from 2015 to 2021. In 2016, e-retail sales amounted to 9.5 billion U.S. dollars and sales are projected to grow to 15.4 billion U.S. dollars in 2021.

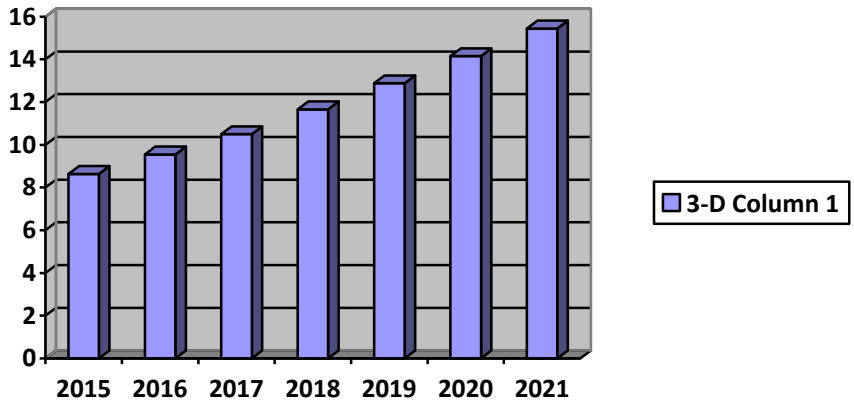

Figure 4. Big Data and E-commerce in Australia from 2015 to 2021 (in Billion US Dollars) [14]

2.5 Australia is the Biggest Market for Online Retail

Australians unquestionably live in the Techno developed country and the online retail spending figures are proof of that. Here are just some of the recent statistics as below:

- 71% of Australian consumers do online shopping.
- Online sales revenue in Australia is achieved more than $37bn AUD most recently.
- 53% of consumers purchase from Australian based E-commerce or online shops rather than overseas online shops.
- 73% of online consumers are in the age group of 35-44 years old.
- $2,108 is the standard spending amount for each online consumer in Australia.
- Credit card, BPay, EFTPOS, PayPass and PayPal are the most popular payment methods [14].

2.6 Big Data Boosts Top and Bottom Line Results

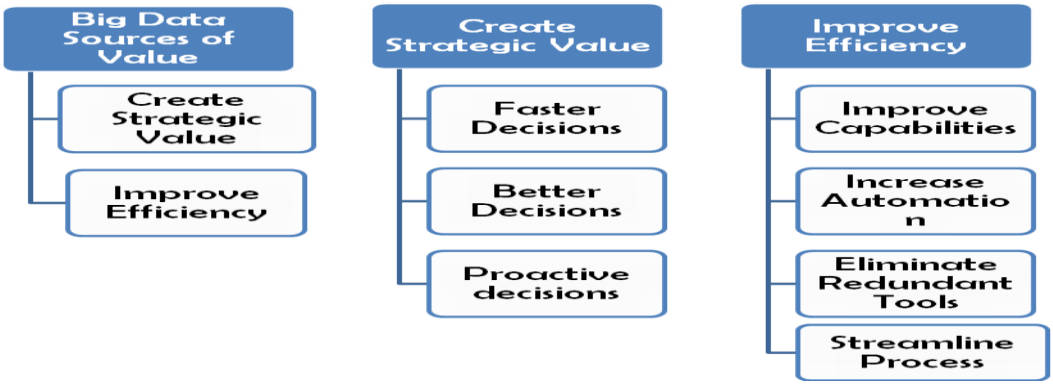

Figure 5. Big Data [15].

2.7 Big Data Boosts Top and Bottom Line Detailed Results

- Faster Decisions
  - Prompt Decision Making
  - Provide More common, Precise Analysis
- Better Decisions
  - Approximate Contact Using Cross-Organisational Investigation
  - Measure Impact of Judgment
- Proactive Decisions
  - Predict Consumer and Marketplace Dynamics
  - Gain Operational Insights
- Progress Capabilities
  - Skills of Current Analyst
  - Free Employees from Low Value Activities
- Increase Automation
  - Reduce Efforts to Produce Reports
  - Free Management
- Eliminate Redundant Tools
  - Eliminate Tools for Data Extract, Reporting and Analysis
- Streamline Process
  - Standardize Metrics by Global Stakeholders
  - Demand Management Process [15]

2.8 Big Data and E-commerce in Action for Development

- In addition to providing insight to make small to midsized businesses more profitable:
- Big Data and e-commerce are showing huge promise to improve and substantively change the international development sector in novel ways.

