



# **Tax reform within a digitalised economy: Tax, technology and assurance**

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## **INTRODUCTORY REMARKS**

The reader is reminded of the following:

- The thesis is presented in the article format in accordance with the policies of the faculty of Economical and Management Sciences' (North-West University) WorkWell Research Unit.
- The thesis consists of a total of three journal research articles.
- Each of the research articles in the thesis complies with the individual writing style requirements as per the journal to which the particular article was submitted.

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## DECLARATION

I declare that:

**“TAX REFORM WITHIN A DIGITALISED ECONOMY: TAX, TECHNOLOGY AND ASSURANCE”**

is my own original work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references. This thesis has not previously been submitted by me for a degree at any other university.

*Helena Strauss*

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***Knowledge may be power, but without wisdom and compassion it will never be the solution – Bryant McGill***

## THESIS SUMMARY

**TOPIC:** Tax reform within a digitalised economy: Tax, technology and assurance

**KEYWORDS:** Assurance, audit, corporate income tax, data analytics, data science, direct tax, cryptocurrencies or assets, digitalised economy, employees' tax, gig economy, goods and services tax, indirect tax, information technology, international tax, (near) real-time tax collection, personal income tax, risk assessment, risk management, shared economy, tax administration, tax reform, value-added tax.

Tax administration within the digitalised economy is currently under scrutiny, globally, due to the disruption that the digitalisation of the economy caused in traditional tax administration processes and policies. The Third Industrial Revolution introduced the "Internet" to the world and from there the Fourth Industrial Revolution introduced various other digital tools and innovations, such as the Internet-of-Things (IoT) and artificial intelligence (AI) that impacted the economy.

One of the most significant changes associated with the Third Industrial Revolution is probably the fact that it connected the world and eliminated various business and communication challenges that were previously associated with physical borders. The Internet and the innovations that followed the introduction of the Internet enabled digital global trade. Traditional business models soon transformed to take full advantage of the digitalised economy. This transformation resulted in a global decrease in physical presence and an increased reliance on intangible assets and users to create value. This is in comparison to physical and tangible assets and inventory per the traditional business models. Traditional goods or physical inventory also transformed, in many instances, into digital services.

The digital reform had a major impact on the global economy, as businesses suddenly had access to new global markets that they did not have access to previously. New business models were also created within the digitalised economy which also created new commodities such as data. These innovations and transformations, however, also impacted the national and international tax systems. The digitalisation of the economy enabled businesses to be structured in such a way that they pay minimal or no taxes within the digitalised economy, while creating significant global turnovers. The digitalisation of the economy also enabled tax leaks and base erosion and profit shifting globally. These challenges led to the international tax community questioning the relevance and effectiveness of current international tax system in the digitalised economy.

Although the digitalisation of the economy disrupted the “traditional” international tax system as well as tax administration systems, it also introduced various opportunities from a tax administrative perspective. This study evaluates the status quo of tax reform in response to the digitalisation of the economy by evaluating the international tax system as a holistic unit or organism.

In research article 1 the global tax legislative and policy reform that took place to date in response to the digitalised economy is evaluated. This evaluation is done from a global perspective, as the digitalised economy is regarded as a unique environment, therefore it can be argued that the legislative and policy reform in this regard should also be evaluated from a global and holistic perspective. Direct and indirect tax types that are impacted the most by digitalisation were evaluated together with other elements and their tax implications, such as cryptocurrencies and the gig and shared economy.

The research results indicate that the current international tax reform lacks consistency and that it does not take all aspects of digital business models into consideration. The current tax reform is still bound to physical country borders and based on “traditional” international tax rules.

Legislative and policy reform provide tax authorities with the legal right to execute its mandate, but the next step to ensuring optimised tax administration is to ensure that effective and efficient tax administrative systems are implemented to accomplish its mandate. In research article 2 the main generic digital goals (within the digitalised economy) of selected global tax authorities are explored and the way participating tax authorities reformed their tax systems to date in line with these common strategic goals to ensure optimised tax administration within the digitalised economy are studied.

In this study, stark differences in the level of reform among participating tax authorities from developed and developing economies are identified. The research results further indicate that none of the participating tax authorities currently reflect an optimised digital tax reform in response to the digitalisation of the economy.

Lastly, the digitalisation of the economy has introduced various new tax risks and has substantially increased existing tax risks. This increase requires a significant reform in the risk management and assurance approach of tax authorities to protect their respective tax bases. In research article 3 the global reform that took place with regards to tax risk and assurance in response to the digitalisation of the economy is evaluated. In this study, the international reform and measures that were implemented to date are synthesised and the level of implementation of these measures

among selected international tax authorities are evaluated to obtain a global view of tax risk management and assurance reform in response to the digitalised economy.

Once more, the findings indicated a significant difference in reform among developed and developing economies, which might impact the existing economic gap between developed and developing countries if the discrepancies are not addressed. This difference in reform is especially concerning if it is measured against the predictions of the significant role that digital platforms will play in the next ten years to stimulate global economic growth.

In summary, from the research, it is clear that the current international tax system and the traditional tax administration systems were not designed for the digitalised economy. Reform is therefore required that take into consideration the hybrid nature of the digitalised business models that operate within the digitalised economy which is regarded as a unique environment. The reform should further take full advantage of the various digital tools that are associated with the digital economy. The research further indicates that there is a substantial difference in reform among developed and developing economies, which requires urgent global attention, as it has the potential to further increase the economic gap between developed and developing economies if it is not addressed urgently.

## PROEFSKRIF OPSOMMING

**TITEL:** Belasting-hervorming met betrekking tot die digitale ekonomie: Belasting, tegnologie en gerusstelling.

**SLEUTELTERME:** Belasting op Toegevoegde Waarde, belastingadministrasie, belasting-hervorming, data analise, data wetenskap, digitale ekonomie, digitale geldeenhede/bates, digitale platform ekonomie, direkte belasting, deel-ekonomie, indirekte belasting, korporatiewe belasting, inligtingstegnologie, internasionale belasting, (naby) onmiddellike belastinginvordering, oudit, persoonlike inkomstebelasting, risiko assessering, risikobestuur, werknemersbelasting.

Belastingadministrasie hervorming in reaksie tot die digitalisering van die ekonomie is tans 'n hewige en belangrike internasionale debat as gevolg van die ontwrigting wat die digitalisering van die ekonomie veroorsaak het ten opsigte van die manier hoe belasting gehef en administrateur word. Die Derde Industriële Revolusie het die "Internet" aan die wêreld bekend gestel. Van daar het die Vierde Industriële Revolusie verskeie ander digitale instrumente bekend gestel wat insluit, maar nie beperk is tot innovasies soos die "Internet-van-voorwerpe" en "kunsmatige intelligensie".

Een van die mees merkwaardigste veranderinge wat met die Derde Industriële Revolusie geassosieer word, is moontlik die feit dat die wêreld deur die bekendstelling van die "Internet" globaliseer het. Besigheid- en kommunikasie uitdagings wat voorheen ervaar is as gevolg van fisiese land en kontinent grense is, tot 'n groot mate, deur die bekendstelling van die Internet uitgewis. Die Internet en die innovering wat daarna gevolg het, het wêreldwye handel daargestel en gestimuleer.

Tradisionele besigheidsmodelle het baie vinnig getransformeer om die voordele van die digitale ekonomie ten volle te benut. Hierdie transformasie het gelei tot die wêreldwye afname in fisiese teenwoordigheid van besighede, maar terselfdertyd 'n verhoogde steun op ontasbare bates en Internet gebruikers om sodoende besigheidswaarde te skep. Laasgenoemde is in vergelyking met die tradisionele besigheidsmodelle wat swaar gesteun het op fisiese en tasbare bates en voorraad. Tradisionele goedere en voorraad het ook in baie opsigte getransformeer na digitale dienste.

Die bogenoemde transformasie het 'n baie groot impak gehad op die globale ekonomie want besighede het nou toegang tot internasionale markte wat nie voorheen moontlik was nie. Nuwe besigheidsmodelle is ook ontwikkel wat nuwe kommoditeite daarstel soos byvoorbeeld, data.

Hierdie innoverings en transformasies het egter 'n wesenlike impak gehad op nasionale en internasionale belastingstelsels, asook op belastingadministrasie stelsels. Die digitalisering van

die ekonomie het besighede in staat gestel om hulleself so te struktureer dat hulle minimaal of geen belasting betaal binne die digitale ekonomie, ten spyte van die feit dat hierdie besighede merkwaardige internasionale omsette genereer. Die digitalisering van die ekonomie het voorts die risiko verhoog vir “belasting lekke”, belasting erosie en internasionale wins verskuiwing. Hierdie uitdagings het daartoe gelei dat die internasionale belasting gemeenskap die effektiwiteit van die huidige internasionale belasting sisteem bevraagteken in terme van die relevansie daarvan tot die digitale ekonomie.

Die digitalisering van die ekonomie word wel geassosieer met baie uitdagings vanuit ‘n belasting administrasie perspektief, maar dit het ook baie geleenthede aan inkomstebelasting dienste bekendgestel. In hierdie studie word die huidige stand van belasting hervorming van die internasionale belasting sisteem ge-evalueer in reaksie tot die digitalisering van die ekonomie. ‘n Holistiese evaluering was gedoen met inagneming dat belastingadministrasie ‘n holistiese stelsel of organisme is.

In navorsingsartikel 1 word die internasionale belastingwet en beleidsverandering wat plaasgevind het in reaksie tot die digitalisering van die ekonomie ge-evalueer. Hierdie evaluasie is vanuit ‘n internasionale perspektief gedoen omdat die digitale ekonomie as ‘n unieke omgewing geag word. Dit word dus afgelei dat ‘n globale en holistiese perspektief dus nodig is om die ware internasionale belasting hervorming effektief te evalueer.

Die studie resultate dui daarop dat die internasionale belastingwette en beleidsverandering inkonsekwent is indien dit vanuit ‘n globale oogpunt geëvalueer word. Dit dui verder aan dat alle aspekte van die digitale besigheidsmodelle en die digitale ekonomie met betrekking tot belasting wetgewing en beleid hervorming, nie in ag geneem is nie. Die huidige belasting hervorming is dus steeds gebaseer op “tradisionele” belasting reëls en word gebonde aan “landsgrense” wat teenstrydig is met ‘n digitale ekonomie wat geen fisiese grense het nie.

Belasting wetgewing en beleidsverandering gee die inkomstebelasting diens ‘n wetlike reg om belasting in te vorder binne die digitale ekonomie. Die volgende stap is om seker te maak dat die data en inligtingstelsels van die inkomstebelasting diens optimaal is om hierdie wetlike reg effektief af te dwing om hulle mandaat sodoende te bereik. In navorsingsartikel 2 word die hoof generiese digitale doelwitte van geselekteerde internasionale inkomstebelasting dienste binne die digitale ekonomie ondersoek.

In die studie word die huidige stand van deelnemende inkomstebelasting dienste se belastingadministrasie data en inligtingstelsels evalueer om te verseker dat hulle belasting kan administreer binne die digitale ekonomie. Die hervorming van die deelnemende

inkomstebelasting dienste se belasting data en inligtingstelsels word ook geëvalueer teenoor die generiese digitale strategiese doelwitte wat gedurende die studie identifiseer is om sodoende hulle vermoë te evalueer om belastingadministrasie binne die digitale ekonomie te optimaliseer.

Die studie resultate dui daarop dat daar drastiese verskille is tussen die hervorming wat plaasgevind het tussen deelnemende inkomstebelasting dienste van ontwikkelde en ontwikkelende ekonomieë. Die studie dui verder daarop dat geen van die deelnemende inkomstebelasting dienste tans oor 'n optimale belasting administrasie stelsel beskik wat geskik is vir die digitale ekonomie nie.

Die digitalisering van die ekonomie het laastens verskeie nuwe belasting risiko's en bestaande risiko's aansienlik verhoog. Dit vereis dus 'n verandering in die manier hoe belasting risiko en oudits benader en bestuur word. In navorsingsartikel 3 word die internasionale belasting risiko en -audit hervorming wat plaasgevind het ge-evalueer in reaksie van die digitalisering van die ekonomie. In die studie word die internasionale reaksie in hierdie verband opgesom en evalueer. Die implimentering van hierdie internasionale maatstawwe deur die deelnemende inkomstebelasting dienste word ge-evalueer om sodoende die huidige stand van hervorming te identifiseer ten opsigte van inkomstebelasting dienste se vermoë om belasting risiko en oudits te bestuur in 'n digitale ekonomie.

Die bevindinge dui daarop dat daar ook 'n wesenlike verskil is in belasting hervorming ten opsigte van belasting risiko bestuur en audit in die digitale ekonomie tussen deelnemende inkomstebelasting dienste van ontwikkelende en ontwikkelde ekonomieë. Hierdie verskille mag negatief reflekteer op die lande se vermoë om ekonomiese groei te bewerkstellig indien dit nie aangespreek word nie. Die bevindinge is kommerwekkend, veral omdat daar voorspel word dat die digitale ekonomie 'n wesenlike bydrae gaan lewer in die volgende tien jaar om globale ekonomiese groei te stimuleer.

Ter opsomming, dui die navorsingsresultate aan dat die huidige internasionale belasting sisteem en administrasie stelsel nie ontwerp is vir die digitale ekonomie nie. Hervorming is dus nodig om die nuwe hibriede omgewing wat daargestel is deur die digitalisering van die ekonomie te akkommodeer. Hervorming is ook nodig ten opsig van die digitale gereedskap wat daargestel is in die digitale omgewing en om dit ten volle te benut om belasting binne die globale digitale ekonomie te administreer. Die resultate reflekteer verder 'n wesenlike verskil in hervorming tussen die deelnemende inkomstebelasting dienste van ontwikkelde en ontwikkelende lande wat dringende aandag verg, aangesien dit die potensiaal het om die huidige ekonomiese gaping tussen die ontwikkelende en ontwikkelde lande te vergroot.

# TABLE OF CONTENTS

- INTRODUCTORY REMARKS..... I**
- ACKNOWLEDGEMENTS ..... II**
- DECLARATION..... III**
- THESIS SUMMARY ..... V**
- PROEFSKRIF OPSOMMING ..... VIII**
- LIST OF ABBREVIATIONS ..... XX**
  
- CHAPTER 1 ..... 1**
  
- INTRODUCTION AND BACKGROUND ..... 1**
  
- CHAPTER 1 OUTLINE..... 2**
  
- 1 INTRODUCTION AND BACKGROUND ..... 3**
- 1.1 Background to the research area ..... 3**
- 1.2 The e-commerce markets ..... 3**
- 1.3 Cryptocurrencies or assets ..... 4**
- 1.4 The gig or shared economy..... 4**
- 1.5 A “digital-by-default” tax administration mechanism..... 5**
- 1.6 Disruption of tax administration due to digitalisation ..... 5**
- 1.7 Challenges from a tax administration perspective due to digitalisation ..... 8**
- 1.7.1 Tax administration and BEPS..... 8
- 1.7.2 Increased and new tax risks within the digitalised economy ..... 9
- 1.7.3 Tax administration and cryptocurrencies or assets ..... 10
- 1.7.4 Tax administration and the gig or shared economy..... 10

1.7.5	Tax assurance within the digitalised economy .....	11
1.8	<b>Tax administration as an interconnected and multi-faceted organism.....</b>	<b>11</b>
2	<b>PROBLEM STATEMENT .....</b>	<b>12</b>
3	<b>OBJECTIVES .....</b>	<b>13</b>
3.1	<b>Main objective .....</b>	<b>13</b>
3.2	<b>Secondary objectives.....</b>	<b>13</b>
4	<b>RESEARCH DESIGN.....</b>	<b>14</b>
4.1	<b>A philosophical approach.....</b>	<b>14</b>
4.2	<b>Research approach .....</b>	<b>15</b>
4.3	<b>Literature review .....</b>	<b>16</b>
4.4	<b>Empirical research .....</b>	<b>17</b>
5	<b>STUDY OVERVIEW .....</b>	<b>17</b>
6	<b>ETHICAL CONSIDERATIONS .....</b>	<b>20</b>
<b>CHAPTER 2 .....</b>		<b>21</b>
<b>RESEARCH APPROACH AND METHODOLOGY.....</b>		<b>21</b>
<b>CHAPTER 2 OUTLINE.....</b>		<b>22</b>
1	<b>INTRODUCTION .....</b>	<b>23</b>
1.1	<b>The theoretical framework: Organisational development .....</b>	<b>23</b>
1.1.1	<b>Theory .....</b>	<b>25</b>

1.1.2	Conceptual framework.....	27
1.1.3	Practice.....	27
<b>2</b>	<b>RESEARCH APPROACH.....</b>	<b>28</b>
<b>2.1</b>	<b>Research philosophy .....</b>	<b>28</b>
2.1.1	Positivism .....	29
2.1.2	Interpretivism .....	30
2.1.3	Critical paradigm.....	31
<b>2.2</b>	<b>Research design.....</b>	<b>31</b>
2.2.1	Data collection .....	33
<b>3</b>	<b>RESEARCH METHODOLOGY.....</b>	<b>34</b>
<b>3.1</b>	<b>Research plan and methods.....</b>	<b>37</b>
<b>3.2</b>	<b>Validity and reliability of qualitative research results.....</b>	<b>40</b>
3.2.1	Quality and rigor of research results.....	40
3.2.2	Confirmability of research results .....	41
3.2.3	Trustworthiness of research results.....	41
3.2.4	Validity and credibility of research results .....	42
3.2.5	The reliability and applicability of research results .....	44
3.2.6	The quality and consistency of the research results.....	44
<b>3.3</b>	<b>PhD by publication .....</b>	<b>45</b>
<b>4</b>	<b>ETHICAL CONSIDERATIONS .....</b>	<b>45</b>
<b>5</b>	<b>POSSIBLE LIMITATIONS .....</b>	<b>46</b>

<b>6</b>	<b>CONCLUSION .....</b>	<b>46</b>
	<b>CHAPTER 3 (RESEARCH ARTICLE 1) .....</b>	<b>48</b>
	<b>AN EVALUATION OF THE LEGISLATIVE AND POLICY RESPONSE OF TAX AUTHORITIES TO THE DIGITALISATION OF THE ECONOMY.....</b>	<b>48</b>
	<b>CHAPTER 3 (RESEARCH ARTICLE 1) OUTLINE.....</b>	<b>50</b>
<b>1</b>	<b>INTRODUCTION .....</b>	<b>52</b>
<b>2</b>	<b>METHODOLOGY .....</b>	<b>54</b>
<b>3</b>	<b>RESEARCH RESULTS AND DISCUSSION .....</b>	<b>56</b>
<b>3.1</b>	<b>The impact of digitalisation on organisational forms/business models .....</b>	<b>56</b>
<b>3.2</b>	<b>The impact of payment methods (cryptocurrencies) and related tax reform .....</b>	<b>57</b>
<b>3.3</b>	<b>The impact of digitalisation of the economy on direct taxes and related tax reform .....</b>	<b>62</b>
<b>3.3.1</b>	<b>Corporate income tax .....</b>	<b>62</b>
<b>3.3.2</b>	<b>Personal income tax .....</b>	<b>68</b>
<b>3.4</b>	<b>The impact of the digitalisation of the economy on indirect taxes and related tax reform .....</b>	<b>71</b>
<b>3.5</b>	<b>The impact of digitalisation of tax administration methods and related reform .....</b>	<b>75</b>
<b>4</b>	<b>CONCLUSION .....</b>	<b>78</b>
	<b>REFERENCES .....</b>	<b>80</b>

<b>CHAPTER 4 (RESEARCH ARTICLE 2)</b> .....	<b>88</b>
<b>AN EVALUATION OF THE DIGITAL RESPONSE OF TAX AUTHORITIES TO OPTIMISE TAX ADMINISTRATION WITHIN THE DIGITALISED ECONOMY</b> .....	<b>88</b>
<b>CHAPTER 4 (RESEARCH ARTICLE 2) OUTLINE</b> .....	<b>90</b>
<b>1 INTRODUCTION</b> .....	<b>92</b>
<b>2 METHODOLOGY</b> .....	<b>94</b>
<b>3 LITERATURE REVIEW RESULTS</b> .....	<b>96</b>
<b>4 INTERVIEW RESULTS AND DISCUSSION</b> .....	<b>98</b>
<b>4.1 Digital response to optimise the tax administration system within the digitalised economy</b> .....	<b>99</b>
<b>4.2 Data science, automation and artificial intelligence (AI)</b> .....	<b>101</b>
<b>4.3 Data management strategy (data collection vs. data connection)</b> .....	<b>103</b>
<b>4.4 Data architecture (data stored in siloes or consolidated data warehouses)</b> .....	<b>104</b>
<b>4.5 Tax ecosystems/(near) real-time tax collection</b> .....	<b>104</b>
<b>4.6 National and international data sharing and collaboration</b> .....	<b>105</b>
<b>5 RECOMMENDATIONS</b> .....	<b>108</b>
<b>6 CONCLUSION</b> .....	<b>109</b>
<b>7 FURTHER CONSIDERATION AND STUDIES</b> .....	<b>110</b>
<b>REFERENCES</b> .....	<b>111</b>

<b>CHAPTER 5 (RESEARCH ARTICLE 3) .....</b>	<b>115</b>
<b>TAX RISK ASSESSMENT AND ASSURANCE REFORM IN RESPONSE TO THE DIGITALISED ECONOMY .....</b>	<b>115</b>
<b>CHAPTER 5 (RESEARCH ARTICLE 3) OUTLINE.....</b>	<b>117</b>
<b>1 INTRODUCTION .....</b>	<b>119</b>
<b>2 METHODOLOGY .....</b>	<b>122</b>
<b>3 LITERATURE REVIEW RESULTS AND DISCUSSION.....</b>	<b>124</b>
<b>3.1 Tax risk identification in response to the digitalised economy .....</b>	<b>124</b>
<b>3.2 Tax risk prevention measures reform measures in response to the digitalised economy .....</b>	<b>125</b>
<b>3.3 Tax risk detection reform measures in response to the digitalised economy .....</b>	<b>127</b>
<b>3.4 Tax assurance reform measures in response to the digitalised economy .....</b>	<b>130</b>
<b>3.5 Summarised results per integrative cross-national literature review .....</b>	<b>131</b>
<b>4 INTERVIEW RESULTS AND DISCUSSION.....</b>	<b>132</b>
<b>4.1 Utilisation of data and technology as a tax risk management tool .....</b>	<b>132</b>
<b>4.2 Data and information collection from cyberspace .....</b>	<b>135</b>
<b>4.3 Extent and source of data used during the tax risk management process .....</b>	<b>136</b>
<b>4.4 Utilisation of automation and AI during the tax risk management process .....</b>	<b>137</b>

4.5	<b>Change in tax audit approach in response to the digitalisation of the economy .....</b>	<b>138</b>
4.6	<b>IT audits or e-audits .....</b>	<b>140</b>
4.7	<b>Data analytics as a tax audit/assurance tool .....</b>	<b>141</b>
5	<b>CONCLUSION .....</b>	<b>142</b>
6	<b>LIMITATIONS.....</b>	<b>143</b>
7	<b>FURTHER CONSIDERATIONS AND STUDIES.....</b>	<b>144</b>
8	<b>ACKNOWLEDGEMENTS .....</b>	<b>144</b>
	<b>REFERENCES .....</b>	<b>145</b>
	<b>CHAPTER 6 .....</b>	<b>150</b>
	<b>SUMMARY, LIMITATIONS AND RECOMMENDATIONS .....</b>	<b>150</b>
	<b>CHAPTER 6 OUTLINE.....</b>	<b>151</b>
1	<b>INTRODUCTION .....</b>	<b>152</b>
2	<b>LIMITATIONS.....</b>	<b>154</b>
3	<b>DISCUSSIONS AND RECOMMENDATIONS .....</b>	<b>155</b>
3.1	<b>An evaluation of tax reform within the digitalised economy with an emphasis on tax legislation and policy .....</b>	<b>155</b>
3.1.1	Summarised research results with regards to tax legislative and policy reform within the digitalised economy .....	157

3.1.2	Recommendations with regards to tax legislative reform within the digitalised economy .....	163
<b>3.2</b>	<b>An evaluation of the global digital technology response of tax authorities to optimise tax administration .....</b>	<b>170</b>
3.2.1	Summarised research results with regards to data and technology reform to optimise tax administration within the digitalised economy .....	170
3.2.2	Recommendations pertaining to tax reform within the digitalised economy, with a specific focus on data and technology .....	178
<b>3.3</b>	<b>Tax risk assessment and assurance reform in response to the digitalised economy .....</b>	<b>189</b>
3.3.1	Summarised research results regarding the tax risk management and assurance reform in response to the digitalised economy .....	189
3.3.2	Recommendations regarding reform of the tax risk management and assurance process within the digitalised economy.....	198
<b>4</b>	<b>SYNTHESIS .....</b>	<b>205</b>
<b>4.1</b>	<b>Synthesis: Tax reform within the digitalised economy - Tax legislation, technology, tax risk and assurance.....</b>	<b>205</b>
4.1.1	Global tax reform within the digitalised economy: Legislation and policy .....	205
4.1.2	Global digital reform to optimise tax administration within the digitalised economy .....	206
4.1.3	Global tax risk and assurance reform in response to the digitalisation of the economy .....	207
4.1.4	Organisational development (OD) .....	208
<b>4.2</b>	<b>Recommendations: Tax reform within the digitalised economy - Tax legislation, technology, tax risk and assurance .....</b>	<b>210</b>
4.2.1	Strategic goal setting that is appropriate for the digitalised economy .....	210

4.2.2	A global tax administration support function.....	213
<b>5</b>	<b>SCIENTIFIC CONTRIBUTION.....</b>	<b>217</b>
<b>6</b>	<b>REFLECTION.....</b>	<b>218</b>
<b>6.1</b>	<b>Research approach and methodological reflection.....</b>	<b>218</b>
<b>6.2</b>	<b>Substantive reflection.....</b>	<b>219</b>
<b>7</b>	<b>CONCLUSION.....</b>	<b>221</b>
<b>8</b>	<b>RECOMMENDATION FOR FUTURE STUDIES.....</b>	<b>222</b>
	<b>CONSOLIDATED LIST OF REFERENCES.....</b>	<b>224</b>
	<b>ANNEXURE A: ETHICAL CONSIDERATIONS – INTERVIEW CONSENT FORM.....</b>	<b>251</b>
	<b>ANNEXURE B: RESEARCH QUESTIONNAIRE.....</b>	<b>254</b>
	<b>ANNEXURE C: SUPPORTING DOCUMENTATION FROM THE SOUTH AFRICAN JOURNAL OF ACCOUNTING RESEARCH (SAJAR) (RESEARCH ARTICLE 1).....</b>	<b>256</b>
	<b>ANNEXURE D: SUPPORTING DOCUMENTATION FROM E-JOURNAL OF TAX RESEARCH: UNIVERSITY OF NEW SOUTH WALES BUSINESS SCHOOL (AUSTRALIA) (ATAX) (RESEARCH ARTICLE 2).....</b>	<b>265</b>
	<b>ANNEXURE E: SUPPORTING DOCUMENTATION FROM JOURNAL OF TELECOMMUNICATIONS AND DIGITAL ECONOMY (JTDE) (AUSTRALIA) (RESEARCH ARTICLE 3).....</b>	<b>270</b>

## LIST OF ABBREVIATIONS

AEOI	Automatic Exchange of Information
AI	Artificial Intelligence
APS	Application Service Provider
ATAF	African Tax Administration Forum
ATO	Australian Taxation Office
AUSTRAC	Australian Reports and Analysis Centre
BEAT	Base Erosion and Anti-abuse Tax
BEPS	Base Erosion and Profit Shifting
B2B	Business-to-Business
B2C	Business-to-Consumer
CAV	Computer Assessed Verification
CbC	Country-by-Country Reporting
CIT	Corporate Income Tax
DPT	Diverted Profit Tax
DST	Digital Services Tax
ERP	Enterprise Resource Planning
EU	European Union
GCC	Gulf Corporation Council
GloBE	Global anti-abuse erosion proposal
GST	Goods and Services Taxes
HMRC	Her Majesty Revenue & Customs

ICAEW	Institute of Chartered Accountants in England and Wales
ICTD	International Centre for Tax and Development
IP	Internet Protocol
IoT	Internet-of-Things
IRS	Inland Revenue Services
TIWB	Tax Inspectors Without Borders
MAAL	Multinational Anti-Avoidance Law
MNE	Multi-national Entities
MOSS	Mini One-Stop-Shop
OD	Organisational Development
OECD	Organisation of Economic and Co-operative Development
PAYE	Pay-as-you-Earn
PE	Permanent Establishment
SDP	Significant Digital Presence
SAF-T	Standard Audit File for Tax
SARS	The South African Revenue Services
SEP	Significant Economic Presence
SGP	Significant Global Presence
SME	Small, Medium Enterprise
TFDE	Task Force on the Digital Economy
UK	United Kingdom

UN	United Nations
USA	The United States of America
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organisation
VAT	Value Added Tax
WEF	World Economic Forum

**LIST OF TABLES**

**CHAPTER 3**

Table 1: Evaluation sheet used per country during systematic literature review.....55

**CHAPTER 4**

Table 1: Strategic goals with a strong digital focus for selected tax authorities.....96

**CHAPTER 5**

Table 1: Synthesis of identified tax risk and assurance reform measures in response to the digitalisation of the economy .....132

**CHAPTER 6**

Table 1: Summary of integrative literature review regarding tax risk and assurance reform in response to the digitalised economy .....190

**LIST OF FIGURES**

**CHAPTER 1**

Figure 1: Possible research approaches.....15

**CHAPTER 2**

Figure 1: Research process and outline.....24

Figure 2: Organisational development cycle .....25

Figure 3: Typical tax administration organisational structure.....26

Figure 4: Activities within Kurt Lewin’s three-phase model .....28

Figure 5: Elements of the research approach .....32

Figure 6: Deductive research methodology .....35

Figure 7: Inductive research methodology .....36

Figure 8: Research plan and related process flow .....37

Figure 9: Triangulation methods used during the study .....43

**CHAPTER 3**

Figure 1: Tax reform in response to the use of cryptocurrencies/assets .....60

Figure 2: Direct tax legislative and policy reform in response to the digitalised economy .....67

Figure 3: Personal income tax reform in response to the gig/shared economy .....70

Figure 4: Indirect tax legislative reform in response to the digitalised economy .....72

Figure 5: Percentage indirect tax levied on digital services per country .....73

Figure 6: Global level of digitalisation of tax administrations’ filing and payment systems .....76

Figure 7: Legislative requirements regarding tax administration/management by highly digitalised MNEs .....77

**CHAPTER 4**

Figure 1: Digital Response to Optimise the Tax Administration System within the Digitalised Economy.....100

Figure 2: Level of Utilisation of Big Data, Automation and AI .....102

Figure 3: (Near) Real-time Tax Collection .....105

Figure 4: E-Government and Intergovernmental Data Sharing.....106

**CHAPTER 5**

Figure 1: Extent to which participating tax authorities use technology and data in order to identify, prevent and detect tax risk within the digitalised economy .....133

Figure 2: Utilisation of technology in order to collect data and information from cyberspace.....135

Figure 3: The extent and sources of data and information utilised during the tax risk management process.....136

Figure 4: The extent of automation and AI utilised during the risk management process.....138

Figure 5: Participating tax authorities' response from an audit/assurance approach and methodology perspective .....139

Figure 6: The application of IT audits/e-audits .....141

Figure 7: Utilisation of data analytics during the assurance process .....142

**CHAPTER 6**

Figure 1: Main research or study phases .....153

Figure 2: Proposed hybrid model for tax reform within the digitalised economy .....168

Figure 3: Summarised research results for participating tax authorities from developed economies .....172

Figure 4: Summarised research results for participating tax authorities from developing economies .....176

Figure 5: Elements to consider when measuring digital maturity or dexterity .....181

Figure 6: Elements of minimum standards for digital maturity framework for tax authorities ...187

Figure 7: Summary of tax risk and assurance reform in response to the digitalised economy – participants from developed economies.....191

Figure 8: Summary of tax risk and assurance reform in response to the digitalised economy – participants from developing economies.....194

Figure 9: Global distribution of developed and developing economies .....198

Figure 10: Global tax administration support function as a tax risk management tool within the digitalised economy .....201

Figure 11: Global digital reform to optimise tax administration within the digitalised economy .....206

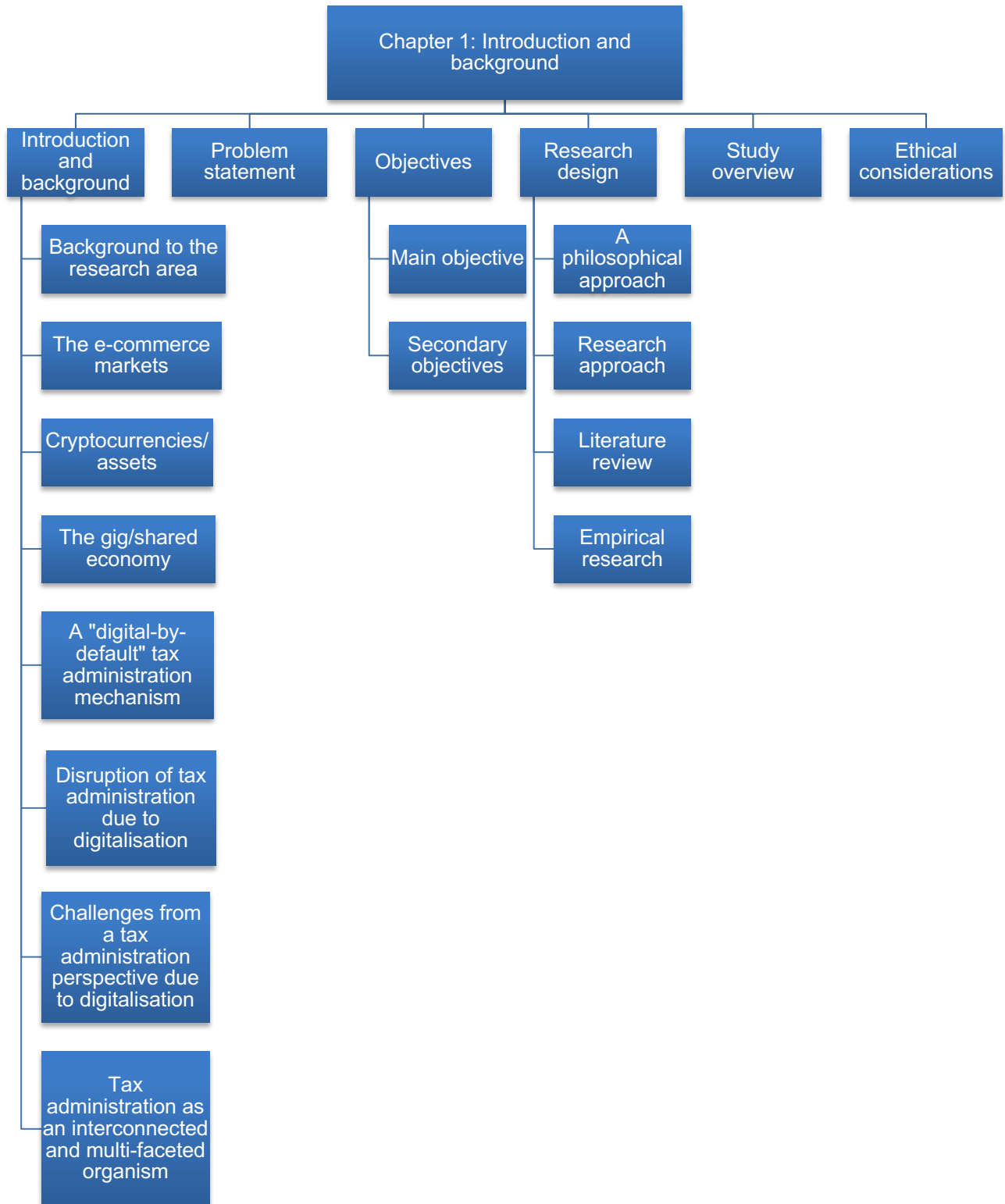
Figure 12: Global tax risk management and assurance in response to the digitalisation of the economy.....207

Figure 13: The tax administration processes evaluated from an organisational development perspective .....209

# **CHAPTER 1**

## **INTRODUCTION AND BACKGROUND**

# CHAPTER 1 OUTLINE



# **1 INTRODUCTION AND BACKGROUND**

## **1.1 Background to the research area**

The Third Industrial Revolution occurred in the 1980's and introduced what is commonly known as "the Internet" or the "World-Wide-Web" (Schwab, 2016:1). The new technological capabilities of the Internet allowed businesses and individuals alike to expand their personal and business horizons to anywhere in the world without the restriction of physical borders. The Fourth Industrial Revolution soon followed and is associated with exponential innovation, which is unprecedented compared to previous industrial revolutions. The introduction of the Internet-of-Things (IoT) and Artificial Intelligence (AI), among others, not only disrupted traditional business structures and methods, but also the products and services that could be sold. Customer-centric service providers witnessed a major shift alongside a transition from "tangible" products to digital services (Schwab, 2016:1).

After the digitalisation of the economy, other technologies were introduced, which include but are not limited to blockchain technology and digital or cryptocurrencies, of which Bitcoin is the most common example. The gig or shared economy, which includes shared-services companies, such as Uber Technologies Inc., Lyft Inc. and TaskRabbit is another phenomenon that arose from the digitalisation of the economy and has enabled multiple individuals to transact and provide services globally while being stationed in a single location (Trimarchi, 2018:1). An introductory discussion of specific elements associated with the digitalised economy and the impact on tax administration follows.

## **1.2 The e-commerce markets**

Studies indicate that 1.92 billion people shopped online in 2019 and the number of buyers is expected to rise to 2.14 billion online shoppers by 2021. Revenue from e-commerce sales accounted for 13.7% of worldwide retail sales in 2019 with an expected increase to 17.5% of global retail by 2021 (Statista, 2019:1).

Osman (2020:1) estimates that 95% of purchases will be made online by 2040. Furthermore, the amount of global online retail sales is expected to amount to US\$ 4.5 trillion by 2021, which is almost double the amount of online sales reported in 2017.

The top ten largest e-commerce markets globally are listed below (Osman, 2020:1):

- China (US\$672 billion)
- USA (US\$340 billion)

- United Kingdom (US\$99 billion)
- Japan (US\$79 billion)
- Germany (US\$73 billion)
- France (US\$43 billion)
- South Korea (US\$37 billion)
- Canada (US\$30 billion)
- Russia (US\$20 billion)
- Brazil (US\$19 billion)

Statistics further reflect that the e-commerce marketplace is bolstering globalism with 57% of online shoppers having made purchases from foreign suppliers (Osman, 2020:1).

### **1.3 Cryptocurrencies or assets**

Another financial “phenomenon” that the Third and Fourth Industrial Revolution introduced to online users is digital currencies. As at 11 June 2020, there were over 2,000 different types of cryptocurrencies available globally and the creation of new cryptocurrencies are increasing on a daily basis (Coinmarket, 2019:1). The literature review reflects that public adoption of digital or cryptocurrencies is increasing exponentially with Hong Kong, Singapore, the United Kingdom and the United States of America, currently reported to have the largest number of registered digital currency exchanges (Alexandre, 2019:1). Furthermore, the number of global blockchain wallet holders increased since the inception of digital currencies in 2009 to a reported amount of 47 million wallet holders at the end of March 2020 (Statista: 2020b:1). The global digital currency market capitalisation was valued at US\$ 2.371 billion as at the end of 2019, which represented just under a 100% increase from 2018 (Statista, 2020a:1). Oliveira (2019:1), furthermore, indicated a rise in the use and acceptance of cryptocurrencies by enterprises and organisations as a method of payment for goods and services.

### **1.4 The gig or shared economy**

The emergence of digital platforms that link workers and employers globally is the driving force behind the increasing prominence of the gig economy. The gig economy refers to a growing number of people who abandoned the traditional 40-hour work week in to work independently on a task-by-task basis for various employers or clients (AiGroup, 2016:1). The gig economy also

offers companies and employers access to a fluid workforce, hyper-specialised talent that would lead to cost savings and an increase in productivity (Kalleberg & Dunn, 2016:10-14). The same principle is applied in the shared or sharing economy that is defined as “an economic system in which assets and services are shared between private individuals” (Lovick, 2020:1). The shared economy includes shared-services companies, such as Uber Technologies Inc., Lyft Inc., and TaskRabbit (Trimarchi, 2018:1).

### **1.5 A “digital-by-default” tax administration mechanism**

Technological advances within the Fourth Industrial Revolution have introduced tax authorities to new tools to not only analyse, survey and administer taxes, but also to transform the way tax systems operate within the digitalised economic eco-system to become a “digital-by-default” environment. Examples include (near) real-time tax collection within natural portals, near real-time tax verification, auditing and assurance, collaborated international data exchange, data analytics and big data (Jacobs, 2017:3-17).

Natural systems and portals can now be harnessed to create an environment where “tax just happens” while business is conducted and where there is no need for the filing of tax returns, but pre-populated tax returns are merely confirmed with the taxpayer for the purposes of accuracy and completeness. In addition, innovation, agility and creativity have become a key concomitant of the digitalised economy and is a critical requirement for tax administrations to administer taxes within the digitalised economy. The latter will also be imperative to live up to taxpayers’ expectations in a post-digital era where digitalisation and digital processing is the norm and not a luxury as it was in the past. Big data and data analytics tools provide tax authorities with the opportunity to enforce and collect taxes more efficiently and effectively. It, furthermore, provides tax authorities with the ability to enhance their digital offering to taxpayers and personalise these service offerings which shows direct correlation with voluntary tax compliance. However, the optimal and effective implementation and use of these tools by tax authorities globally are questionable.

### **1.6 Disruption of tax administration due to digitalisation**

In the midst of the hype of technological advancement and innovation, various tax authorities remained stagnant in their approach to tax administration within the digitalised economy (Barnay, *et al.*, 2018:1). The Third and Fourth Industrial Revolution introduced the ability for human beings and businesses to transact and socialise across and outside the physical borders of a country, which disrupts the administration of tax. The allocation of taxing rights (nexus) is one of the fundamental principles of current tax legislation globally and entitles and enables tax authorities

to effectively charge and collect taxes based on either substantive jurisdiction (source-based) or enforcement jurisdiction (practical or effective means to collect tax) (OECD, 2018a:36; OECD, 2019:4). However, the physical borders of countries are a primary indicator of jurisdiction (Baez & Brauner, 2015:6).

The current principle and application of the nexus rules create critical questions and concerns regarding the relevance of current and traditional tax legislation within the digitalised economy. The question consequently follows whether drastic tax reform is not a critical requirement for effective and efficient tax administration within a global, digitalised economy. One of many questions that arise, taking into consideration the global nature of the digitalised economy, is whether the concept of nexus is still relevant and/or whether it should be redefined by taking into consideration new business structures and digital service offerings and/or whether the concept should be made obsolete with regard to the digitalised economy (OECD, 2018b:4).

From the perspective of multinational entities (MNEs), tax compliance seems to become more complicated while the digitalisation of the economy is associated with ease of business, speed and comfort (Ernst & Young, 2016:1). The same predicament applies to tax authorities, since tax enforcement is becoming increasingly complicated as technology evolves. An example that illustrates the fact that tax compliance has been complicated relates to tax administration and the enforcement of Value-Added-Taxes (VAT) or Goods and Services Tax (GST) within the digitalised economy for cross-border transactions. With reference to the current global response to the delivery of digital services across international borders, it becomes clear that there are inconsistencies and a lack of uniformity of legislative amendments made by various tax authorities and their enforcement and technological tools that are implemented to enable the collection of tax in the different countries. This introduced major tax compliance challenges for multinational entities (Hartley, 2019:1). The concern regarding the increasing complications of tax compliance within the digitalised economy was echoed on a global scale by various MNEs and tax professionals alike (Mehboob, 2019:1).

From the tax administrations' perspective, various goods are now being classified as a service due to the impact of digitalisation, which complicates the tax enforcement and collection of indirect taxes on these transactions. An example of such a reclassification is 3D printing. Consumers are now able to purchase a "product" electronically, but instead of it being sent to the client via postage, the blueprint is downloaded instantly and printed in the comfort of the client's home with a 3D printer. In this case, traditional goods, as defined in the tax legislation, have been transformed to a "service" (Ernst & Young, 2017:1).

From a Corporate Income Tax (CIT) perspective, the introduction of the Internet as a platform to trade and the further digitalisation of the economy has changed the landscape of how business is done and in what form and structure it is conducted. Digital revolutions have enabled companies to set up multi-national business structures and to structure their businesses in such a way that enables them to pay no or lower taxes than what was paid within the traditional business structures and in the country where the permanent establishment rules, as per Article 5 of the Organisation of Economic Co-operation and Development (OECD) could be applied (OECD, 2018a:43). Another main challenge associated with the digitalised economy, from a tax administration perspective, is base erosion and profit shifting (BEPS). While the OECD has issued various preliminary reports on possible solutions and interim solutions, a final, practical and implementable recommendation has not been tabled, since a practical solution and the related consensus among the different member countries could not be reached to date. The OECD, however, stated that a final report regarding tax administration within the digitalised economy would be issued in 2020 (OECD, 2019a:4).

In addition to the disruptions to the existing tax laws discussed in the preceding paragraphs, the digitalisation of the economy also introduced new elements with new tax implications. Innovations such as cryptocurrencies and the gig/shared economy as discussed in sections 1.3 and 1.4 were not included in traditional tax legislation and countries have responded in various (inconsistent) ways to ensure that these transactions are included in their tax nets (International Tax Review, 2018:1). Another major challenge regarding cryptocurrencies and the gig/shared economy include the practical and actual enforcement and collection of the taxes that are due from these transactions. Some countries have responded to the challenges of cryptocurrencies by updating both their Indirect Tax Acts and issuing media releases regarding the direct tax treatment of cryptocurrencies (National Treasury, 2018:42). However, the current ability of tax authorities to enforce taxes in this regard remains uncertain. With reference to the gig economy, no specific reference is made in the tax law of the tax authorities globally, despite the increase in digitalised economic activity.

Taking into consideration the time lapse since the introduction of the Third and Fourth Industrial Revolution and the remaining lack of an international practical tax administrative solution and global consensus within the 'traditional' international tax framework, the question arises as to whether an alternative or new tax administration system should not be considered. Azam (2007:1-33) recommended an alternative option of a global tax administration function and a possible apportionment model as a possible solution for tax administration for e-commerce transactions. A possible change in traditional international tax law was also recently echoed by the OECD in a paper that was issued in 2019 where a call for response regarding a new proposal of the

apportionment for highly digitalised companies was made (OECD, 2019a:16). Major disruption of the traditional tax system is thus clear, but this might be the catalyst for a new modernised tax system to optimise tax administration within the digitalised economy.