- Various individuals and enterprises in Australia are exploring the potential of Big Data and e-commerce.
- Big Data and e-commerce in Australia show assurance to develop real-time responsiveness, look forward to test, and extend understanding of social systems by governments and other institutions [16].

The highly competitive of e-commerce in Australia is driven by price and advertising. A very important implement for success in e-commerce is Big Data. To be successful in e-commerce, Australian companies rely on information such as how to put price on items, which items to keep on stock and what the best possible ways are to send those items in the business market. Usually, organisations rely on labour-intensive performances to collect and research large sets of data. Furthermore, personal unfairness and enthusiasm also limit the gathering and storage of important data. With the significant assistance of Big Data, Australian organisations considerably enlarge success in assembling, examining and put into practice the information available [16].

2.9 Challenges and Considerations

- The data can be biased when conducting statistical analyses.
- Data may be difficult to access, especially if it is held by private institutions.
- Even in the case of public institutions, datasets are often available but difficult to find due to limited metadata.
- Challenges in e-commerce around ensuring privacy and safety arise. This is also linked with the issue of personal data ownership.
- Preparing data and ensuring its scalable and efficient use presents challenges such as the time and effort required to clean data [17].

2.10 Issues in the Context of Big Data and E-commerce in Australia

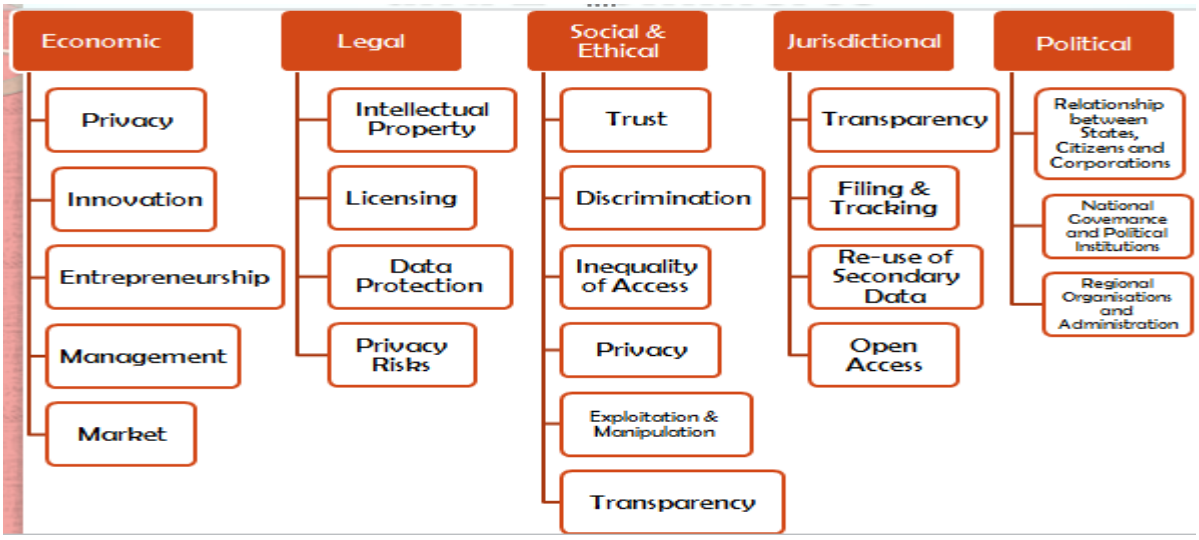

Figure 6. Big Data and E-commerce in Australia [17]