## **1.7 Challenges from a tax administration perspective due to digitalisation**

Tax authorities worldwide, as well as the OECD (2018a:12-20), have raised various concerns regarding tax administration within the digitalised economy. Whilst the digitalisation of the economy did not introduce base erosion and profit shifting (BEPS) risks, it enables it further. Various actions were recommended by the OECD (2018a:12-20) but international consensus could not be reached to date regarding the way forward to ensure effective tax administration within the digitalised economy. With reference to documented literature, the OECD reports issued to date as well as other major international organisations like the United Nations (UN), it is clear that efficient and effective tax administration within the digitalised economy remains a challenge. Some of these challenges or real-world problems are discussed below.

### **1.7.1 Tax administration and BEPS**

Tax authorities worldwide are currently considering possible solutions to prevent BEPS enabled by the digitalisation of the economy due to factors listed in section 1.6. The question, however, remains whether tax administration within the digitalised economy is each country's individual responsibility or whether a different collaborative (global) approach is more suitable considering the (global) characteristic of the digital economy. To date, the majority of tax authorities have implemented none or limited additional measures, ranging from legislative amendments to technological innovations. During the preliminary literature review in this study, no country was identified that has implemented a complete and effective holistic strategy to prevent BEPS enabled by the digitalised economy.

Some of the unilateral tax measures in response to the digitalised economy that were introduced to date include the following (Hadzhieva, 2019:38-43; Australian Tax Office, 2020:1):

- Austria's and Hungary's online advertisement tax
- Australia's multinational anti-avoidance law (MAAL) and Diverted Profit Tax (DPT)
- Australia, United States of America, United Kingdom and various other countries' cryptocurrency tax
- Belgium's fairness tax

- France's YouTube tax
- India's new nexus and equalisation levy, significant economic presence
- Israel's new nexus and significant digital presence test
- Italy's web tax
- New Zealand's digital services tax
- Saudi Arabia and Kuwait's virtual permanent establishment
- Slovakia's intermediation tax
- The United Kingdom's diverted profit tax (DPT)
- United States of America 's base erosion and anti-abuse tax (BEAT)
- Taiwan's new nexus rules
- Turkey's withholding tax and e-payments

#### 1.7.2 Increased and new tax risks within the digitalised economy

Anonymity is a major benefit for users of digital products but poses major challenges to tax authorities as this further complicates the tax administration process (Azam, 2007:7). The identification of the location of a user or buyer of electronic services is currently critical for tax administration purposes because current legislation still refers to physical borders as the identification of tax jurisdiction. If a tax authority can therefore prove that a foreign company or taxpayer delivers services in, for example, France, it has the right to tax the foreign company. The practicality of the identification of the users of electronic services is, however, not as easy as in the past. Users can anonymise the Internet Protocol (IP) addresses of the electronic devices that are used, their geo-identification can be changed or anonymised and some digital payment methods, such as Ethereum do not provide any indication of the user's normal place of residence (Lubbe, 2015:47).

Although there are as many causes of tax evasion as there is authors about the topic, the digitalisation of the economy is another tool people use to evade taxes (Collosa, 2019:1). Studies also indicate that human morality and ethics decrease as technology advances (Goodman, 2016:82). The decrease in ethics, together with inefficient tax administration associated with the complexities of the digitalised economy, present the perfect conditions for tax evasion. The

digitalisation of the economy provides the inclination, the ability and the opportunity to evade taxes (Hadzhieva, 2019:16).

Another critical predictor of tax compliance is the ease with which taxpayers can comply with tax laws and systems. Taxpayers are more prone to comply and complete their tax returns accurately and completely if the tax administration system and legislation makes it easy to comply (Serem, Robert & Philip, 2017:1). Tax compliance within the digitalised economy for MNEs and other participants, however, pose a major challenge due to the lack of consistency among global tax authorities' tax legislation and administrative processes (Dancey, 2019:1). The tax risk for tax authorities has thus drastically increased in relation to tax collection and tax evasion due to the digitalisation of the economy.

### 1.7.3 Tax administration and cryptocurrencies or assets

Although tax authorities have made some adjustments and public announcements regarding cryptocurrencies and crypto-assets, the regulation, surveillance and practical tax enforcement within this environment remains a major challenge for tax authorities worldwide. Tax evasion is made possible with cryptocurrencies due to its unique characteristics, such as peer-to-peer cross border transfers, anonymity associated with some cryptocurrencies, mining on private phones and the storing of currency in unregulated e-wallets (Hadzhieva, 2019:13). The tax risks of tax fraud and evasion associated with cryptocurrencies and associated administration challenges thus remain a challenge for tax authorities globally.

### 1.7.4 Tax administration and the gig or shared economy

A 2016 survey of members of the National Association of the Self-Employed in the United States of America (USA) found that 34% of gig economy workers said they did not know they had to file tax returns. The survey also indicated that 36% of respondents did not understand which tax records must be kept and 43% did not make any provision to meet their tax obligations (Trimarchi, 2018:1). Furthermore, large numbers of those employed in the gig economy have multiple sources of income, which leads to confusion for some individuals resulting in tax returns being completed incorrectly or not at all. In addition, some gig economy workers may deliberately not declare income from this alternative source of income (Wiles, 2020:1). Literature as set out in section 1.6, however, suggest that limited reform took place in this regard from the side of tax administrators globally to address the related challenges associated with the gig/shared economy.

### 1.7.5 Tax assurance within the digitalised economy

Tax assurance for the purposes of this study refers to the audit or verification of the accuracy and completeness of tax returns submitted by taxpayers registered for tax. Tax assurance is also extended to businesses and individuals who should be registered for taxation in terms of domestic tax law, but who is not registered as taxpayers.

Tax assurance within a digitalised economy has become a major challenge for tax authorities. Tax audits and assurance are one of the enforcement tools that are used by tax authorities to maximise tax collection and recover tax losses associated with tax fraud and/or evasion.

The disruption of the traditional economy due to digitalisation has, however, impacted traditional audit approach and associated methodologies (KPMG, 2017:34-35). The introduction of cloud-computing, distributed ledgers (Blockchain) and the increased amounts of data associated with the disruption of the traditional economy due to digitalisation require a drastic change of skills and approach from a risk assessment and assurance perspective to ensure relevant, efficient and effective tax collection and an appropriate tax risk response (KPMG, 2017:34-35).

### 1.8 Tax administration as an interconnected and multi-faceted organism

The core tasks of a tax administration are centred around the implementation and enforcement of tax laws and regulations. These activities and processes include the identification and registration of taxpayers, the processing of tax returns and third-party information, the examination of the completeness and accuracy of tax returns, the assessment of tax obligations, the collection of taxes and a service provided to taxpayers (Alink & Van Kommer, 2016:87). Therefore, tax administration is a holistic, interconnected and multi-faceted organism which produces specific outputs. The change of tax legislation alone, for example, will not result in an increase in collected tax revenue. Similarly, the technological enhancement of the tax filing and payment systems would not by itself optimise the collection of tax revenue. Optimised national and international tax administration is thus dependant on the efficient and effective consolidation and interaction of the various inter-connected and multi-faceted systems and processes within a tax authority that operates as a single organism.

Three major elements that must be considered from a tax administration perspective include the relevant tax legislation and policy, the effectiveness and efficiency of the tax administration system (largely driven by technology and data) and the tax risk assessment and assurance process. In order to evaluate tax reform with regards to the digitalisation of the economy, a holistic evaluation should be done to evaluate the critical elements that form part of a tax administration as an inter-connected and multi-faceted unit or organism instead of compartmentalising the

evaluation. The holistic evaluation of tax reform in response to the digitalisation of the economy is recommended due to the co-dependency of the various systems and processes within a national and international tax administration system. It is the effectiveness, efficiency and relevance of the reform evaluated as a holistic unit that will provide a view of optimised or ineffective (guided by research results) tax administration within the digitalised economy.

## **2 PROBLEM STATEMENT**

Current available literature and knowledge regarding tax administration within the digitalised economy only focus on one element (for example, only technological advances or tax legislative challenges). The literature review that was conducted with regards to the digitalised economy is fragmented and limited literature could be identified that provides a holistic evaluation of the global response to tax administration within the digitalised economy and the possible solutions to optimise tax administration within the digitalised economy.

The digitalised economy, international taxation as well as tax administration are holistic and multi-faceted environments and systems. It is thus imperative to understand and have sufficient knowledge of the above multidisciplinary subject matters and how these integrate into an “ecosystem” to enable tax authorities to identify alternatives to the current (‘traditional’) international tax legislation and tax administration system. Research that provides a holistic view and possible solutions to tax administration within the digitalised economy remains limited.

Based on the abovementioned context, the following problem statements can be formulated:

- Despite the global tax legislative and policy response to tax administration within the digitalised economy, the consistent, effective and efficient implementation of the tax legislation and policy responses that will make it easier for highly digitalised multinational entities and other taxpayers within the digital economy to comply and optimise tax administration within the digitalised economy remain uncertain.
- While the Fourth Industrial Revolution is synonymous with technological advancements and innovation, most tax authorities seem unable to efficiently and effectively implement technology and data to optimally administer taxes within the digitalised economy.
- The tax and business environment underwent a major disruption due to the digitalisation of the economy. The risk assessment and assurance approach from most tax authorities, however, seem to have remained stagnant, which results in material under-collection of taxes globally.

### **3 OBJECTIVES**

#### **3.1 Main objective**

The main objective of the research is to investigate, evaluate and analyse the extent of tax reform within the digitalised economy. Specific focus will be placed on the international response to tax legislative and policy changes and the utilisation of technology and data to ensure efficient and effective tax administration within the digitalised economy.

The main objective will be accomplished by addressing the secondary objectives identified below.

#### **3.2 Secondary objectives**

In order to achieve the main objective of the study, a systematic approach will be followed by addressing the following three secondary objectives:

- 1.** An evaluation of tax reform within the digitalised economy with emphasis on tax legislation and policy. This secondary objective will focus on the collection of data to obtain a global view of the status quo of legislative and policy reform in response of the digitalisation of the economy. Direct and Indirect taxes impacted by the digitalised economy will be evaluated as well as specific matters such as the tax reform in response to the increased utilisation of cryptocurrencies and the gig or shared economy.
- 2.** The evaluation of global data and technology reform in response to the digitalisation of the economy in to ensure relevant, efficient and effective tax administration. This secondary objective will focus on the evaluation of selected tax authorities' digital response to administer taxes within the digitalised economy, with specific focus on digital service offerings to taxpayers for tax filing and payment purposes, the provision of tax administration digital infrastructure and the collection and analysing of digital taxpayer information for tax administration purposes.
- 3.** An evaluation of global tax risk assessment and assurance reform as a tool to assess tax risk and assurance in response to the digitalisation of the economy. This secondary objective will focus on the evaluation of selected tax authorities' reform to identify, evaluate and respond to tax risks associated with the digitalised economy. The evaluation of the assurance response will be limited to full-scope audits/assurance responses.

The above objectives will be addressed in research articles one, two and three, which are included in Chapters 3 to 5 of this thesis.

## **4 RESEARCH DESIGN**

### **4.1 A philosophical approach**

The research philosophy of a study should be defined clearly to address the research question and to select the most appropriate research approach. Two aspects regarding research philosophy will be considered, namely the ontological philosophy and the epistemological philosophy. Ontology refers to assumptions about the nature of reality and influence the way in which one see the study and research objects (Saunders, 2009:126).

The ontological assumption is divided into objectivism and constructionism. Objectivism implies that reality exists independently from human consciousness and that humanity has direct contact with reality through their perceptions. In contrast, constructionism stipulates that social phenomena can be accomplished by social actions. Constructivists believe that scientific knowledge is constructed by scientists and are not discovered from the world (Sequeira, 2010:1). A social construction is a concept or practice that is the construct of a particular group according to constructionist thought (Hazelrigg, 1986:1-13).

With reference to this specific study, the study's subjects include tax authorities, taxpayers and the digital economy. The study will also focus on how these subjects interact within the digitalised economy and how tax authorities can adapt to these changes and interactions to ensure a balanced ecosystem among government, taxpayers, highly digitised MNEs and their clients, which will simultaneously encourage global economic innovation, development and growth. This view is in contrast with a philosophy where tax authorities remain stagnant in their current tax administration approach and require the digitalised economy and its role players to adapt to its current legislation, regulations and processes. In this study, the opinions and values of the various role players will be taken into account to accumulate knowledge on the subject matter.

Epistemology is the study of knowledge and refers to the ways in which data will be acquired in a study. Epistemology concerns assumptions regarding what constitutes acceptable, valid and legitimate knowledge, as well as how this knowledge can be communicated to others (Burrell & Morgan, 1979:54). Epistemology is further divided into two parts, namely positivism and interpretivism. Positivism is a study of social reality or how the social world can be analysed. It further assumes that objective facts offer the best scientific evidence (Saunders, 2009:127). Interpretivism, however relates to elements such as the values, norms and subjective positioning of the researcher and the research community in an attempt to interpret reality (Bauer, Festner, Gruber, Harteis & Heid, 2004:284-292).

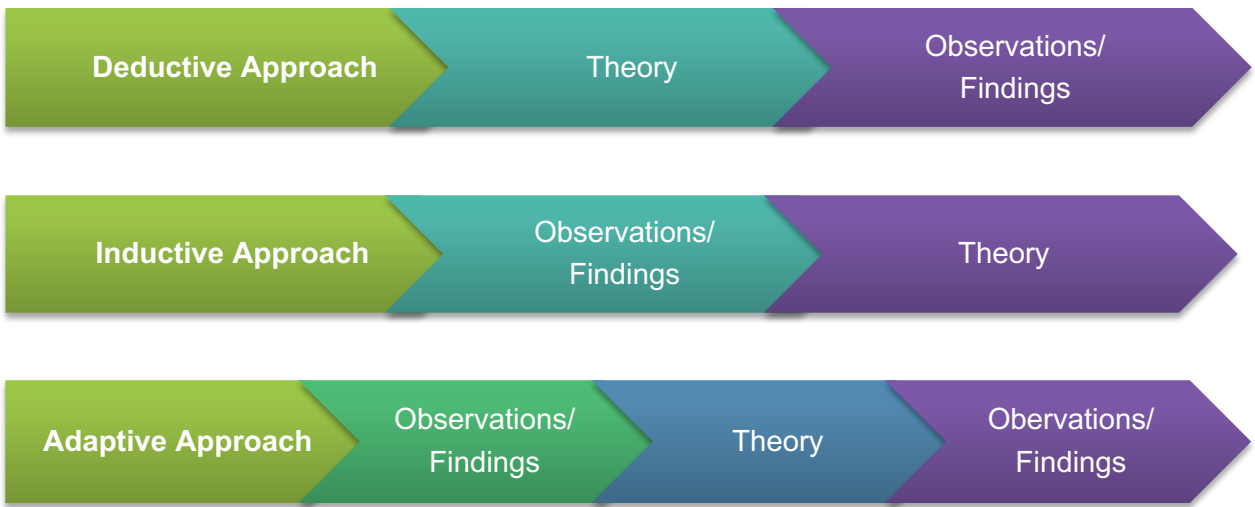
This study will accumulate knowledge by applying the interpretivism approach as subjective information will be accumulated to acquire knowledge regarding the specific research objects. The nature of the study does not allow the application of the positivism approach since it is a relatively new phenomenon with limited data available.

**4.2 Research approach**

The extent to which this study aimed to address the research question depends on an appropriate and effective research approach. Research approaches can be segregated into three different types: inductive, deductive and adaptive approaches (Morgan, 2007:71). Where a deductive approach is followed, a conceptual and theoretical structure is developed and then tested by empirical observations (Glaser & Strauss, 1967: 29). The direction of the research is from a general law to a specific case and data is collected to test the theories in terms of this approach (Andreewsky & Bourcier, 2000:836-845; Taylor, Fisher & Dufresne, 2002:313-330).

An inductive approach is usually from a particular to a general approach and data is collected to generate theories. In terms of this approach, a theory is developed from observations to generate theoretical conclusions (Kovacs & Spens, 2005:137). Finally, abduction or an adaptive approach is a combination of both the deductive and inductive approaches. According to this approach there is a back and forth movement between the inductive and deductive approaches in terms of which observations are first converted into theories and then assessed through action (Morgan, 2007:71). Figure 1 below illustrates the different types of research approaches.

**Figure 1: Possible research approaches**



Source: Schutte (2011:9).

The deductive approach will not be suitable for this specific study due to the subjective nature of the study and the fact that limited data and research is available on the topic. The inductive approach might be suitable for this study because limited data is available on the subject matter and because observations will be used to formulate a possible theory.

The adaptive approach combines the deductive and inductive theory. Since limited theory is available on the subject matter, it was deemed impractical to apply this method.

Therefore, the inductive approach will be the most suitable for this study as limited data is available on the subject matter and due to the fact that the knowledge accumulated during the study will be used to formulate a theory on the subject matter.

With reference to the objectives and chapter layout below, initial observations regarding the global response of tax administration from a tax legislation and policy perspective within the digitalised economy will firstly be considered (Chapter 3). Thereafter, global tax reform with specific emphasis on data and technology solutions as a tax administration tool will be evaluated (Chapter 4). Finally, the global reform in the approach to tax risk assessment and assurance will be considered to effectively and efficiently administer taxes within the digitalised economy (Chapter 5). The research therefore includes an analysis of specific observations regarding tax administration within the digitalised economy with the aim to develop a generalised theory based on the observations.

### **4.3 Literature review**

A literature review will be conducted with the aim to answer the question of what data, statistics and information is currently available regarding the proposed research topic. Various international resources are available, including detailed research of the OECD, the United Nations as well as leading tax offices around the world. There are also academic research papers available in this area, although they are limited.

A literature review is critical for the proposed study as it enables the identification of which actions were already taken within the digitalised economy and related tax, how effective it is or was and what additional measures can be investigated to propose possible alternatives to tax enforcement in the digitalised economy. Comparative, cross-national studies will also be conducted to focus on the similarities and differences between countries and actions taken to date to ensure effective tax administration within the digitalised economy. Comparative studies are appropriate as they provide insight on an international level and provides global comparative feedback.

#### **4.4 Empirical research**

An empirical study will be conducted to provide an in-depth description of the participants of the digitalised economy and the tax administration thereof. An empirical study is the most appropriate research design because a real-world solution is required in to ensure effective and efficient tax administration within the digitalised economy. Interviews will be held with key role players of selected tax authorities globally to ensure a global view regarding the tax administration reform in response to the digitalised economy. Countries identified for interviews will be selected based on their ability to influence global international tax policy and because they are regarded as front runners regarding tax reform within the digitalised economy (informed by the literature review). In order to obtain a balanced global view, the countries that will be selected for interviews will include countries from developed as well as developing economies. Data collected by way of interviews will be applicable to chapters 4 and 5 of this study.

A comprehensive overview regarding the research methodology and approach will be provided in chapter 2 of this thesis.

### **5 STUDY OVERVIEW**

Three academic research articles will be submitted for publication during the course of the study. Due to the rapidly continuous changing landscape of technology and the current global uncertainty regarding the effective and efficient tax administration within the digitalised economy, the approach of article publication as the research is finalised per research topic will be more relevant and actual. This is considered in comparison to the finalisation of the research in its totality and publication in thesis format after the fact.

The proposed topics of the three articles are listed below:

- An evaluation of tax reform within the digitalised economy with emphasis on tax legislation and policy.
- An evaluation of the global digital technology response of tax authorities to optimise tax administration.
- Tax risk assessment and assurance reform in response to the digitalised economy.

Based on these proposed research articles, the high-level chapter layout of the thesis is provided below:

### **CHAPTER 1: Introduction and background**

The main objective of this chapter is to provide background regarding the research topic in the format of a literature review. In Chapter 1, a problem statement is formulated, the objectives of the research are presented and background regarding the research philosophy and approach is provided. The chapter also include which methods will be used in the study to accumulate knowledge and collect data and what the contribution of the study would be in the subject field.

### **CHAPTER 2: Research approach and methodology**

The main objective of Chapter 2 is to provide a detailed overview on the research approach and methodology that will be followed to collect data and knowledge with the aim to address the research problem. The chapter include the data collection process that will be followed to ensure the reliability and creditability of the research results.

### **CHAPTER 3 (RESEARCH ARTICLE 1): An evaluation of tax reform within the digitalised economy with emphasis on tax legislation and policy**

Chapter 3, which is the first research article, focuses on the global reform with regard to tax legislation and policy in response to the digitalised economy. Due to the fact that tax administration is enabled by tax legislation and policy, the legislative and policy response of tax administrators globally would be the first element to evaluate to reach the main objective of the research. A holistic and global evaluation of tax legislation and policy response within the digitalised economy for direct and indirect taxes is included in the article. The results of Chapter 3 will be indicative of the tax authorities' status quo and readiness to administer taxes successfully within a digitalised economy.

With regards to the field of study, the research article contributes to the currently limited literature that is available regarding a global overview of the status quo of direct and indirect tax reform in response to the digitalisation of the economy.

## **CHAPTER 4 (RESEARCH ARTICLE 2): An evaluation of the digital response of tax authorities to optimise tax administration within the digitalised economy**

Chapter 4 (research article 2) focuses on evaluating the reform that took place among global tax administrators with specific reference to data and information technology as a tool for tax administration. The strategic direction of global tax authorities in relation to data and technology is evaluated, followed by the status quo of information technology and data maturity levels of various tax authorities to ensure efficient and effective tax administration within the digitalised economy. In this article, reference is made to various new systems introduced due to the digitalisation of the economy as well as the use of data science.

With regards to the field of study, the research article contributes to the currently limited literature that is available regarding technological innovation to ensure efficient and effective tax administration, as well as the technological transformation required to ensure relevance within a disrupted digitalised economy.

## **CHAPTER 5 (RESEARCH ARTICLE 3): Tax risk assessment and assurance reform in response to the digitalised economy**

The objective of Chapter 5 (research article 3) is to identify the specific tax risks associated with a digitalised economy whether it is existing tax risks that is increased due to digitalisation and/or new tax risks introduced by the digitalisation of the economy. Further to the latter, the global risk management and assurance reform that took place to address the identified tax risks are evaluated. In this chapter, the changes that took place within the tax risk management process are evaluated, including the level at which these changes or measures were implemented globally (if at all). Furthermore, the reform that took place from a tax assurance perspective is considered, with specific focus on full or comprehensive tax audits. An evaluation of the global application (if any) of the identified reform measures from an assurance perspective is also included in this chapter.

With regards to the field of study, the research article contributes to the currently limited literature that is available regarding the global tax risk and assurance reform in response to the digitalisation of the economy.

## **CHAPTER 6: Summary, limitations and conclusions**

The findings and limitations in the preceding chapters are summarised and concluded in Chapter 6. An analysis of specific observations regarding tax reform within the digitalised economy is provided, together with a combined and holistic evaluation of the three interactive elements

included in the study. A possible alternative tax administration model designed to optimise tax administration within the digitalised economy is proposed in this chapter and is based on the research results and observations of the study.

The overall contribution of this study will add knowledge to the current literature on the subject matter with the added value of a holistic and integrated view of tax administration, technology, data and tax risk assessment and assurance within the digitalised economy. In addition, the study provides possible practical solutions to tax authorities globally to ensure efficient and effective tax administration within the digitalised economy.

## **6 ETHICAL CONSIDERATIONS**

Knowledge will be accumulated, and data will be collected during this study by means of three main research methods, including:

- A combination of different literature review methods,
- Cross-national comparisons, and
- Semi-structured Informal interviews with key stakeholders of selected tax authorities

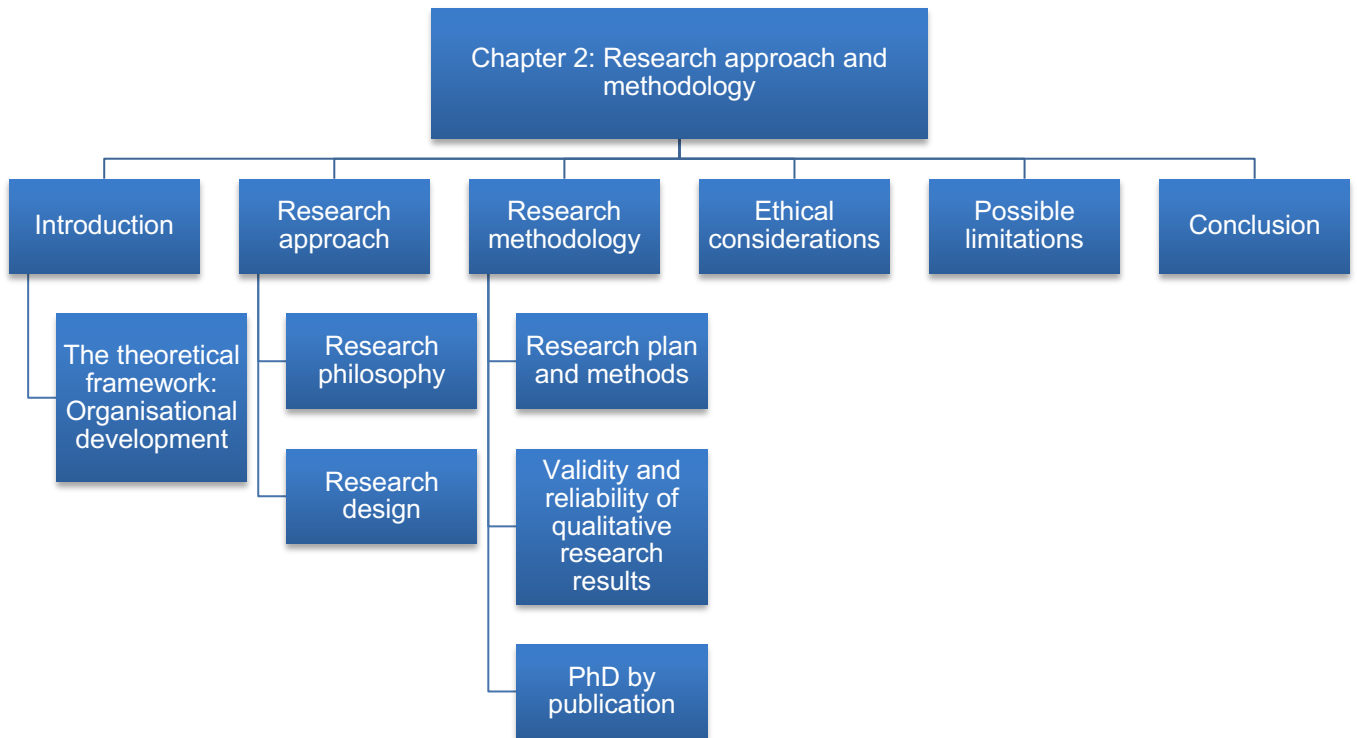
In addition, approval will be obtained from the North-West University's ethical committee regarding the questions that will be asked during the informal interviews with key stakeholders of tax authorities.

The tax authorities and interviewees/participants will remain anonymous due to the sensitivity of tax administrations' internal systems and processes. The identification of a specific tax authority may also lead to the abuse of information by taxpayers or tax representatives to evade taxes. In cases where specific reference is made to a tax authority, the information was obtained from verifiable sources in the public domain.

## **CHAPTER 2**

### **RESEARCH APPROACH AND METHODOLOGY**

## CHAPTER 2 OUTLINE



## **1 INTRODUCTION**

During the literature review, it was found that there is a reasonable amount of reliable literature relating to tax administration available in the form of journal articles and research work executed by international organisations like the OECD and the UN. Limited literature was however, identified relating to the actual tax reform that took place globally as a result of the recommendations made due to research projects undertaken by the OECD and the UN and/or as a result of researchers' own initiative and innovation at country level. The literature review further suggests that tax administration within the digitalised economy is a relevant global discussion that seeks innovative and agile solutions to prevent tax losses and tax fraud enabled by the digitalisation of the economy.

Based on the literature review, there does not seem to be a current theory or hypothesis that can be tested in relation to tax administration within the digitalised economy. Furthermore, tax authorities and other global organisations are still seeking facts relating to the subject matter to formulate a solution or solutions that will, among others, embrace technology to optimise tax administration and reduce the relevant tax risks associated with the digitalised economy.

The objective of the study is to obtain and broaden the information that is currently available in the subject field and to provide possible solutions or a part of a solution for tax reform within the digitalised economy with specific emphasis on tax legislation reform, technology and data reform, as well as tax risk management and assurance reform. The research process and results are documented within the structure presented in Figure 1 below. The research approach and methodology that will be used to collect data and knowledge in this field, with the intent to solve the problem statement, are subsequently discussed in this chapter.

### **1.1 The theoretical framework: Organisational development**

In order to provide a background in relation to the lens through which the study will be conducted and the collected data evaluated and analysed, the discussion of the theoretical framework that will be applied is important.

The organisational development (OD) theoretical framework will be applied in the study, because it is deemed appropriate since the digitalisation of the economy requires tax authorities to reform and develop as organisations as a whole to optimise tax administration within a new economic and technological environment. While tax authorities are unique in the fact that their mandate is to collect taxes (among others) for governments globally, its core operational structures and processes remain similar to any other organisation that consists of business processes, information technology and human resources.

**Figure 1: Research process and outline**



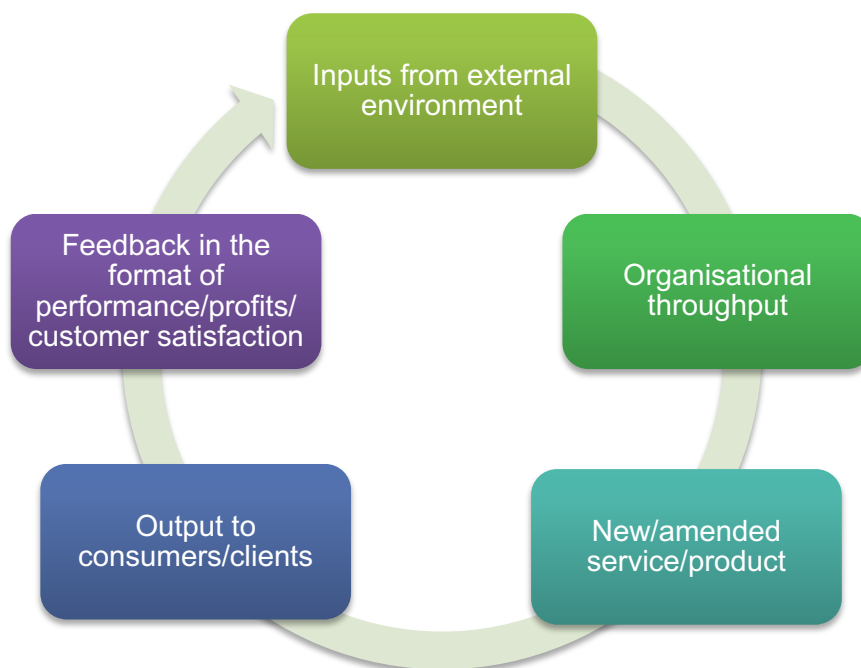
Source: Author's own (2020).

According to Kessler (2013:542), OD is “a process of planned change in an organisation that is (a) system wide, (b) based on open system theory and the application of behavioural science knowledge, (c) involving organisational members in the process, (d) long-range (months if not years), (e) grounded in humanistic values, (f) aimed toward modification of the organisation’s culture, and (g) intended to improve an organisation’s capacity for managing change and development in the future”. The fundamentals of an organisational framework can be considered in three categories namely theory, conceptual frameworks and practice (Kessler, 2013:542).

### 1.1.1 Theory

While there is no all-encompassing, singular theory of OD, most OD practitioners think in terms of open system theory, which is where an organisation receives input from its external environment and translates that input into throughput within the organisation. The throughput produces a service and/or product that becomes an output to the customer. Examples of these outputs can be performance, sales, profits and customer satisfaction and become feedback for the organisation in the form of input and then the cycle continues (Kessler, 2013:543). The cycle is illustrated in Figure 2 below.

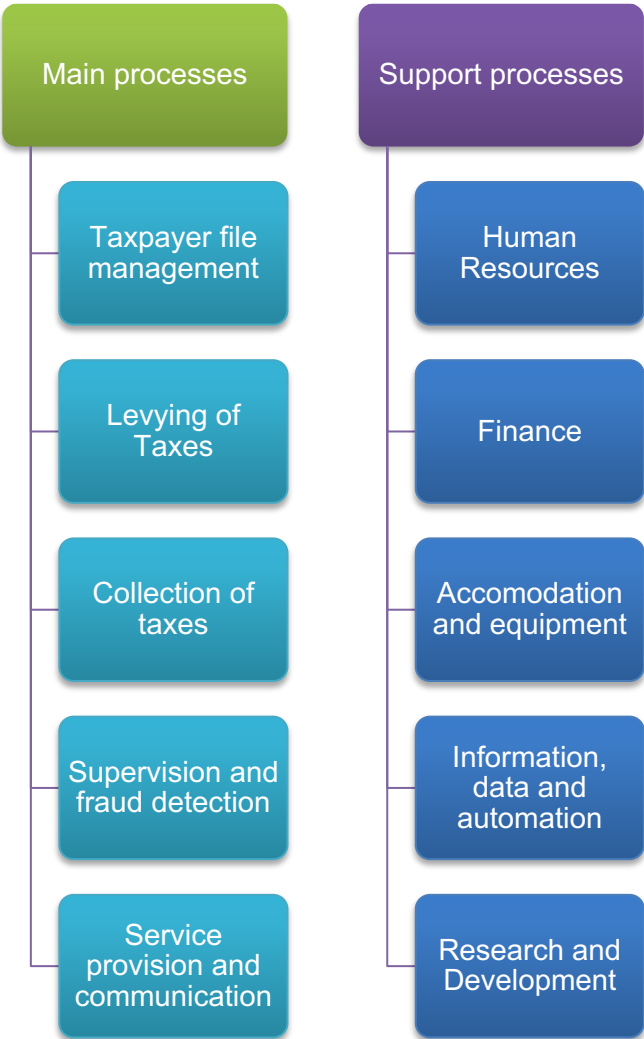
**Figure 2: Organisational development cycle**



Source: Kessler (2013:543).

According to Kessler (2013:544), an organisation can be considered as a living, breathing organism that is dependent on its external environment for the sake of survival. This metaphorical organism goes hand-in-hand with open systems theory that originated from cell biology. Comparisons between a living cell and an organisation help explain and understand certain concepts associated with change that include, but are not limited to chaos, disequilibrium, self-organising, among others. The typical organisational structure and processes (organism) of a tax authority are illustrated below in Figure 3.

**Figure 3: Typical tax administration organisational structure**



Source: Alink & van Kommer (2000: 73-115).

Based on the open source theory, it is expected that a change of the nature of the economy, which in this case is the digitalisation of the economy, will be regarded as an external factor that impacts the organism, tax system or organisation as a whole or in part. It is further expected that

the organism, which, for the purposes of this study, is tax authorities, will react to the change in external environment to change and adapt to ensure its survival.

### 1.1.2 Conceptual framework

The conceptual frameworks followed by experienced OD practitioners are based on a concept that is known as “action research” (Kessler, 2013:543). In terms of this framework, data is collected from the organisation(s) and the action that follows - a change intervention - is informed by the data that was collected. The data that are collected can be summaries of interviews, survey results, archival information, observations, or a combination of these methods. The practice of OD therefore follows Kurt Lewin’s dictum: “no action without research and no research without action” (Kessler, 2013:543).

Similar to the conceptual framework discussed in the preceding paragraph, the preliminary literature review suggests that some tax authorities globally did take action in response to the digitalised economy, while others remain stagnant. The objective of the study is thus, to collect data, as suggested by Kessler (2013:543), to expand the current available literature relating to tax reform within the digitalised economy and to utilise the knowledge accumulated during the research process to make possible recommendations for consequent informed and researched organisational and international change to the current tax administration model.

### 1.1.3 Practice

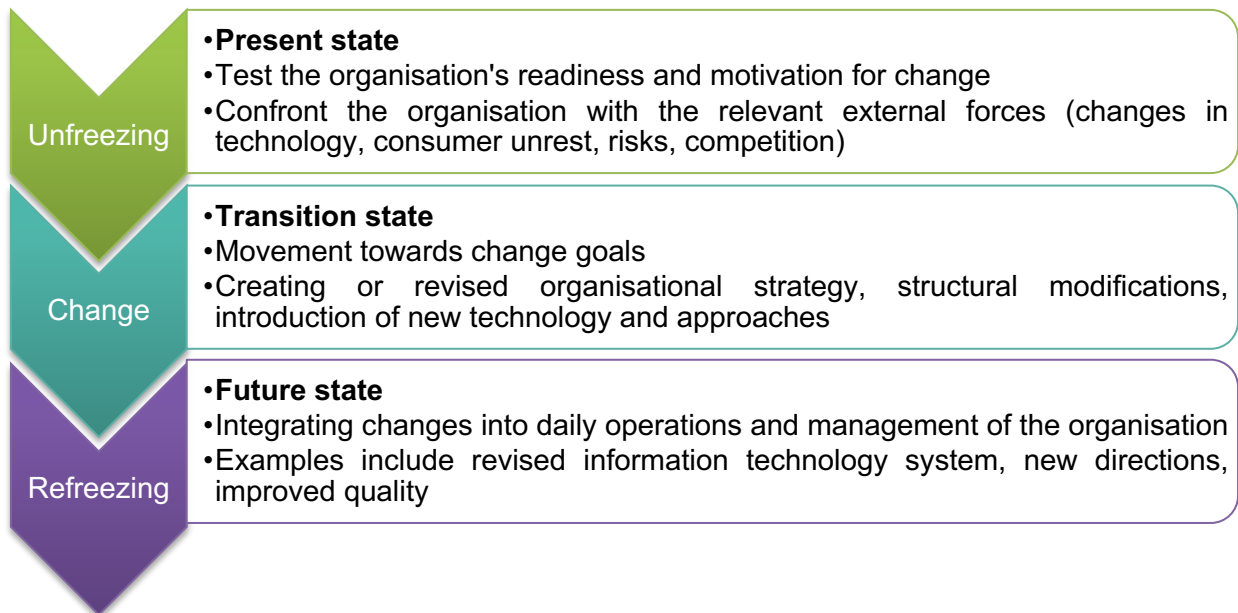
Most practitioners in OD base their consultation on Kurt Lewin’s three-phase model. These phases are “unfreezing”, “changing” and “refreezing”. The activities associated with each phase are set out in Figure 4.

The digitalisation of the economy represents the input from the external environment (in terms of the OD theory) to tax authorities globally and have forced tax authorities and international tax policymakers to rethink the way taxes are administrated and how this product is presented to their clients. Based on the literature review, the digitalisation of the economy already sets the process of OD and change into action by unfreezing some of the tax authorities and moving them into the change phase, while others have only shown relatively limited development and change to date. From an OD and change point of view, only legislation, data and technology as well as tax risk management and assurance response will be evaluated using the OD theory as a lens for the research process.

This study will evaluate, as part of the overall evaluation of tax reform within the digitalised economy, to what extent tax authorities have responded to the digitalisation of the economy.

Responses for global tax authorities can thus be in the phase of “unfreezing”, “change” or “refreezing”. It is expected that tax authorities would be in different phases globally and that the implementation of organisational reform will differ for the various processes within a single tax authority.

**Figure 4: Activities within Kurt Lewin’s three-phase model**



Source: Hussain & Lei, *et al* (2018: 123-127).

## 2 RESEARCH APPROACH

### 2.1 Research philosophy

Sapsford (2006:175) describes research philosophy as “a philosophical stance of worldview that underlies and informs a style of research”. In other words, research philosophy describes a researcher’s “worldview” (Mackenzie & Knipe, 2006). A researcher’s worldview in relation to what knowledge is and how it can be collected will inevitably influence their approach and the methods followed to gather and interpret data. Two important principles that underlie research philosophy is epistemology and ontology.

“Epistemology” originates from the Greek words *epistēmē* (knowledge) and *logos* (reason) (Stroll, 2020:1-7). The word *episteme*, which means knowledge is concerned with the nature and forms of knowledge (Cohen *et al.*, 2007:7). Epistemological assumptions deal with how knowledge can be created, obtained and communicated, in other words “what it means to know”. Epistemology

asks the question of “*what is the nature of the relationship between the would-be knower and what can be known*” (Guba & Lincoln, 1994:108).

“Ontology” originates from the Greek word *ontologia* (“science of being”), which relates to the study of being (Simons, 2015:1). Ontological assumptions are concerned with what constitutes reality, in other words “*what is*” (Crotty, 1998:10). Examples of questions asked during the science of ontology is whether objects exist, whether these objects independent of mind and languages, if they depend on some external or internal influences, whether they are discovered or created or basic, irreducible constituents of reality or objects that can be reduced to others. Objects in this instance can be represented by real or abstract concepts (Simons, 2015:2-5). The view and beliefs of the researcher in relation to both epistemology and ontology influence the perspective or beliefs that inform the meaning or interpretation of research data.

Three typical patterns or models (paradigms) of epistemology and ontology are positivism, interpretivism and critical theory (Rehman & Alharthi, 2016:51-59).

### 2.1.1 Positivism

The ontological position of positivism is one of realism, which perceives objects to have an existence that is independent of the knower (Cohen, *et al.*, 2007:7). A discoverable reality therefore exists independently of the researcher (Pring, 2000a:59).

In addition, the positivist epistemology is one of objectivism. Crotty (1998:8) states that positivists go into the world impartially, discovering absolute knowledge about an objective reality. It is also presumed that the researcher and the researched are independent entities. Positivists believe that meaning solely resides in objects and not in the conscience of the researcher and the aim of the researcher is to obtain this meaning (Crotty, 1998:8). Positivism is a mythological philosophy in quantitative research where methods of natural sciences are applied in to discover the study of social science. However, the understanding of the phenomena in reality must be measured and supported by evidence (Crotty, 1998:8-9).

Some disadvantages of the positivism paradigm is that it would be impossible to measure phenomena related to the intention, attitude and thoughts of a human being, because these concepts may not explicitly be observed or measured with experience or without evidence (Hammersley, 2013: 23-24). Another disadvantage is that the fundamental theoretical perspective aims to generalise its results, which might disregard individuals’ interpretation of specific events under consideration.

### 2.1.2 Interpretivism

The ontological position of interpretivism is relativism, which is the view that reality is subjective and differs from one person to another (Guba & Lincoln, 1994:110). Interpretivism therefore states that our realities are mediated by our senses and that without consciousness the world is meaningless. Reality emerges when consciousness engages with objects that are already influenced by life experiences to form subjective meaning (Crotty, 1998:43). Frowe (2001:185) states that reality is individually constructed and consequently, there are as many realities as individuals. A single phenomenon may thus have multiple interpretations besides the ones that can be determined by a process of measurement. Researchers therefore gain a deeper understanding of the phenomenon and its complexity in its unique context instead of generalising the base understanding for an entire population (Creswell, 2007:12). Hammersley (2013:25) suggests that researchers should try and understand “the diverse ways of seeing and experiencing the world through different contexts and cultures”.

The interpretive epistemology is also related to subjectivism, which is based on real world phenomena. The world does not exist independently of our knowledge of it (Grix, 2004:83). For example, with regards to trees, Crotty (1998:43) elaborates, “a tree is not a tree without someone to call it a tree”. This statement suggests that meaning is not discovered, but rather constructed through the interaction between consciousness and the world. Consequently, different people may construct meaning in different ways (Crotty, 1998:9), but truth is a consensus formed by co-constructors (Pring, 2000b:251). Knowledge, therefore, has the trait of being culturally derived and historically situated. Furthermore, the interpretive paradigm does not question ideologies, but accepts them. Crotty (1998:42) states that knowledge and meaningful realities are constructed as a result of interaction between humans and their reality and are developed and transmitted in a social context. It can therefore be deduced that the social world can only be understood from the perspective of individuals who participate in it (Cohen, *et al.*, 2007:19).

The benefits of interpretivism are that the researcher cannot only describe objects, human or events, but also obtain a deep understanding of them in a social context. Researchers can also conduct these types of research in natural settings by utilising key methodologies to gain the insider’s insights into the research objects (Tuli, 2010:1) to provide with more authentic information related to the research topic. A second advantage of interpretivism is that it allows the researcher to investigate and prompt matters that cannot be observed. A researcher can therefore probe an interviewee’s thoughts, values, prejudices, perceptions, views, feelings and perspectives (Wellington & Szczerbinski, 2007: 3-7). The valuable data that is collected during the process will therefore provide researchers with better insights for further action at a later stage.

### 2.1.3 Critical paradigm

The ontological position of the critical paradigm is historical realism. Historical realism states that reality was shaped by social, political, cultural, economic, ethnic and gender values and that reality that was once regarded “plastic” has become crystallised (Guba & Lincoln, 1994:110). According to this paradigm, realities are socially constructed entities and are under constant internal influence.

Critical epistemology is subjective and is based on real-world phenomena linked to societal ideologies. Knowledge is therefore both socially constructed and influenced by power relations from within society. Cohen, *et al.* (2009: 27) explain that, “what counts as knowledge is determined by the social and positional power of the advocates of that knowledge.” With reference to knowledge on trees, different organisations have different beliefs. The World Wildlife Fund and logging companies for example, have different agendas and they consequently often dispute what constitutes an “endangered tree” (Cohen, *et al.*, 2009: 27).

With regards to this study and the philosophical approach and worldview, the researcher views the world as one of relativism and believes that reality is different from one person to another. For the purpose of this study, knowledge is seen as a subjective matter that is influenced by a human being’s experience of the world. Interpretivism as a research paradigm will therefore be applied during the study to collect and interpret data with the intention to solve or add knowledge to the stated research problem.