2.10.1 Economic Issues

Economic issues include modernization through new business that centre on developing added importance and capturing efficiencies of Big Data and e-commerce. These issues are related to security

and privacy alarms. The economic issues of Big Data and e-commerce evaluate the existing and prospective worth. Big Data and e-commerce boost the financial system by increasing effectiveness and sustaining new business models and modernization. Profitable issues such as modernization, free enterprise and execution efficiency are linked to a revolutionize in business models in a range of sectors, including trade, development, fitness care, medical sciences and the community area. The test for Big Data and e-commerce economic performers is to get economic and community settlement and minimise the possible negative effects. These sectors are impacted by Big Data and e-commerce in a different way from the large data processing. As a result, Big Data and e-commerce are most promising and challenging at the identical time. While these assure large amount of output, that output comes with various concerns. Big Data and e-commerce are original assets to both the private and the public sector and characterize solution and foundation for contest. The governments and businesses equip themselves with the Big Data and e-commerce to take better advantage of Big Data and e-commerce. In fact, Big Data and e-commerce make the difference to how Australia and companies contend and prosper [18].

2.10.2 Legal Issues

Legal issues in relation to Big Data and e-commerce include intellectual property rights, licensing and agreement issues, data security and privacy risks, jurisdictional issues and suggestion for due progression. The researchers judge these issues and check whether the current legal frameworks sufficiently deal with the gap between the law and technological ability. On the other hand, the basic problem of the copyright law remains and poses problems with other technical growth as well. In addition, intellectual property rights give a default assets command regulating access to and control of data. The researchers also consider whether data placed on social networking sites, for example, are owned by the person who produced it or the person who provides the stage that collects, stores and practices it. Clearness is a key structure block in Big Data and e-commerce. The connection between answerability and legal responsibility are the matters of the biggest indication. Answerability involves issues of legal responsibility and issues of authority. These aspects of legal responsibility are complicated by Big Data processing, e-commerce that removes jurisdictional boundaries [19].

2.10.3 Social and Ethical Issues

The researchers examine the social and ethical issues that arise in relation to Big Data and e-commerce practices, as well as the negative and positive suggestions these issues have for individuals and Australian society. The Big Data practices that associate social and ethical issues are clearness, outlining and pathway, personalisation techniques, reuse, unintentional less important use, sharing, data admittance and open data. These practices raise social and ethical issues such as conviction, favouritism, dissimilarity of access, isolation, management and consumer treatment. For example, apparent practices can generate positive and negative ideas for Big Data and e-commerce organisations and potential consumers. On one side, clarity builds user trust in e-commerce and backs the discovery of more data by trusting data subjects. On the other side, it can cause users to modify behaviour and limit the data. Accurateness and trail can lead to a form of digital overload. Such injustice requires effectual minimisation to limit the socio-economic cost for those distinguished against. In addition, profiling and tracking using Big Data can also develop users when commercial add is had at the expenses of the social and ethical values of individuals. However, consciousness of the negative externalities of Big Data and e-commerce practices translate into positive outcomes for users. This is undeniable benefit for society that can also support a sustainable Big Data and e-commerce industry [20].

2.9.4 Political Issues

Political issues come into view as a result of the challenges. Big Data and e-commerce presents to associations between states, people and businesses. Big Data and e-commerce contact politics at all levels, including: intercontinental relations between states; national authority and supporting organization; and local organisation and management. Big Data, e-commerce and the digital surroundings modify the stability between citizens, states and organisations. Organisations are currently testing past steadiness with states on many issues in a very wide variety of activity ranging from taxes to data

defence, from utilities to official document. The researchers also judge the relationship between the state and citizens, as the connection is strongly impacted by Big Data and e-commerce. This is a result of two main undertakings: first, Big Data and e-commerce restructure the public room and more exactly what citizens can access and what states share; and second, Big Data and e-commerce unlock an extensive variety of new potentials in terms of authority. However, the researchers' examination makes public that Australia has developed strong local systems, which generate most of the data of their population [21].

3. Research Methodology

In this study, the *Secondary research method* was chosen. It starts with analysing available secondary resources to offer a broaden representation of the topic and a broad investigation of the positive and negative consequences of each issue relevant to Big Data, the architects of the consequences and those affected by the consequences.