## 2.2 Research design

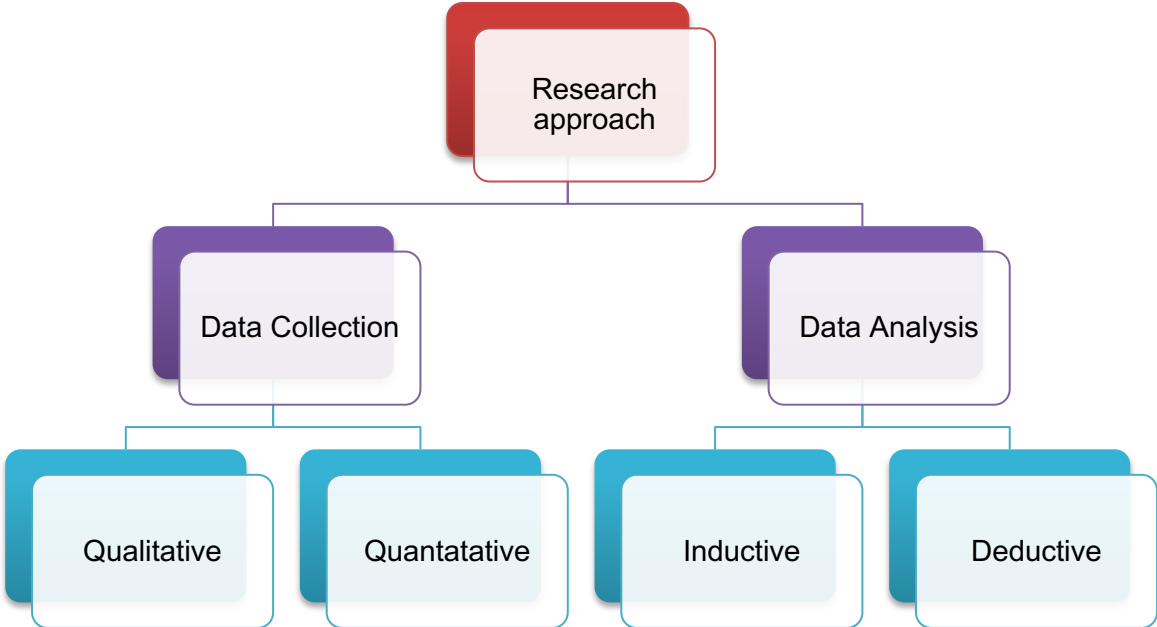
Based on the research philosophy, a research plan and the procedures to collect, analyse and interpret data will be designed. The function of a research design is to ensure that the evidence that is collected and obtained during the study enables the researcher to effectively address the research problem as unambiguously as possible (Kirshenblatt-Gimblett, 2006:1).

A descriptive research design is regarded as the most appropriate method of accumulating data for this specific study. A descriptive research design will assist with the provision of answers to the questions of “who?”, “what?”, “when?”, “where?”, and the “how?” associated with the specific research problem. Descriptive research design will be used to obtain information concerning the current status of the research problem statement and to describe “what exists” with regards to variables or conditions in a situation (Anastas, 1999:123-139).

As part of the research design, the research approach will provide insights into how the researcher intends to collect and analyse data to address the research problem. The research approach

generally entails specifying how the evidence will be collected and analysed. The research approach, as part of the research design, is illustrated and discussed below.

**Figure 5: Elements of the research approach**



Source: Chetty (2016:1)

As discussed above, the researcher’s worldview relates to the interpretivists’ research paradigm. In terms of the interpretivists’ research paradigm, an object is viewed relative to its environment and is it believed that an object and its surroundings are interconnected. The interpretivism paradigm follows a subjective approach as knowledge is regarded as being influenced by an object’s life experiences. With regards to the study of tax reform of tax authorities within the digitalised economy, it is the researcher’s philosophy that tax authorities globally will be influenced subjectively by the digitalisation of the economy and their consequent response to it will be influenced by past life or organisational experiences. It is further believed that their unique subjective surroundings that include but is not limited to the economic, social and political environments will influence their response to the digitalisation of the economy. The interpretivism paradigm places higher value on individualised quality research feedback than feedback that is standardised to provide a generalised view.

### 2.2.1 Data collection

Data can be collected by applying either a qualitative or quantitative approach.

- (i) **Qualitative research approach:** The goal of quantitative research is to collect numerical data from a group of people and to generalise the data to explain an existing hypothesis. Numerical data is collected and analysed using statistical methods. This approach is used where an existing knowledge claim should be confirmed or refuted. It thus starts with the statement of a problem, generates a hypothesis to be tested and execute a quantitative analysis (Apuke, 2017:40-41).

The strengths of this research approach is its reliability by critical analysis, short timeframe for administered surveys and it facilitates numerical data for groups and extents of agreement or disagreement to a certain subject matter. Weaknesses of this research approach include the lack of human perceptions or believes, a lack of resource for large scale research and a lack of in-depth experience description (Choy, 2014:101).

- (ii) **Qualitative research approach:** A qualitative research approach are appropriate in studies where factual data is required to answer a research question and where the question or problem is known (De Lacey *et al.*, 2016:499). A qualitative research approach will provide the researcher with the opportunity to use research methodologies that celebrate richness, depth, nuance, context, multi-dimensionality and complexity (Manson, 2002:1). According to Manson (2002:1), qualitative research has an unrivalled capacity to constitute compelling arguments on “how things work in a particular context”.

The strengths of a qualitative research approach include the fact that it provides a view of homogeneous exploration, it raises more issues through broad and open-ended inquiry and the researcher is able to obtain a better understanding of behaviours of values, beliefs and assumptions. The weaknesses associated with this research approach are that the results might not be objectively verifiable and that it is a time-consuming process (Choy, 2014:101).

The preliminary literature review suggests that there is limited data and knowledge available in relation to global tax reform within the digitalised economy with specific reference to the multidisciplinary interaction of tax, technology, risk and assurance. The available literature review is compartmented per tax, technology or risk management, but limited literature could be identified that follows a holistic and multidisciplinary approach to evaluate the holistic and integrated reform of these elements as a unit or a functioning organism. It will consequently be difficult to apply a quantitative research approach as the field of study is still new and it would be difficult to formulate a hypothesis and test it numerically among a test group or participants that is representative of

the population. Furthermore, it would be difficult to apply this approach, because the tax reform per country in response to digitalisation of the economy will differ from country to country as it will be influenced and be dependent on a variety of factors. Should it be possible to apply this approach, another concern is the loss of individualised data that is collected from experts in the respective field due to the high volume and generalised approach associated with a qualitative research approach.

A qualitative research approach, on the other hand, will allow the researcher to collect data and knowledge by engaging in an exploratory journey (Holliday, 2007:122). The “story” thus unfolds as the research continues where the researcher makes sense of not only the data, but also the total research experience, which is an interactive process. While quantitative work carries its meaning in its tables and summaries, qualitative research work carries its meaning in the text and in the reading (Holliday, 2007:122). According to Anderson (2011:141), qualitative research is valuable to policymakers, because it often provides insight in the field in which policies will be implemented. It is often used to collect data regarding studies in social sciences, healthcare, education and complex human interactions (Anderson, 2011:141). Due to the fact that the researcher will be able to formulate the research question, which requires factual findings to add to the current limited literature available on the research subject, a qualitative research approach will be the most suitable for the study.

Another consideration with regards to the research approach is how the data that will be obtained during research will be analysed, which is discussed in detail below. The data and information that will be analysed will differ from one chapter to the other since different approaches will be followed to collect data. In Chapter 3 (Research article 1) the collected data will be analysed in two phases that include an integrative literature review followed by a systematic literature review. In Chapter 4 (Research article 2) and Chapter 5 (Research article 3) data will be analysed by means of both integrative literature review, as well as semi-structured interviews with subject experts.

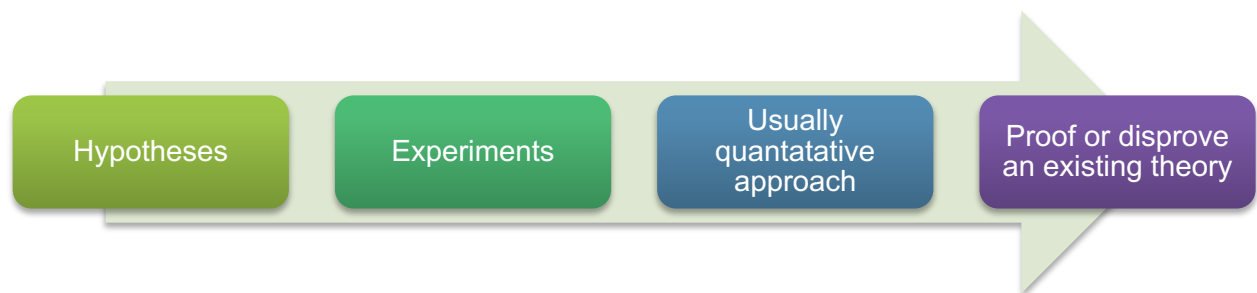
### **3 RESEARCH METHODOLOGY**

While the research design speaks to the researcher’s plan to answer the research problem, research methodology is the strategy that will be used to implement the plan (Sileyew, 2019:1). A research methodology is the strategy or plan of action that informs the choice and use of particular research methods (Crotty, 1998:3). Methodology is concerned with why, what, from where, when and how data is collected and analysed and informs how the inquirer can go about finding out whatever they believe can be known (Guba & Lincoln, 1994:108). In addition, research

methods are the specific techniques and procedures will be used to collect and analyse data (Crotty, 1998:3).

Two alternative research methodologies available are the deductive and inductive research methodologies. Firstly, in terms of the deductive methodology, a hypothesis based on existing theories will be tested. This method assists in explaining possible causal relationships between concepts and variables, it could measure concepts quantitatively and it could assist in generalising research findings (to a certain extent) (Dudovskiy, 2017:1). A deductive research methodology is in most instances associated with a quantitative research approach with a positivism research philosophy (Chetty, 2106:2). Deduction starts with an expected pattern that is tested against research observations (Pelissier, 2008:3) and the process is illustrated below.

**Figure 6: Deductive research methodology**



Source: Author's own (2020).

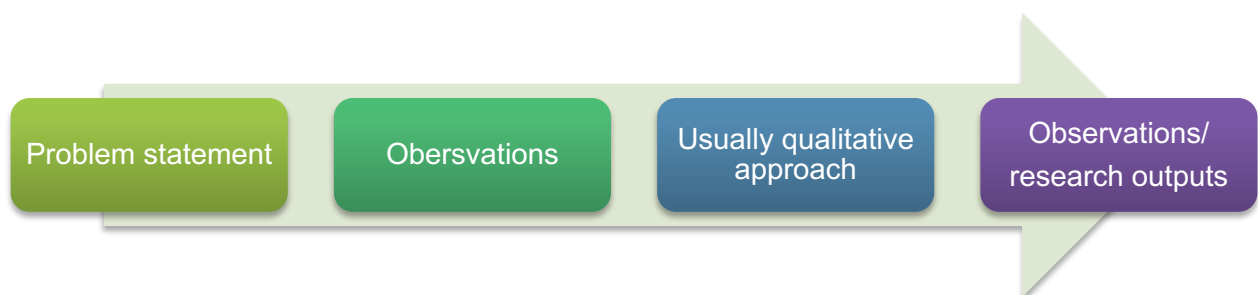
The preliminary literature review of the study suggests that there is no existing theory and related hypothesis or an existing pattern regarding tax reform within the digitalised economy with specific emphasis on tax legislation, information technology and data and tax risk management and assurance. Therefore, a deductive approach to analyse the collected data will not be applicable for this study.

An alternative methodology that can be considered for the study is an inductive methodology. The inductive or interpretive methodology is directed at understanding phenomenon from an individual's perspective, investigating the interactions among individuals as well as the historical and cultural contexts that surround the individual or organisation (Creswell, 2009:8). Individual constructs are extracted and understood by means of interaction between the researchers and participants (Guba & Lincoln, 1994:111) with a heavy reliance on the participants (Creswell, 2009:8). Observations are not reduced to simplistic interpretations, but new layers of understanding are uncovered as an occurrence or circumstance are described.

The inductive or interpretive theory is usually grounded (inductive) and is generated from the data, not preceding it (Cohen, *et al.*, 2007:22). An inductive methodology yields insight and understanding of behaviour, explains actions from the participant's perspective and does not control the participants. Examples of this methodology include open-ended interviews, focus groups, open-ended questionnaires, open-ended observations, think-aloud protocol and role-playing (Chetty, 2016:2). These methods usually generate qualitative data and the data analysis is related to the researchers' interpretations due to the fact that a qualitative approach places greater emphasis on the methods used to collect data and less emphasis is placed on the analytical techniques to interpret the data (Chetty, 2016:2).

In contrast with a deductive approach, induction begins with observations and seeks to find a pattern within the observations (Pelissier, 2008:3). An inductive approach primarily applies a detailed reading of secondary data to develop concepts, themes and models. A study area is thus selected, and a theory is built as the data is collected and analysed. An existing theory and related hypothesis are usually absent when applying an inductive data analysis approach (Chetty, 2016:2). The inductive research methodology is demonstrated below in Figure 7.

**Figure 7: Inductive research methodology**



Source: Author's own (2020).

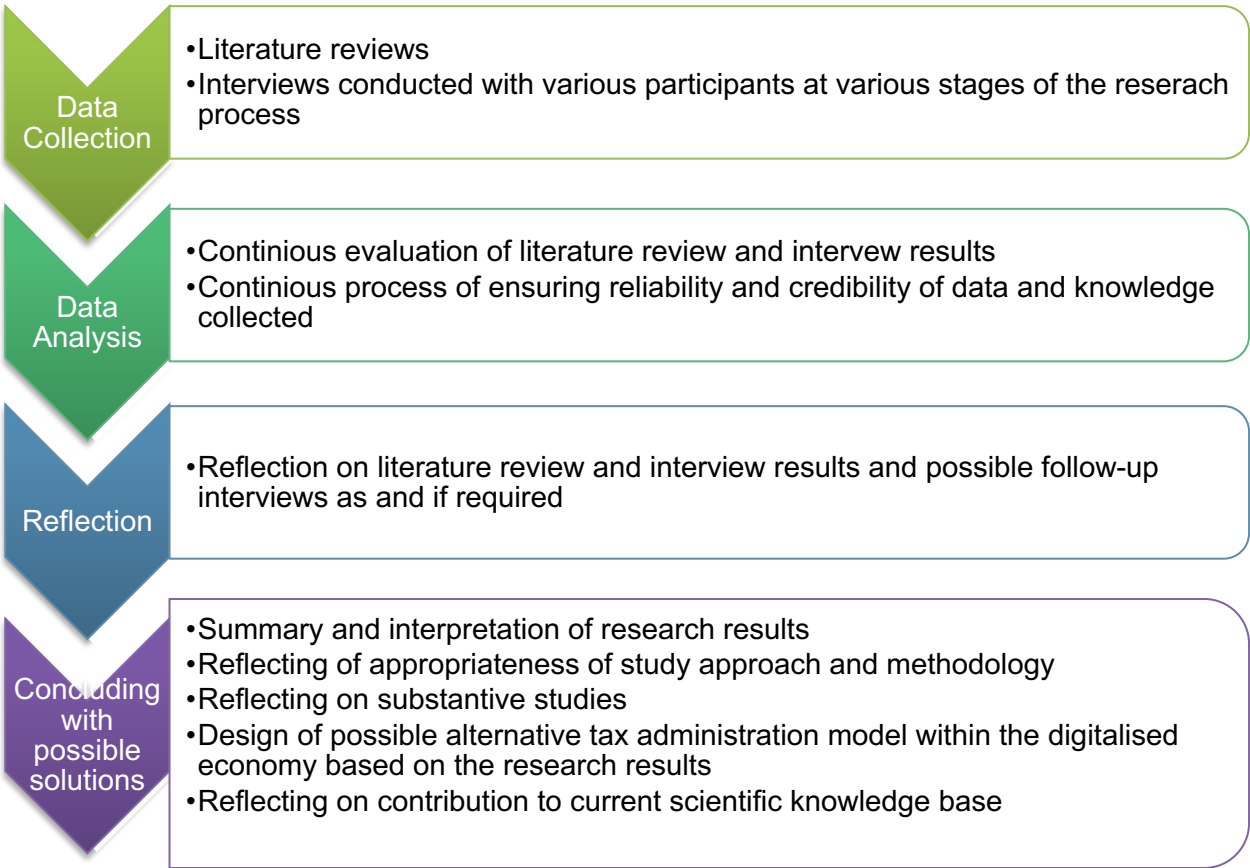
The preliminary literature review suggests that limited data or knowledge exist in relation to the current level of global reform of tax authorities within the digitalised economy with specific reference to legislation, data, technology and the risk management process and assurance. The latter are interactive processes that enables tax authorities to execute its mandate of revenue collection. The researcher is of the opinion that a holistic view of the reform in these areas as part of the tax administration process are thus critical. Only a limited number of experts with related publications in the multidisciplinary process of tax administration within the digitalised economy could be identified. However, there is not yet a holistic solution or existing theory with regards to optimised tax administration within the digitalised economy. Therefore, data and knowledge will have to be developed and analysed as the research progress to build a theory. An inductive

approach will consequently be followed to analyse the data collected to build a theory and related research outputs.

**3.1 Research plan and methods**

Tax reform within the digitalised economy was selected as the research topic because a real-world problem exists that requires additional inputs and literature in an attempt to find real-world solutions to the problem. A detailed outline of the preliminary literature review, scope and objective of the research are set out in Chapter 1. A specific focus will be placed on the tax legislative reform, information technology and data reform and lastly tax risk management and assurance response. These focus areas were identified in the preliminary literature review in Chapter 1, indicating that reform within these focus areas is critical for tax authorities to remain relevant, effective and efficient within the digitalised economy. The research plan and methods that will be applied during the study are illustrated in Figure 8.

**Figure 8: Research plan and related process flow**



Source: Author’s own (2020).

The first process of data collection in the study will be the execution of a semi-structured cross-national literature review as per the three focus areas: global tax legislative reform, information technology and data reform and lastly tax risk management and assurance reform among international tax authorities in response to the digitalisation of the economy. The results of the literature review and cross-national evaluation will be evaluated and used to design semi-structured questions that will be posed to participants during an interview process. Data will subsequently be collected during interviews with selected participants. The questions that will be posed to the participants will be informed by the results of the literature review and will be a combination of open and semi-closed questions to optimise the value obtained from the interviews. The data collected per focus areas will be analysed and evaluated separately and the results will be documented in Chapters 3, 4 and 5. A holistic and consolidated overview of the research results will be documented in Chapter 6.

Thirty international tax authorities will be identified and selected for interview purposes. The sample size will be set at thirty to ensure that the sample will be large enough to allow for the unfolding of richly textured information that is relevant to the study, but small enough to ensure a deep understanding of the subject matter as prescribed by Sandelowski (1995:183). Morse (2000:3-5) states that the more useful and greater the quality of information is that can be extracted from participants, the less participants are required. Green and Thorogood (2004:102-104) indicate that studies show that little additional knowledge is obtained after interviewing 20 people in relation to the same research topic. Ritchie, *et al* (2003: 77-88) suggest that studies employing interviews should not conduct interviews with more than 50 participants to enable the researcher to manage the complexity of the analytic task.

Based on the above literature and based on the assumption that the 30 selected international tax authorities might result in more than one interview participant per tax authority, it can be concluded that saturation would be obtained by selecting 30 tax authorities for interview purposes. The tax authorities and related countries that will be selected will be based on their ability to influence the global economy and international tax policy because that they are leaders in relation to tax reform within any one or all of the three focus areas (tax legislation; technology and data; tax risk management and assurance) and due to their economical maturity level i.e. is it a developing or developed economy. The selected tax authorities and the participants will remain anonymous due to the sensitivity of the organisations being evaluated (tax authorities), their mandate and the confidential nature of information shared during the research process.

The participants in the interviews will be selected by the tax authorities and will be experts in the fields of tax policy and legislation, technology and data and risk management and assurance. Interviews will be conducted in person, via secure digital communication channels or telephonically. Participation in the interviews in its totality and the answering of individual questions will be voluntary and the participants will be reminded of their voluntary participation before the commencement of the interview. Furthermore, the participants will be provided with the interview questions in advance to assist the revenue authorities to allocate the questions to the correct experts and to allow the participants sufficient time to prepare for the interviews. In Chapter 3 (Research article 1), the findings will be summarised in relation to global tax reform from a tax legislative and policy perspective in response to the digitalised economy.

Data will be collected by means of an integrative literature review and the data will be synthesised and analysed based on the literature available per country and the actions taken with relation to tax reform within the digitalised economy. This initial research phase will be followed by a structured systematic literature review and analysis of 120 countries to assess the global legislative and policy reform in response to the digitalisation of the economy. A selection of 120 countries will be selected to obtain an approximate 60% global coverage of the total amount of countries in the world. Interviews will not be conducted to collect data in this regard as tax legislative amendments are open source and publicly available information. The data that will be collected via the literature review will be analysed and presented in the most appropriate format to communicate interesting and valuable observations and deductions made during the data collection process.

The findings in relation to global tax reform that took place to date regarding information technology and data to optimise tax administration within the digitalised economy will be summarised in Chapter 4 (Research article 2). As a starting point, data will be collected by means of a semi-systematic literature review. The literature review results will be evaluated to identify possible commonalities in relation to global tax authorities' strategic direction from an organisational development or tax reform point of view, with specific reference to the utilisation of technology and data as a tax administration tool. These results will be used to inform the questions that will be posed to the interview participants to establish reform in this area per selected tax authorities. The data collected during the interviews will be collated into one database where it will be analysed and evaluated. The evaluated data will be used to compile graphical presentations to interpret and communicate the research results to the reader.

The findings in relation to global tax reform that took place to date in relation to the tax risk management and assurance process in response to the digitalised economy will be summarised in Chapter 5 (Research article 3). Data will initially be collected by means of an integrative literature review to synthesise the data and identify what international reform already took place in relation to tax risk management and assurance in response to the digitalised economy. The literature review results subsequently will be used to inform the interview questions posed to participants to evaluate the extent of global reform with regards to the research topic. The data collected during the interviews will be collated into one database where it will be analysed and evaluated and used to compile graphical presentations to interpret and communicate the results to the reader.

### **3.2 Validity and reliability of qualitative research results**

#### **3.2.1 Quality and rigor of research results**

The evaluation of the quality and rigor of qualitative research results is critical to ensure credibility to the data and study results (De Lacey, *et al.*, 2016:498-501). Adler and Adler (1994:92) state that one of the primary criticisms of observational or qualitative studies is the question of its validity due to possible subjectivity and bias of the researcher. Validity can be increased by continually utilising multiple observers to cross-check data and patterns (Adler & Adler, 1994). Secondly, it is suggested that the researcher refines and tests propositions and hypotheses throughout the study and that the researcher should write using "verisimilitude" or "vraisemblance" for the reader to recognise the authenticity of the results (Adler & Adler, 1994: 383). Adler and Adler (1994:383) also address the matter of reliability of qualitative studies where they suggest systematically conducting observations repeatedly under different conditions. The reliability of the data should then be verified by the observation of similar results.

Criteria that can be used for evaluating the quality of qualitative studies, including the use of involved participant observers, relatively free access to a broad range of activities to be provided to the researcher and observations that will be conducted over a long period of time. Another criteria suggested to evaluate the quality of the study results is the use of triangulation so that researchers can be assured that the picture that will be presented of the reality of a setting or situation is clear and true. Multiple methods can furthermore be used to address research questions, but the same data may be collected from other samples at other times and in other places (Borg & Gall, 1989:393). Borg and Gall (1989:394) further state that researchers should strive to gain a holistic view of the issues and context and then sample purposely to ensure that the data that is collected is representative of the range of realities of participants. It is finally recommended that researchers should observe, record and analyse, not just verbal exchanges,

but also subtle cues by using unobtrusive measures to collect data and knowledge (Borg & Gall, 1989:395).

### 3.2.2 Confirmability of research results

In order to ensure confirmability, Lincoln and Guba (1985:45) recommend the use of triangulation with multimethod and various sources of data, the use of a reflexive journal and the conducting of a “confirmability audit”. Triangulation refers to the use of multiple methods or data sources when conducting qualitative research. The four types of triangulation that can be used to validate research findings include method triangulation, investigator triangulation, theory triangulation and data source triangulation (Denzin, 2017:449-458; Patton, 1999:1189-1208). In addition, triangulation refers to the verification of the consistency of findings generated by different data collection methods. Triangulation of sources refers to the examination of the consistency of different data sources from within the same method. Analyst triangulation refers to the use of multiple analysts to review findings or the use of multiple observers, while theory or perspective triangulation refers to the use of multiple theoretical perspectives to examine and interpret the data.

### 3.2.3 Trustworthiness of research results

In order to ensure the trustworthiness of the data and study results, a transparent process will be followed. An initial in-depth semi-structured integrative literature review will be conducted to identify what the challenges are in relation to tax administration within the digitalised economy and how some tax authorities have overcome or responded to these challenges to date. In addition, various international and national seminars and expert meetings will be attended by the researcher to obtain an in-depth understanding of the digitalised economy and related technology, the international tax system, tax within the digitalised economy and the process of tax administration. Based on the knowledge accumulated during the preceding procedures, a research problem statement, approach and methodology will be formulated and presented to the North-West University (NWU) for approval. Further literature review on the research subject matter, informal discussions with experts in the respective fields and attendance of national and international expert meetings will aid in the accumulation of further knowledge and data on the subject matter and will inform the design of the interview questionnaires.

The questions in the questionnaires will be based on the challenges, tools and processes identified in the literature review and on preliminary discussions that will be conducted with global experts in the field of tax reform within the digitalised economy. The purpose of the questionnaire is to set a minimum set of questions that would enable to researcher to evaluate the reform as

per the three focus areas. The interviews will, however, not be limited to the questions as per the questionnaires but will prompt further discussion on the subject matter to identify outlier and unique approaches to tax and organisational reform and successes and challenges in this regard.

The NWU's ethical requirements and procedures will be followed during the research and interview process to ensure transparency and trustworthiness of the research results. Upon approval of the designed questionnaire, the questions will be distributed to the selected tax authorities for them to allocate the appropriate experts for interview purposes. Interviews will be held in the format preferred by the tax authority or interviewees. The alternatives that will be offered to the participants are in-person interviews, interviews per secure digital platforms, telephonic interviews or written responses. Alternatives to discuss the questionnaire in a group setting or in one-on-one discussions will also be posed to the participants and the researcher will respect their preferences in this regard.

The data that will be collected and the notes that will be made during the discussions will securely be stored to ensure the confidentiality of the content of the interviews as well as the protection of the identity of the participants. The data collected during the literature review and the interviews, will be documented according to country and will be analysed by the researcher first and then evaluated by two study leader and study assistant for accuracy, reliability and validity. The results will subsequently be documented according to chapters, as set out in Chapter 1 of the thesis.

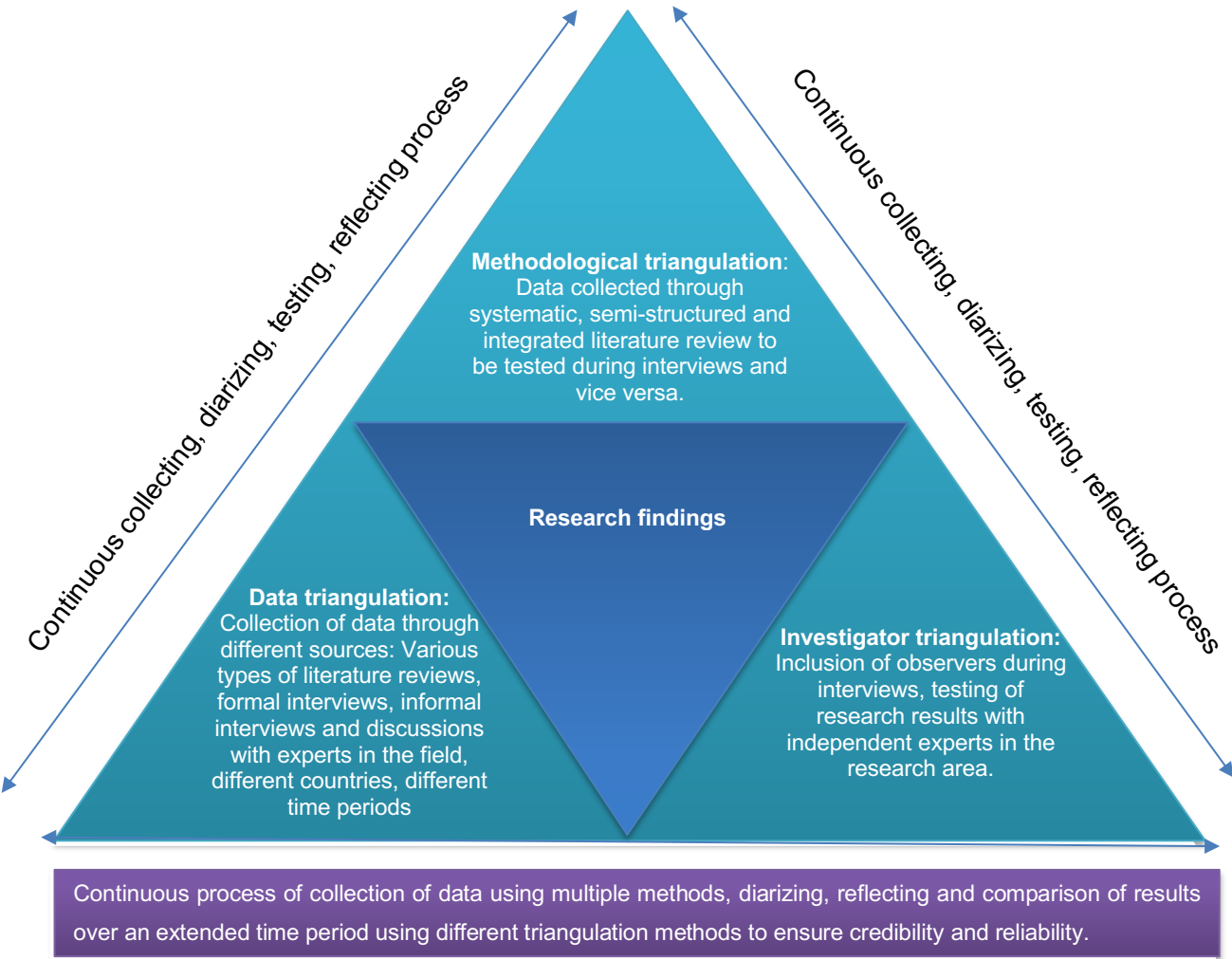
#### 3.2.4 Validity and credibility of research results

In order to ensure the validity or credibility of the study, methods such as reflexivity, triangulation, the use of multiple observers in interviews, the use of experts to cross-check data and observations, as well as a substantial description of the interpretation process will be applied and documented. The findings from the literature reviews and interviews will be reflected upon and inconsistencies, patterns or outliers will be identified (if applicable) while the accuracy and credibility of the data will be ensured. On a continuous basis, reflection on the problem statement of the study and its validity will be done, based on data and knowledge accumulated as the study progresses.

In addition, triangulation methods will be used to ensure the validity and credibility of the data and knowledge that will be collected. Data triangulation will be used by collecting data and knowledge from different international tax authorities, different international experts in the field and at different times. The data accumulated over a period of time will be evaluated as a unit to ensure consistency in data and research results. Investigator triangulation will be used by involving an international expert in tax reform within the digitalised economy to verify the data and consequent

outputs with the investigator’s results and experience on similar subject research and engagements. Lastly, methodological triangulation will be used to confirm the validity and credibility of both the literature review results and interviews. The results of the literature review will be confirmed during the interviews for where it relates to the specific country and interview data and results will be verified with the literature review and or other sources, such as the tax authorities’ websites and taxpayer service offerings, publicly available interactions with taxpayers and published papers, opinions and legislative amendments. With the permission of the interview participants, independent observers will be invited to attend the interviews to ensure the credibility and validity of the data collected and subsequent results. The triangulation methods that will be applied to ensure the reliability and credibility of the research results are demonstrated below:

**Figure 9: Triangulation methods used during the study**



Source: Author’s own (2020).

### 3.2.5 The reliability and applicability of research results

The reliability and applicability of the data collected and research results will be ensured by systematically conducting observations repeatedly under different conditions. In addition to the continuous literature review and interviews with the participants over a period of time, participation in international expert meetings, international conferences and debate and engagements with experts on the subject will also take place. The attendance of these meetings and procedures will ensure that the data collected during the research and consequent output could fit into contexts outside this study situation and where other researchers and practitioners find the study results useful and applicable to their own experience. The reliability and applicability will further be enhanced by the measures put in place to ensure quality and consistency.

### 3.2.6 The quality and consistency of the research results

A holistic view of the tax administration challenges identified within the digitalised economy as well as the context of these challenges will be taken into consideration when the participating tax authorities are selected. This will be done to ensure the quality and consistency of the data and subsequent research results. It will, furthermore, ensure purposeful sampling to ensure that the data that is collected is representative of the range of realities of participants. The initial phase of data and knowledge collection will inform the critical elements to be considered when the sample of international tax authorities is selected for interview purposes. These elements include the fact that there are key role players (internationally) in relation to tax law and policy reform, data and technology reform and tax risk and assurance reform.

During the process, it also became clear that the sample should include both developed and developing economies due to the significant differences in tax reform identified during the preliminary data collection process. The initial data collection process further suggests that there are front-runners among the developing countries and developed countries respectively with regards to tax reform. The sample selection takes all of the above elements into consideration, while it will be ensured that the participants who are selected for interview purposes included the specifically identified countries as well as countries that are not identified during the literature review to ensure that the sample is heterogeneous.

The quality and consistency of the research results will further be enhanced by the selection of thirty international tax authorities for interview purposes to reflect a sample of countries from Africa, Asia and Australasia, Europe and North America. Other measures that were already discussed, but will also be put in place to ensure the quality and consistency of data and research output include the invitation of participant observers (if the interviewee was comfortable with it),

observations made over a prolonged period of time, triangulation and data collection from other sources at different times and places. Finally, subtle cues during the interaction with participants will be observed, recorded and analysed in addition to verbal exchanges.

Anderson (2011:141) reiterates the fact that qualitative research focuses on how “X” varies in different circumstances rather than how big “X” is or how many “X’s” there are. The study’s results will be grounded in interviewees’ contributions and where possible and appropriate the results will be semi-quantified. The research results may therefore, in some instances, be expressed as a percentage of the participants’ total responses. In the absence of a qualitative or mathematical approach to the study, mathematical reliability and credibility tests will not be applicable. Examples of qualitative research in the fields of accounting, taxation, audit/assurance and technology include previous studies conducted by Sapiei, *et al.* (2013:1-5), Mir (1998:1-302), Akir (2006, 1-233) and Mashiri (2018:1-180).

### **3.3 PhD by publication**

The study focusses on reform in relation to tax legislation and policy, information technology and data as well as tax risk assessment and assurance. These focus areas are highly volatile and change at an exponential rate. In order to ensure that the research findings remain relevant from an academic, research and a continuously changing international tax and tax administration point of view, the research results and conclusions will be submitted for evaluation and possible publication as they are finalised in contrast with finalising the study in its totality and publishing the final thesis at the end of the study process. Part of the thesis therefore comprises of a series of research articles submitted for publication. The cut-off date of legislative and reform considerations included in this study are the dates at which the respective final articles were submitted for publication.

This research approach is globally adopted by top-ranked universities, such as the ETH Zurich (ETH Zurich, 2020), Harvard University (Harvard University, 2020), University of Auckland (University of Auckland, 2020), University of Cambridge (University of Cambridge, 2020) and the University of New South Wales (UNSW, 2020). The chapters in the thesis that will be submitted for evaluation and possible publication as the results become available are Chapter 3 (research article 1), Chapter 4 (research article 2) and Chapter 5 (research article 3).

## **4 ETHICAL CONSIDERATIONS**

The application for ethical clearance to perform the study was submitted to the Economic and Management Sciences Research Ethics committee at NWU. The request was accompanied by the approved study proposal, the questions designed to be posed to the participants, the

international tax authorities that were selected for interviews and how the participants was selected. The application was subsequently approved by the committee.

Data will be collected, and the interviews will be conducted in accordance to the code of conduct of the NWU. Taking into account the sensitivity of the information shared by the participants and the confidentiality of the information shared, the participants selected for interview purposes will remain anonymous.

The four major principles of integrity, as per the NWU's code of conduct for researchers, will be followed throughout the study and include, but are not limited to:

- Honesty in all aspects of research,
- Accountability in the conduct of research,
- Professional courtesy and fairness in working with others,
- Good stewardship of research on behalf of others.

## **5 POSSIBLE LIMITATIONS**

While it will be valuable to quantify the impact of tax reform within the three main focus areas of tax authorities within the digitalised economy, this information might not be readily available because the information is confidential, the pervasive nature of the reform (for example technology and data) and the fact that the tax authorities have not quantified it to date due to the short time-frame since the implementation of the reform.

With regards to the interviews, the approached participants have the right not to participate in the survey or to not respond to one or more of the interview questions. In cases where the participant chooses not to answer a specific question, alternative data collection methods, such as supplementary literature reviews will be conducted.

## **6 CONCLUSION**

The research problem of the study will be evaluated through the lens of an OD theoretical model as tax reform within the digitalised economy requires organisational reform of tax authorities due to an external event that is the digitalisation of the economy. A research philosophy of interpretivism will be followed, as it allows for the evaluation of data and knowledge from a viewpoint that reality is different from one person to another. Furthermore, knowledge is regarded as a subjective matter that is influenced by a human being's experience of the world. This philosophy is regarded as relevant to the study because the tax response to the digitalised economy might be influenced by and might be relative to various elements and circumstances

applicable per country and its respective tax authority. It is therefore expected that tax reform globally will be subjective, based on the individual experience per country or tax authority.

A descriptive research design will be applied to assist with the provision of answers to the research questions. It is regarded as relevant to this study because a descriptive research design provides information concerning the current status of the research problem statement. Furthermore, it provides evidence on “what exists” within a specific environment. The study seeks to identify what the current status of global tax reform is with specific reference to three elements and processes related to tax administration. An inductive research approach will be followed to collect data because an existing theory does not exist to date, with regards to the research subject matter. A theory will therefore be built during the research process by means of collecting and interpreting the relevant data to solve the research problem.

A qualitative research approach will furthermore be applied to collect data and knowledge with the aim to build a theory. Data will be collected in the format of a literature review, in addition to interviews conducted with identified experts within the selected tax authorities. Expert interviews are regarded as relevant as qualitative (rich, in-depth) data and knowledge is sought to assess the global tax reform within the digitalised economy with specific focus on tax legislation, tax and technology as well as the tax risk assessment and assurance process. The study will subsequently add value to the current literature review and knowledge in the field. Qualitative data and knowledge collection by way of literature review and interviews will further assist in building a theory in terms of the inductive research approach.

Finally, several measures to ensure reliability and credibility of the data and research results will be put in place during the research process. The majority of these measures relate to various triangulation methods applied over a prolonged period of time, as discussed above. The standard ethical requirements related to data collection in terms of literature review and interviews will be followed as well. A possible limitation that could impact the research approach is the fact that some of the selected participants might not want to participate in the study in its totality or partially. In these cases, alternative methods of data and information collection will be considered, such as supplementary literature reviews.

## **CHAPTER 3 (RESEARCH ARTICLE 1)**

### **AN EVALUATION OF THE LEGISLATIVE AND POLICY RESPONSE OF TAX AUTHORITIES TO THE DIGITALISATION OF THE ECONOMY**

The reader is requested to take note of the following:

This research article has been submitted for publication to the following IBSS indexed, peer-reviewed and department of education accredited academic journal as follows:

Strauss, H., Schutte, D. & Fawcett, T. An evaluation of the legislative and policy response of tax authorities to the digitalisation of the economy. South African Journal of Accounting Research (SAJAR). Published. (ISSN: 1029-1954 – Print; ISSN 2376-3981 Online).

The article was researched and written by the first author as the candidate. The second and third authors fulfilled a “reviewer” function thereto as the study’s promoter and assistant promoter. Estimated weightings of contribution are as follows:

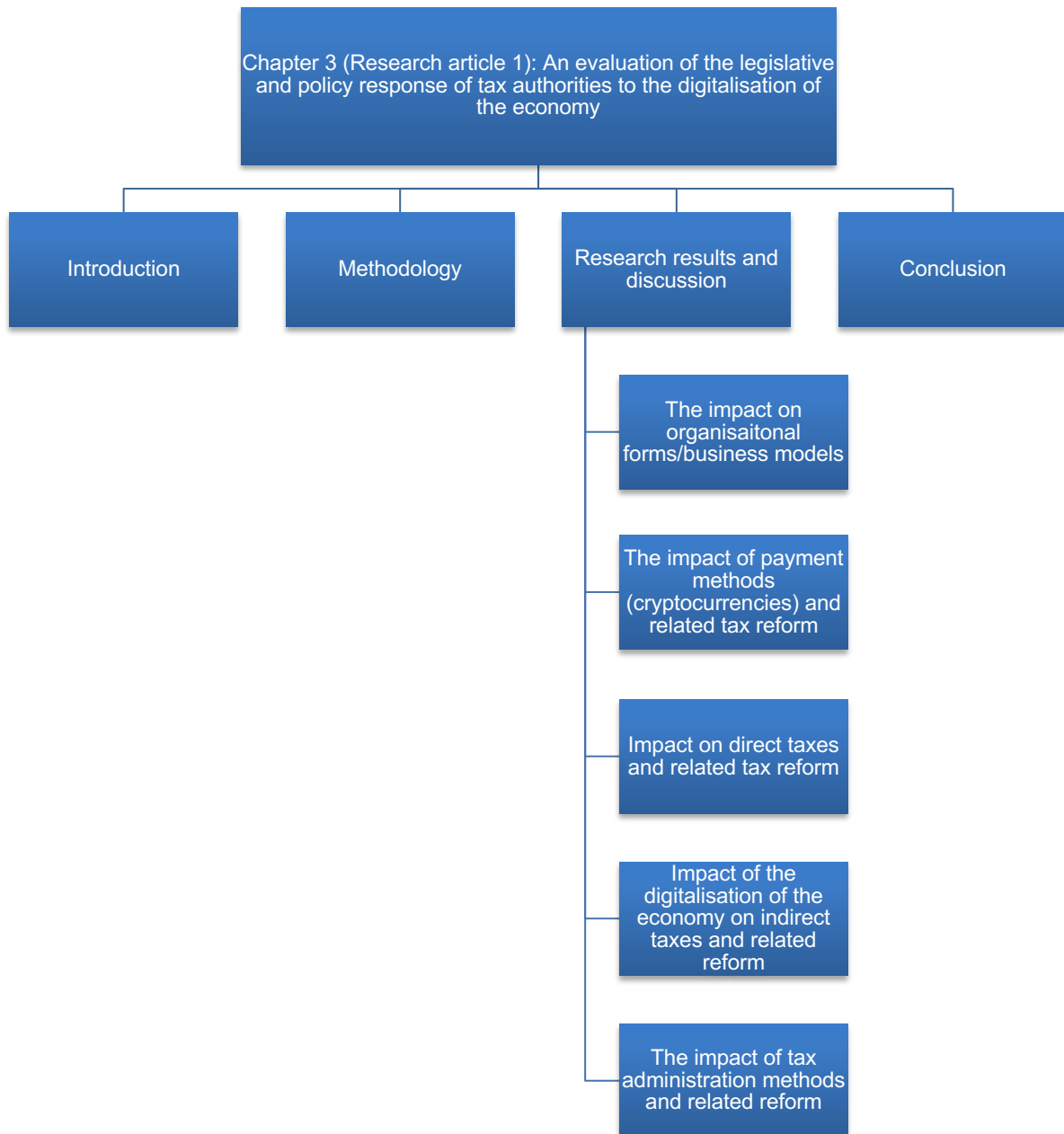
Strauss, H. (80%)

Schutte, D. (10%)

Fawcett, T. (10%)

Confirmation of receipt of the article from SAJAR was received and is presented as part of Annexure C on page 257. The article was written in line with the journal’s submission guidelines, which are included as part of Annexure C on page 257.

## CHAPTER 3 (RESEARCH ARTICLE 1) OUTLINE



## **Abstract**

Tax administration and reform within the digitalised economy is an ongoing global debate. In the study, the global tax response to various elements introduced by the digitalisation of the economy is synthesised, analysed and evaluated. The study is set apart from other studies, as it provides a global and holistic overview of current tax reform of all major tax types impacted by the digitalisation of the economy. The study's results are based on evidence collected for 120 countries worldwide and reflect that while the digitalised economy is regarded as borderless and digitalised, current international responses remain influenced by country borders and traditional tax principles that have led to global tax reform that is complex, expensive and difficult for highly digitalised multinational entities to comply with. The findings further indicate that although the recommended interim tax measures (where applicable) were adopted in principle by the majority of countries worldwide, the application of these measures lacks uniformity. It can further be deduced that international tax response to the digitalisation of the economy does not fully embrace and acknowledge the hybrid nature and digital environment of the business models associated with a digitalised economy.

**Keywords:** cryptocurrencies, crypto-assets, digitalised economy, gig/shared economy, international tax, tax administration, tax reform.

## 1 INTRODUCTION

The Third and Fourth Industrial Revolutions introduced a globalised digitalised economy and are synonymous with rapid innovation and exponential change. “Traditional” business transactions change on a daily basis as technological innovation evolves. Physical goods are transformed into electronic services and the taxation of traditional “straightforward” transactions have become increasingly complex (Ernst & Young, 2015, p. 1). The digitalisation of the economy enables multinational entities (MNEs) to restructure their business affairs in such a way that would enable them to pay very little or even no taxes despite significant turnovers. Other business, employment and payment models, that are enabled by the digitalised economy, are the gig or shared economy and cryptocurrencies. However, the international tax framework and method of tax administration were designed for traditional business models and the question arises whether this concept is still applicable to a digitalised economy. This ignited an international debate of which one discussion originated in the United Kingdom’s (UK) parliament regarding which of the identified highly digitalised MNEs paid no or a minimum amount of taxes within the UK (Tankersley, 2019; Bardford & Holt, 2013; Blakemore, 2012).

The Task Force on the Digital Economy (TFDE) was mandated to explore and provide possible solutions for tax administration within a digitalised economy and issued its first report in 2015. The Base Erosion and Profit Shifting (BEPS) action 1 report highlights the fact that the digital economy is characterised by an unparalleled reliance on intangibles, a high reliance on data, and the widespread adoption of multi-sided business models (OECD, 2018a). The Organisation of Economic Co-operation and Development (OECD) issued another interim report in 2018, as part of a series of reports issued since 2015, which highlighted the fact that digitalisation had exacerbated BEPS matters (OECD, 2018a). In addition to BEPS, a series of broader tax challenges, identified as data, nexus and characterisation, were highlighted. Further significance of the report lies in its suggestion that countries are now willing to analyse the main challenges experienced in the application of “old” tax rules and how these interact with modern ways of doing business. The report outlined several temporary measures for taxing the digitalised economy (Herzfeld, 2018). Parallel to the OECD, the United Nations (UN) also issued guidance in this regard with the main purpose of taking developing countries’ economic interests into account and ensuring a balanced view and agreement among both developed and developing economies (United Nations, 2017).

The main challenges surrounding tax with regards to the digitalised economy stem from the decreasing relevance of a physical presence in the market of the customers, the increasing importance and mobility of intangibles, and the high degree of integration of the value chain. Although these developments are not entirely new, they have triggered a political and academic

discussion about how international taxation can be reformed to provide a “reasonable and stable system” for taxing the income of MNEs and participants within the digitalised economy (Olbert & Spengel, 2017, p. 2; OECD, 2019a). It is also expected that the tax reform within the digitalised economy will consider the broad taxing principles of neutrality, efficiency, certainty and simplicity, effectiveness, fairness and flexibility, as set out by the OECD (2011).