Qualitative Method and Data Analysis (in Future)

- Interviews will be carried out to bring together significant data from IT and e-commerce specialists, private and public sector representatives, ICT students, and University School of Engineering and technology academics.
- The qualitative stage of data collection, the participants' communication process, their selection method, ethical clearance procedure, and the ***semi-structured and in-depth individual interviews.***
- An invitation letter will be sent prior to the consultation to increase an increased number of participants.
- The departments/faculties of the universities will be contacted by sending a request letter to identify the potential students. Thirty potential students will be chosen who will respond positively by email and telephone.
- Qualitative data analysis with relevant scale based method will be used in future. Relevant computer software (NVivo) will be used.
- All of the transcripts will be categorised by alphabetical order of the interviewees' surname.
- Key issues will be checked systematically and noted in the list. Also the researchers will discuss and prioritise the provider and the respondents who will do significant contribution.

4. Data Collection and Research Analysis

4.1. Qualitative results

The results will be developed from the interview participants namely ICT and e-commerce experts, Government and Non-Government representatives, University Academics, and ICT students, identified by I1, I2, I3, I4, I5……,G1, G2, G3, G4, G5……., A1, A2, A3, A4, A5 and S1, S2, S3, S4, S5……..

5. Research Results and Key Findings

As e-commerce is speedily increasing in the urbanized country: Australia although Big Data and e-commerce are considered significant instruments for development to the Australian financial system. Business over internet has been quickly accepted in Australia for the reason that there are very minor obstacles that have mitigated e-commerce to appropriately take off. It is clear that Australia has fitted in the move for Big Data and e-commerce because it both has the potential and at the same times the importance. The Australian government has commenced several programmes to support further for this

tactic of business. These can be fundamental in outlining significant issues, raising understanding, and optimistically offering clarification and act plans to put into practice solutions [23].

This section has valued some research Key findings which are as below:

- E-commerce and Big Data have emerging business potentials in Australia.
- The network infrastructure and operations are quite advanced to provide e-commerce services in Australia.
- Organisations based in Australia come up with different levels of e-commerce solutions and opportunity for employment will be broadened.
- Big Data and e-commerce can offer faster and reliable services to the potential customers.
- High speed internet, smart phones and tech savvy young generation are main reasons for great potential of e-commerce business in Australia.
- They can improve relationships with customers and make better the economy supporting small to mid-sized new business.
- The private sector and the public sector can make noteworthy development in developing e-commerce push through its industry association.
- Big Data and e-commerce are steadily transforming the way businesses to be conducted and changing the small to midsized enterprises in Australia.
- Collaboration between the two sectors- Where the public sector will ensure the infrastructure & private sector will come up with different business solutions.
- This paper examines translucent performance that produces positive and negative proposition for Big Data and e-commerce companies and users.
- E-commerce and Big Data connect economic and social issues.
- E-commerce and Big Data increase efficiency in the sectors of retail; manufacturing; healthcare; public; and life sciences.
- In relation to negative economic issues, privacy concern is the major obstacles for Big Data and e-commerce.
- Simplicity is the key to building greater Big Data and e-commerce success [24].

6. Conclusion & Recommendations

This study details economic, legal, social and ethical and political issues in relation to Big Data and e-commerce practices and technologies. These issues are significant because they enlighten positive and negative areas that require address. To identify these significant issues and understanding the positive and negative matters they raise is key to the e-commerce and Big Data industry success [25].

For achieving the best possible results from the Big Data and e-commerce the researchers have offered some recommendations. These are as follows:

- Establish good practice guidelines and share the cybercrime scenes
- Frequent establishment of digital forensic laboratory for investigation and detection of cybercrime.
- To train trainers or teachers properly on cybercrime investigation.
- Every transaction should have authenticity, confidentiality and integrity.
- Social and ethical issues necessitate acknowledgment so that e-commerce and Big Data companies can integrate primary values into Big Data and e-commerce practices.

- To avoid the negative issues, the framework standards need awareness of Big Data processing and application.

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