Tax administration challenges associated with the Fourth Industrial Revolution, however, expand to matters beyond the amendment of tax legislation. The digitalisation of the economy increased global economic competition exponentially and the mere adjustment of tax legislation in response to the digitalisation of the economy might not be sufficient to protect a country’s tax base (Azam, 2012). A critical challenge thereby includes, but is not limited to, tax authorities’ ability to implement the relevant administration systems, which are in most instances digitalised and adaptive to not only enable tax authorities to efficiently and effectively apply the legislative framework within the digitalised economy, but also to make it easy for highly digitalised MNEs and participants within the digitalised economy to comply.

Despite the fact that the digitalised economy is borderless and impacts an array of tax types and policies, limited literature exists that provides the global view of tax response for the major tax types affected by the digitalisation of the economy. The majority of documented literature isolates specific tax types impacted by the digitalised economy and/or limits the study to a specific country or continent. With the view that the digitalised economy is borderless (globalised) and that the international tax system is a holistic system or organism that is influenced by various interconnected elements, the objective of this paper is to synthesise, analyse and evaluate the status quo of global legislative and policy reform to tax administration within the digitalised economy. The major elements identified to influence the legislative and policy reform within the digitalised economy are the business and payment models associated with the digitalised economy. These elements consequently form part of the synthesis, analysis and evaluation of global tax reform within the digitalised economy.

Sections 3.1 and 3.2 evaluate the impact of digitalisation on traditional business and payment models as external factors or elements requiring or informing the international tax system to reform in response to the digitalisation of the economy. Section 3.2 also includes an analysis of the tax reform in response to the increased use or mining of and investment in cryptocurrencies. Section 3.3 analyses and evaluates the impact of the digitalised economy on direct taxes. Specific focus is placed on corporate income tax and personal income tax reform because the digitalisation had the greatest impact on these two direct taxes. Section 3.4 analyses and evaluates the impact of the digitalised economy on indirect taxes and the related tax reform with specific focus on VAT/GST due to the major impact on the latter. Section 3.5 lastly analyses and evaluates the

reform that took place with regards to the tax administration methods availed to highly digitalised MNEs after considering the changes in business and payment models, as well as the tax reform that took place in response to the digitalisation of the economy.

## **2 METHODOLOGY**

An explorative inductive research approach was followed to collect data and information using a qualitative approach. Both the international tax system, as well as the digitalised economy, are regarded as holistic systems influenced by various elements. Therefore, a semi-structured, integrative literature review was initially conducted to obtain and synthesise a holistic overview of how traditional elements were impacted by the digitalised economy and what new elements were associated with the digitalised economy from a tax administration perspective. The identified elements are set out and discussed in sections 3.1 and 3.2.

The second objective of the integrative literature review was to identify which recommendations were made in relation to global tax reform and the extent of tax authorities' response to both the digitalisation of the economy and the recommendations that were made. The countries that took international lead in response to the digitalised economy by the research results were documented first, followed by a systematic review and analysis of international tax authorities. The sources used for the systematic data collection included the legislative notices issued regarding reform associated with the digitalisation of the economy, the official taxpayer offerings for the selected tax authorities and other related literature. The systematic review process that was followed is documented in Table 1 below.

Table 1: Evaluation sheet used per country during systematic literature review.

	Tax reform identified per literature review	Extent of reform
Section 3.2: The impact of new payment methods (cryptocurrencies) and related tax reform	Yes/No	Qualitative summary/observations of tax legislative and policy reform as per the literature review, where applicable
Section 3.3: The impact of the digitalisation of the economy on direct taxes and related tax reform	Yes/No	Qualitative summary/observations of tax legislative and policy reform as per the literature review, where applicable
Section 3.4: The impact of the digitalisation of the economy on indirect taxes and related tax reform	Yes/No	Qualitative summary/observations of tax legislative and policy reform as per the literature review, where applicable
Section 3.5: The impact of the digitalisation of tax administration methods and related reform	Yes/No	Qualitative summary/observations of tax legislative and policy reform as per the literature review, where applicable

Source: Author's own (2020)

Following the above process, the research results were synthesised, analysed and evaluated in order to establish the status quo of tax reform in response to the digitalisation of the economy from a global perspective. A sample of 120 countries were selected in order to obtain a “level of saturation”, as defined by Glaser and Strauss (1967:61). The sample provided an approximate 61% representation of the total amount of countries in the world and support the study's objective of achieving a globalised and borderless view with regards to legislative and policy reform in response to the digitalisation of the economy.

The study sample was selected in two stages. The countries, as discussed in sections 3.2 to 3.4, were specifically selected due to their leading role in tax reform within the digitalised economy, as guided by literature. The remainder of the sample was selected at randomly and the total sample selection is representative of Africa, Asia, Europe, North America, Oceania and South America. The reliability and credibility of the research findings were tested by using different triangulation methods. The study results were verified and discussed with various tax authorities' key role players over an extended period of time and under different conditions. The data collected by means of the literature review was, furthermore, referenced and cross-referenced to other data sources in order to ensure the accuracy, credibility and reliability of the data.

### **3 RESEARCH RESULTS AND DISCUSSION**

#### **3.1 The impact of digitalisation on organisational forms/business models**

The digitalisation of the economy enabled businesses to change their traditional structures and platforms regarding the location where business is conducted and their chain of supply (Hadzhieva, 2019; Schwab, 2016). The OECD (2018a, pp. 36, 59) evaluated the virtual business landscape and categorised it into the following main categories: (a) the “value chain”; (b) the “value network”; and (c) the “value shop”. The European Commission (2016, p. 1015) categorised digital business models into a) “online retailers”, b) “social media”, c) “subscription” and d) “collaborative platforms”. Digitalisation enabled the global reach of business models and the elimination of physical borders between suppliers and customers. Digitalisation therefore enabled businesses to dematerialise, transact online and serve customers worldwide (European Parliament, 2019).

A common characteristic identified among virtual businesses was the high reliance on intellectual property and intangible assets. In this regard, intangible assets have become an important driver for business value (Dischinger & Riedel, 2011). Furthermore, international tax planning allows taxpayers the opportunity to register high-value, profit-generating organisations in low or no tax havens. The location in which a business’ intangible assets are controlled or managed (the profit-generating asset) has consequently become an important consideration for tax authorities, as profits are in most instances taxed where the intangible assets are located (OECD, 2018a). Other commonalities identified among digitalised businesses are data and user participation. The intensive collection and analysis of data enable businesses to significantly improve their products and services, which, in turn, stimulates economic growth. It is evident that the digitalised economy has changed the role of user participation, which, in turn, creates value for businesses globally (OECD, 2018a). Consequently, the location of value creation within the digital environment has also become critical from a tax administration perspective.

The abovementioned changes in business models and structures introduced major challenges in relation to the traditional international tax system that was designed for traditional “brick and mortar” enterprises. The digitalisation of the economy has created a disconnect between the jurisdiction where value is created and where the income is taxed (European Parliament, 2019). Where income is taxed is important, because traditional tax systems focus, to a certain extent, on physical presence, while the digital and digitalised enterprises have the ability to create value without having a physical presence within a specific jurisdiction (OECD, 2018a).

Another tax administrative challenge associated with the digitalised economy is the identification of and subsequent enforcement of country-specific tax legislation in relation to MNEs and participants within the digitalised economy who are, in terms of local tax legislation, required to register and meet certain tax obligations. The latter is mainly due to the lack of physical substance and the fact that they, in many instances, reside under the monetary threshold for country-by-country (CbC) reporting thresholds. The literature further suggests that taxpayers are globally taking advantage of the various tax avoidance, and in some cases, tax evasion opportunities that are enabled by the digitalisation of the economy through restructuring (Tankersley, 2019). In response, leading tax authorities are taking a firm stance against tax evasion within the digitalised economy of which a recent example is the €1 billion settlement reached between Google and the French tax authority for alleged tax fraud (Carraud & Rosemain, 2019).

However, limited literature could be identified around the fact that the digitalisation of the economy created a hybrid environment and has led to the establishment of business models that have both digital and traditional characteristics. A new environment was created (cyberspace and the digitalised economy), which can be regarded as a unique environment (Johnson & Post, 1996). The business model of cyberspace and the digitalised economy is, however, dependant on the participation of users and customers, which represents the traditional element of the business model. In this way it becomes clear that the business models within the digitalised economy are characterised by having both a digital and a “traditional” element and the absence of either of these two elements would imply a fundamental change in the model. However, based on the literature review, a limited amount of focus was placed on this very important characteristic of business models within the digitalised economy, which might be critical from a tax legislative and policy reform perspective, as it might impact matters, such as the jurisdiction where the transactions take place and the allocation of taxing rights.

### **3.2 The impact of payment methods (cryptocurrencies) and related tax reform**

The digitalised economy did not only change traditional business models, but also payment methods. Cryptocurrencies or -assets have become a popular alternative to traditional payment currencies globally (Koksal, 2019). The Australian Taxation Office (ATO) (Australian Tax Office, 2020, p.1) defines cryptocurrency as “a digital asset in which encryption techniques are used to regulate the generation of additional units and verify transactions on a blockchain. Cryptocurrency generally operates independently of a central bank, central authority or government”. Furthermore, cryptocurrencies are associated with various “transaction types” or business models which lead to different tax implications. Leading tax authorities have consequently dealt with the tax implications in categories that can be described or summarised as a) investment in cryptocurrencies, b) trade in cryptocurrencies with the intent to generate profits, c) purchase and

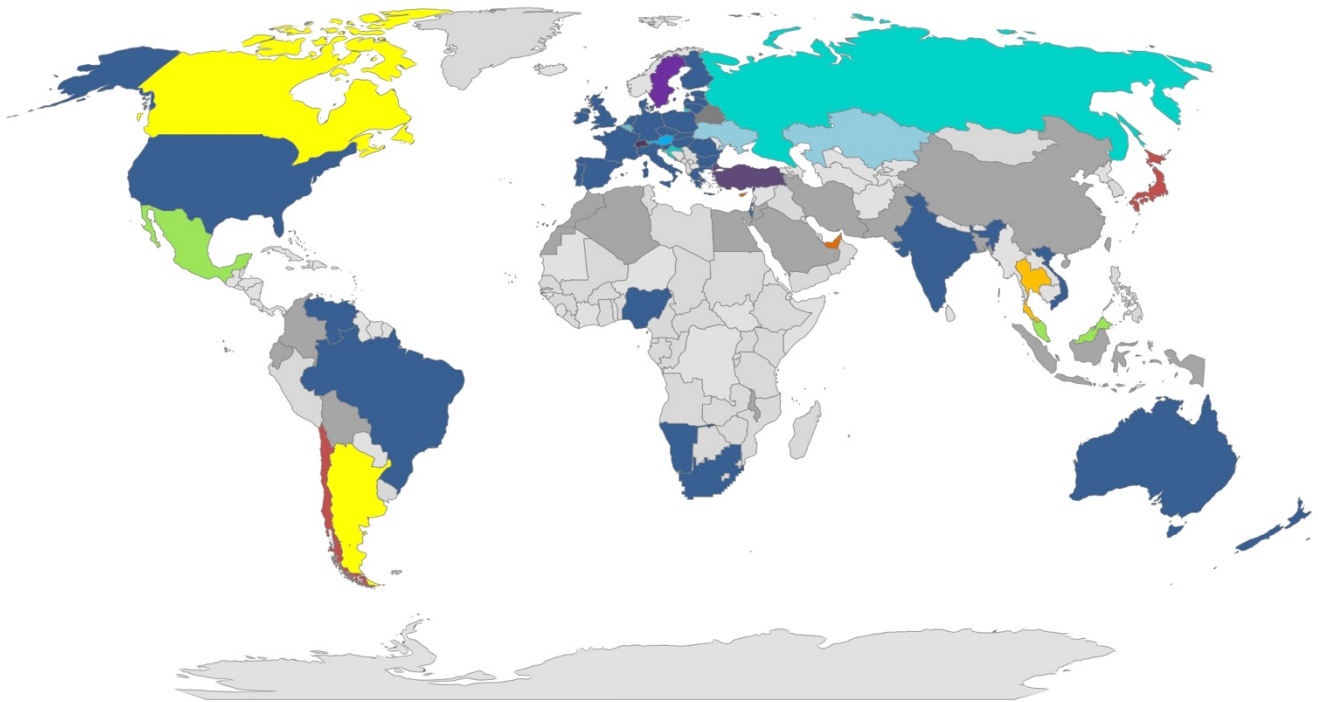
receipt of cryptocurrencies as a payment method, d) mining of cryptocurrencies and e) enabling the transacting with cryptocurrencies (digital currency trade platforms) (Australian Tax Office, 2020). The literature suggests that the main challenges identified from a tax administration perspective relate to the definition and scope of cryptocurrencies or crypto-assets, the education of taxpayers to ensure tax compliance and the identification of non-compliant taxpayers.

The majority of tax authorities did not make specific changes to existing direct tax legislation in relation to cryptocurrencies or crypto-assets. The general direct tax legislation that is applicable to traditional business or investment transactions are, in most instances, applied to the trade, investment and mining of cryptocurrencies (Australian Tax Office, 2019; Lerer, 2019, Lubomir, 2018; Osborne Clarke, 2017; SARS, 2020; Schmidt & Stadler, 2015). This translates to the taxation of income generated from business activities and the allowance of business expenses in the generation of taxable income in the case where the taxpayer falls within the business models described in a) to d) in the preceding paragraph. In cases where the taxpayer purchases cryptocurrencies for investment purposes, the traditional capital gains rules (if enforced by the specific country) will be applicable.

Various instances were, however, identified where tax reform took place regarding indirect tax legislation for cryptocurrencies. The majority of tax authorities regard the investment, as well as the mining of cryptocurrencies, as an exempt supply for indirect tax purposes and consequently added the trade of cryptocurrencies to their indirect tax legislative framework. Trade in cryptocurrencies, with the intent of generating income is, however, in most instances subject to indirect taxes and the same rules apply as with any other business that is regarded as an enterprise in terms of the applicable indirect tax legislation (Osborne Clarke, 2017:1). The scope, definition and rates at which cryptocurrencies and assets are taxed, however, vary globally.

The United States of America (USA) provided guidance in October, 2019 in relation to the tax implications of cryptocurrencies, but various uncertainties still exist regarding technical terms such as “forks” and “airdrop” transactions that might implicate that an owner of cryptocurrencies may be liable for tax due to involuntary cryptocurrency “airdrops” (Baydakova, 2019, pp. 1-5; IRS, 2020). In the UK, the Her Majesty Revenue and Customs (HMRC) issued new guidelines regarding cryptocurrencies in November 2019. The guidance clarifies the term “crypto-assets”, what tax types apply and what records should be kept by crypto-asset owners (HM Revenue & Customs, 2019). The ATO also issued guidelines in relation to the tax implications of cryptocurrencies and crypto-assets and issued communication in September 2019 stating that they expect to collect AUS\$3 billion in penalties by collaborating with local and international cryptocurrency trading platforms (Australia crypto tax, 2019; Janus, 2019). Various other tax

authorities were identified that also issued guidelines in this regard and include, but are not limited to European Union countries, Canada and New Zealand (Government of Canada, 2020, New Zealand Inland Revenue, 2020, Vero Skatt, 2020). The analysis based on the literature review with regards to global tax reform in response to the introduction of cryptocurrencies is presented in Figure 1.



- Banned
- Direct and Indirect taxes: Various tax brackets and other incentives for digital currency activities until 2023
- Direct tax: Capital gains taxes
- Direct tax: Capital gains taxes, no legislation for business platforms
- Direct tax: No implications; Indirect tax: Taxable under certain circumstances
- Direct tax: normal tax principles apply but no capital gains taxes for digital currency investors;  
Indirect tax: Investment and mining proceeds regarded as exempt; Trade in digital currencies regarded as normal supplies
- Direct tax: normal tax principles apply, investment gains are tax-free under certain conditions;  
Indirect tax: Investment and mining proceeds regarded as exempt; Trade in digital currencies regarded as normal supplies
- Direct tax: normal tax principles apply; Indirect tax: Digital Currency exchange is regarded as an exempt supply
- Direct tax: normal tax principles apply; Indirect tax: Investment and mining proceeds regarded as exempt; Trade in digital currencies regarded as normal supplies
- Direct tax: normal tax principles apply; Indirect tax: Digital currency transactions regarded as exempt
- Direct tax: Normal tax principles apply; Indirect tax: No information available
- Direct tax: Normal tax principles apply; Indirect tax: Special considerations for individuals, otherwise normal tax rules applicable
- Direct tax: normal tax principles but individuals exempt; Indirect tax: No information available
- Legislative reform under consideration
- No information available
- No tax implications

**Figure 1: Tax reform in response to the use of cryptocurrencies/assets.**

Source: Author's own (2020)

The synthesis and analysis in Figure 1 reflect a lack of uniformity in global response with regards to the tax reform in response to the introduction of cryptocurrencies and its various associated business models. The analysis reflects a reform that is based on borders and the principles of traditional tax models and does not take into consideration the borderless nature and characteristics of the digitalised economy.

Consistency can be observed among the majority of tax authorities that treat cryptocurrencies as an asset and they apply the same direct tax rules to cryptocurrencies as would be the case with any other businesses, regarding the investment and mining in cryptocurrencies as an exempt supply for indirect tax purposes. However, the synthesis highlights global inconsistency with regards to matters such as the definitions and scope of cryptocurrencies, the classification of transactions as speculative or investment in nature, the tax registration thresholds as well as the tax rates.

Concerns regarding global inconsistency and uncertainty with regards to tax reform in relation to cryptocurrencies were also raised by Ernst & Young (2019b). Schiefelbein and Greaves (2020:5) further raised concerns regarding the application of the nexus rules to cryptocurrencies and assets in cases where the trade or mining of digital assets are the main source of business income. These challenges, however, remain unaddressed as the majority of the guidance that has been issued by tax authorities only address the basic principles of cryptocurrencies, such as the definitions, the business models, scope and tax rates applicable to the different classes of taxpayers and tax types. The concern raised by Schiefelbein and Greaves (2020:5) regarding the application of the nexus rules to cryptocurrencies supports the argument made under section 3.1 that the digital element considered in relation to business models and related tax reform are limited.

The research results and analysis in Figure 1 and the evaluation that follows illustrate that the tax reform, with regards to the introduction to cryptocurrencies, is only limited to the “traditional element” of business models. The digital element and the consideration that cyberspace might be a unique environment in which this business model operate (or jurisdiction), as stated by Johnson and Post (1996), are currently not considered or addressed by related tax reform.

### 3.3 The impact of digitalisation of the economy on direct taxes and related tax reform

#### 3.3.1 Corporate income tax

The digitalisation of the economy is a major enabler of BEPS (OECD, 2018a). In respect of profit allocation and nexus, both the OECD (2018a) and the UN (2017) acknowledged that the taxation of cross-border investments are strongly rooted in their physical presence and the alignment of the distribution of tax rights with the location of an enterprise's economic activities, including people and property are critical. Chapter 5 of the OECD (2018a, pp. 165-176) report that was issued under BEPS action plan 1: "Tax Challenges Arising from Digitalisation", focused on the need to re-examine the principles of nexus and profit allocation, implying that the OECD questioned the fundamental building blocks of the international tax regime. The report further questioned whether the tax rules that determine where economic activities are carried out and where value is created, continue to deliver appropriate results within the digitalised economy.

The critical challenges were grouped into three broad categories, for which various action plans were recommended (OECD, 2018a). These challenges include:

- **Nexus** - whether physical presence is still appropriate for identifying tax jurisdiction;
- **Data** - how to attribute value created from the generation of data through digital products and services; and
- **Characterisation** - how new digital products or means of delivering services create uncertainties regarding the proper characterisation of payments.

Following the above report, the OECD secretariat (2019b) issued a document for public consultation in 2019, that called for intensified international discussion around two main pillars. The first pillar explores potential solutions to determine where tax should be paid and on what basis. The latter contained the following main components: (a) the "user participation" proposal; (b) the "marketing intangibles proposal"; and (c) the "significant economic presence" proposal (OECD, 2019b, pp. 20-23). The second pillar considers the design of a system that would ensure the payment of a minimum level of tax within the digitalised economy (OECD, 2019b; OECD, 2019c).

A follow-up report on pillar one was issued by the secretariat of the OECD (2019d) in October 2019. The proposal fundamentally alters how and where companies that operate across national borders will be taxed. The report did not include the detail of the specific tax rates, but it recommended new rules to determine where companies should pay taxes (mainly where value is created or sales occur) as well as proposals on what profits should be subject to taxation (OECD, 2019d). Furthermore, the OECD (2019e) issued a public consultation document in November

2019 with the goal to obtain public inputs regarding the proposed global anti-base erosion proposal (GloBE). The proposal represents a substantial change to the current international tax system and includes four components, including an “income inclusion rule”, an “undertaxed payments rule”, a “switch-over rule” and a “subject to tax rule”. The OECD (2020, pp. 1-30) issued another follow-up report in January 2020 that provides further updates to work done in relation to pillar one or the “unified approach”. The OECD aims to finalise the discussions and issue the final consensus outcome by December 2020. A discussion of other major direct tax responses to the digitalisation of the economy that were identified during the literature review, follows.

*Australia’s multinational anti-avoidance law (MAAL) and diverted profit tax (DPT):* Australia is one of the leading countries responding to the digitalisation of the economy. The MAAL was implemented and came into effect from 1 January 2016 and the programme is expected to generate an additional AUS\$7 billion in taxable sales revenue (Parliament of Australia, 2018). The MAAL and DPT was specifically designed to address tax arrangements of significant global entities (SGEs) with the main objective to shift profits out of the country. Structuring arrangements addressed by the DPT include, but are not limited to, intellectual property transfers and royalty arrangements, offshoring services and procurement hubs. The MAAL and DPT rules were designed to ensure that the relevant Australian taxes are paid by MNEs, which reflect the economic substance of the activities carried out in Australia. It also aims to prevent MNEs from reducing the amount of Australian tax by diverting profits offshore through contrived arrangements (Lim, McCormack & Newnham, 2017). Since the implementation of the policy, the Australian government has raised over AUS\$10.5 billion in tax liabilities and collected over AUS\$6 billion in cash (Australian Tax Office, 2018).

*Austria, Canada, France, Italy, Hungary, Turkey and the UK’s digital and turnover tax DST:* The European Union (EU) has, to date, not reached consensus regarding a unified approach for member states with regards to taxing the digitalised economy. In the absence of a consensus, some of the European countries implemented, proposed or intend to implement measures in order to address the tax risks associated with the digitalisation of the economy. The Austrian government introduced a country-specific digital tax. A 3% levy applies to internet advertising revenue for all companies with worldwide revenues of at least €750 million and Austrian revenues of at least €10 million. It is expected that the latter will potentially contribute an additional €200 million in taxes (Ernst & Young, 2019a).

The French government also introduced a 3% digital tax levy with a retrospective effect from 1 January 2019. The digital services tax is levied on intermediary services with some exclusions, as well as on the provision of data or services to advertisers that are collected via a digital

platform. Advertising services on digital interfaces that are not targeted based on user data are *de facto* exempt from digital services taxes (KPMG, 2019).

Hungary implemented a modified version of tax on advertising services that took effect on 1 July 2017. Advertisement tax applies to certain advertising services, including digitised advertising services. The tax applies to advertisements that are published in Hungary, or where the advertisement is available on a webpage that is mainly in Hungary. In the case of primary taxpayers, the tax is levied at a rate of 7.5% of total trading turnover in excess of HUF 100 million (PwC, 2018).

As of April 2020, Canada, Turkey and the UK followed suit and introduced digital tax of 3%, 7,5% and 2% respectively on income derived from residents or consumers residing in the above countries (Asen, 2020; Bunn, 2019). Other European countries, such as the Czech Republic, Slovakia and Spain published their proposals in order to implement digital services tax and Latvia, Norway and Slovenia have shown their intention to implement digital services tax (Asen, 2020). Various inconsistencies, however, exist in relation to the scope of digital services subject to DST, the global and domestic revenue thresholds that trigger DST, as well as the rates that are, or will be, levied in terms of the proposals.

*India and Nigeria's new nexus based on "significant economic presence" (SEP) or "significant digital presence" (SDP):* India introduced the concept of SEP into their tax legislation, with effect from 1 April 2018. SEP expands the scope of income of non-residents that accrues or arises in India and results in a "business connection" in India. In this regard, the income attributable to the SDP is taxable in India. SDP includes transactions with regards to any goods, services or properties carried out by a non-resident in India, including the provision or downloading of data or software in India, subject to a prescribed payment threshold. SDP also includes the systematic and continuous soliciting of business activities or engaging in interaction with users in India through digital means (Deloitte, 2018). Nigeria also recently amended its tax laws to make provision for the taxation of enterprises that have a SEP within the Nigerian borders (Orbitax, 2020; PwC, 2020).

*Israel* introduced the SDP in April 2016 in order to accommodate the nexus challenges faced by highly digitalised MNEs. The SDP principles apply to non-resident companies that have a significant number of contracts for online services with Israeli customers, in cases where foreign suppliers' online services are used by Israeli customers and where there is a high volume of web traffic between Israel and the foreign supplier. Israel is furthermore considering the implementation of digital service tax in line with the French model (Sledz, 2019).

*The United Kingdom's DPT:* DPT applies to profits arising in the UK from 1 April 2015 and is specifically focused on contrived arrangements designed to erode the UK tax base. DPT aims to deter and counteract the diversion of profits from the UK by large MNEs that seek to avoid the creation of a permanent establishment that would lead to the charging of UK corporate tax. The DPT is set at higher rates than corporate tax in order to encourage enterprises that fall within the scope to change their arrangements and pay the lower corporate tax rates. It also applies where arrangements or entities are used that lack economic substance to exploit tax mismatches either through expenditure or the diversion of income within the group (HM Revenue & Customs, 2018:2). The HMRC reported an additional £388 million and £700 cumulatively in DPT revenue from the implementation date up to the 2017/2018 tax year (Bales & Fox, 2018).

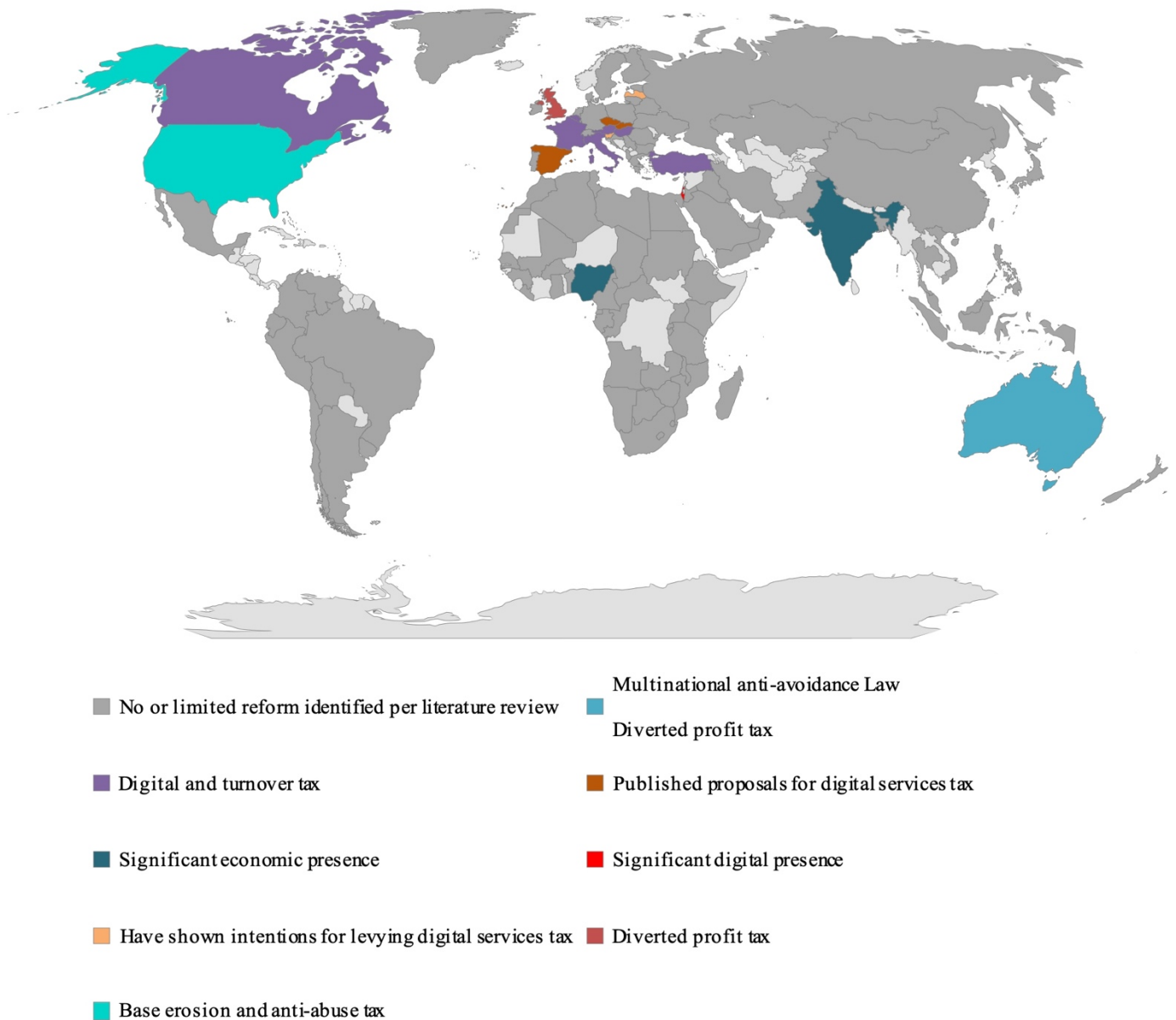
*The United States' base erosion and anti-abuse tax (BEAT):* The United States issued a final proposed BEAT in December 2019 (Johnson, 2020:1; United States Department of Treasury, 2019). BEAT was added to the 2017 Tax Cuts and Jobs Act with the aim to prevent large multinational groups from reducing their US tax liability by making deductible payments to foreign related parties in low-tax countries. The BEAT is a minimum tax add-on and corporations are taxed at a rate of 21% and in cases where the regular tax is lower than the BEAT, the corporation is liable for the regular tax plus the amount by which the BEAT exceeds the regular tax. The BEAT rate was 5% in 2018, 10% from 2019 to 2025, and 12.5% from 2026 and beyond (Tax Policy Center, 2020, p. 415).

Based on these findings in the literature review, it is clear that countries responded by either protecting their current tax base and/or by taxing economic activity within their jurisdiction as a result of digitalisation. MAAL, DPT and BEAT are responses that were designed to protect the country's current tax base and deter tax avoidance that is largely enabled by the digitalised economy. On the other hand, the adoption of SEP, SDP, DPT, as well as Digital and Turnover Tax, focus on the taxation of economic activity enabled by digitalisation within the specified jurisdictions.

Other mechanisms to prevent BEPS enabled by digitalisation include tax treaties. While these do not create taxing rights, they do assist with the allocation of income. The OECD (2011, pp. 4-16) issued a report, "Characterisation issues arising from e-commerce" as early as 2011, which made recommendations on how income from e-commerce transactions (which are associated with the digitalisation of the economy) should be classified for treaty purposes. The report provided further insight into the term "technical services" in order to include an array of transactional variations associated with e-commerce. It was recommended that this amendment should be included under "Article 12, Royalties" of existing treaties (OECD, 2011, pp. 4-16).

In addition, the UN issued an updated model tax treaty in 2017 in order to add technical service fees, therefore minor differences exist between the OECD recommendation and the UN model (United Nations, 2017). Despite the guidance provided by the OECD and the UN, a limited number of countries could be identified that changed their tax treaties in accordance with the above guidelines and it is assumed that participating countries currently rely on the Multilateral Convention to implement tax treaty-related measures (MLI) (OECD/G20, 2018c). The MLI modifies all tax agreements, as defined in article 2(1)(a) of the convention, but does not make specific reference to “technical services” as defined above within the digitalised economy (OECD/G20, 2018c, pp. 4-16). In the absence of updated treaties, which take the digitalisation of the economy into account, the allocation of income and taxing rights among international tax authorities will remain a major challenge until such time that a global solution and consensus are reached.

The research results of the systematic literature review relating to the major global direct tax reforms in response to the digitalisation of the economy as at the date of finalising the research are documented in Figure 2.



**Figure 2: Direct tax legislative and policy reform in response to the digitalised economy.**

Source: Author's own (2020)

With reference to the overall global reform relating to direct taxes, as synthesised and analysed in Figure 2, the analysis suggests that a limited amount of countries made significant changes to their direct tax legislation and policies in response to the digitalisation of the economy. The literature further suggests that the reform that did take place is, from a global perspective, complex and inconsistent, as a majority of the international tax authorities did not make any significant amendments. For those who did, the amendments differ substantially and there is therefore a lack of global uniformity. Complexity and inconsistency in tax legislation are associated with an increased risk of tax non-compliance, as well as an increased compliance cost. As per the

observations made in sections 3.1 and 3.2 above, the fact that digital business models are associated with a hybrid environment, with both digital and traditional elements, does not seem to have been taken into consideration in current corporate income tax reform.

Another aspect of direct tax that was and might be impacted further by the digitalised economy is personal income tax. A discussion of global personal income tax reform in response to the digitalised economy follows in the next section.

### 3.3.2 Personal income tax

The digitalised economy enables the traditional worker or labour force to be employed by more than one employer and/or to be employed internationally regardless of the employee's physical presence or place of residence. This new work environment is referred to as the gig or shared economy and the common characteristics can be broken down into four general sectors – each with its own tax concerns. The four categories include a) the transportation services (e.g. ridesharing, delivering and moving services), b) non-transport service (repair service or dog walking), c) selling activity (e.g. selling of novelty items) and d) leasing services (e.g. short-term rentals and home sharing) (Watson, 2019). Within this context, the gig or shared economy platforms use a high *de minimis* threshold for reporting earnings to tax authorities. The latter increases the risk that workers will fail to meet their tax obligations (Watson, 2019). Both labour and migration have been traditionally conceived as centred around the notion of sovereignty and national boundaries (McKenzie, 2017). The virtual flows of labour enabled by the digitalisation of the economy prove that this is no longer the case, which has clear ramifications for the traditional tax collection system.

The OECD (2018a) recommended the improvement of taxpayer education and self-reporting, improving information accessibility to tax administrations, and a multilateral agreement between countries to facilitate access and the exchange of information. The global response to taxing the gig or shared economy is discussed in the following section.

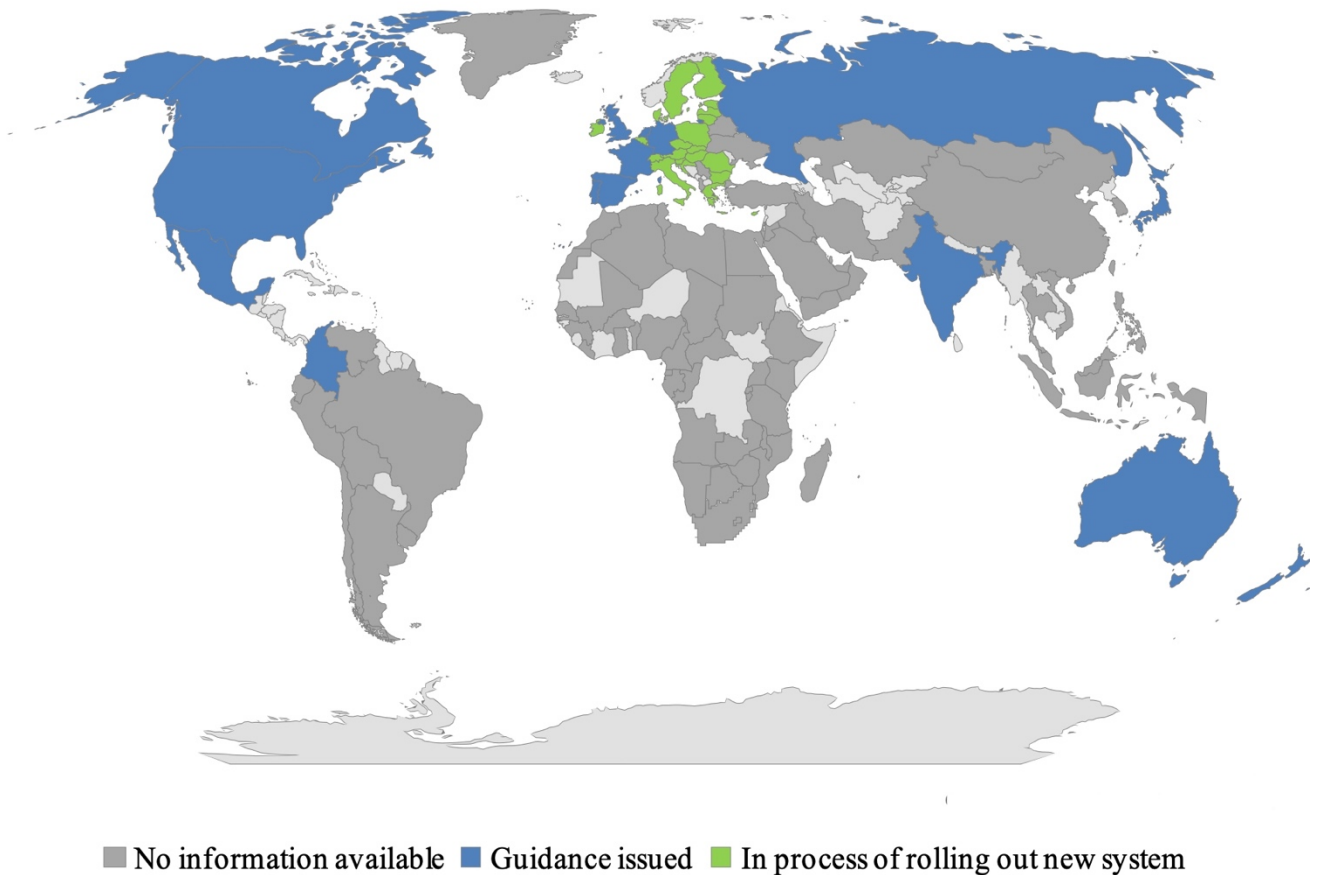
*Tax Foundation recommendations regarding tax administration within the gig economy (United States of America):* The Tax Foundation recommends that the Inland Revenue Services (IRS) amends its current tax legislation in order to mitigate the associated tax risks of the gig economy (Watson, 2019). The recommendations include the implementation of a simplified expense deduction system, the lowering of reporting thresholds, and allowing gig economy platforms to withhold taxes on behalf of their workers. It was further recommended that these changes should be weighed against trade-offs, such as making the tax treatment of the gig economy participants less neutral. Literature that support the approval and implementation of the latter was limited, but

the IRS's "Gig Economy Tax Center" provides detailed guidance relating to workers within the gig economy, as well as digital platforms that enable gig or shared economy activities. Guidance is given with regards to record keeping, the payment of estimated or provisional tax, the filing process, as well as training on what the gig economy is and what the tax responsibilities and implications are for individuals and digital platforms (IRS, 2020).

*The European Union's response to tax administration within the gig economy:* The government of France submitted a draft bill referred to as the "*Loi d'orientation des mobilités*" in August 2018. The bill is intended to provide greater transparency on working conditions within the gig economy and oblige gig economy platforms to inform gig workers before the engagement of the minimum price guaranteed after deduction of commissions levied. Gig economy platforms will furthermore be required to publish working time and earned income by gig workers based on the previous calendar year.

Furthermore, gig workers are currently classified as employees in terms of French case law (Edwards *et al*, 2019). European countries are, furthermore, in the process of rolling out a new system that would enable them to collect data from digital platforms in order to identify and tax workers or contractors within the digitalised economy (Ogembo & Lehdonvirta, 2020). Gig economy platforms in Portugal are required to collect and remit the taxes on behalf of the gig economy workers. The Netherlands and Spain have special rules in place to classify gig workers as either employees, deemed employees or independent contractors, and tax legislation is enforced according to this classification (Edwards *et al*, 2019). Germany does not currently intend to make any legislative changes, but it does provide a greater level of certainty. Companies can apply to the German tax authorities whether they should be withholding wage tax on payments made to an individual (Edwards *et al*, 2019).

In addition, automation increasingly substitutes human labour with fewer workers and lower wages (Schwab, 2016). Although the percentage of tax collected from personal income tax differs from country to country, the OECD published an international average contribution to total tax collected from personal taxes of 23.8% (OECD, 2018b, p. 3). The impact and growth of the changing labour force might therefore have dire consequences from a tax collection perspective. Although there is literature available that relates to the introduction of "robot tax", limited evidence could be identified where the latter is being considered, proposed or enacted by global tax authorities. The analysis for tax reform in response to the introduction of the gig or shared economy is illustrated in Figure 3.



**Figure 3: Personal income tax reform in response to the gig/shared economy.**

Source: Author's own (2020)

Overall, the analysis suggests that the same personal income tax rules apply to gig economy workers as those applicable to the traditional work force. The complexity and inconsistency does, however, emanate from the question whether a gig economy worker is classified as an employee or an independent contract worker as the classification would dictate the tax rules that are applicable. Clarification on the classification also dictates whether the digital platform providers are regarded as employers and consequently need to withhold and pay over the related taxes to tax authorities.

Another risk associated with the gig or shared economy is the low compliance rate of workers or participants within the gig or shared economy. The research results indicate that tax reform, in relation to the gig or shared economy, in most instances targeted the two risk areas identified above. The tax reform consequently relates to the classification of gig or shared economy workers and to transparency in relation to the identity, country of residence and amounts paid to or hours worked by gig economy workers. Research indicates that the digital platforms that enable global

employment opportunities will be key to ensuring tax compliance, collection and/or transparency in this regard.

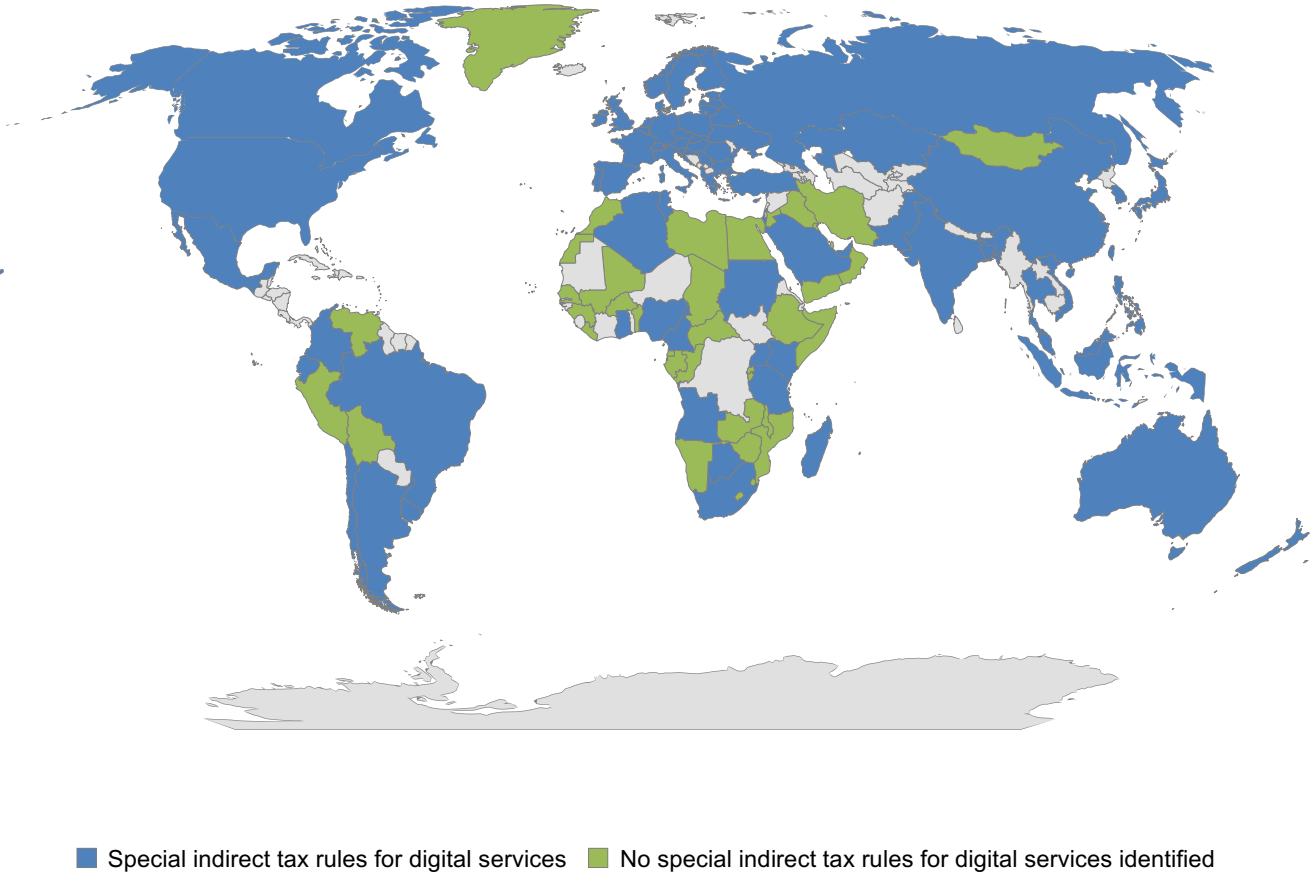
### **3.4 The impact of the digitalisation of the economy on indirect taxes and related tax reform**

Innovations associated with the Fourth Industrial Revolution changed the nature of traditional products and services. Digitalisation enables suppliers to offer new products and services to their customers, many of which were previously categorised as physical goods or products for indirect tax purposes. Examples of new products include 3-D printing and the downloading of music and movies. These changes directly impacted consumer consumption, where value is created and who or what the source of value is. The latter, in turn, directly impacts the tax administration of indirect taxes, such as value-added tax (VAT) or goods and services tax (GST).

A critical consideration from a VAT/GST perspective is whether the transaction constitutes “goods” or “services” as defined (Ernst & Young, 2016, p. 1). The majority of tax legislation globally currently considers a “service” as something that is not “goods”. Goods are usually physical, tangible items and are typically easy to identify due to their tangible nature. Innovation in the digitalised economy has, however, complicated the application of indirect tax law due to the transformation of “goods” into digital services. The latter required change in indirect tax legislation in order to include and define digital services. Another challenge from a tax administration perspective includes the question regarding where the indirect tax should be levied. The ability of tax authorities to identify the delivery of digital services by foreign suppliers within a specific tax jurisdiction is another risk (Lubbe, 2016; OECD, 2001; OECD, 2006).

In order to address the challenges associated with indirect tax administration within the digitalised economy, the OECD (2011) recommends that indirect taxes for digital cross-border transactions should be levied at the place of consumption in order to prevent double taxation or intentional non-taxation where two jurisdictions apply non-compatible place of taxation rules. The place of consumption for cross-border services or supply of digital services for Business-to-Consumer (B2C) should be regarded as the jurisdiction where the consumer has his or her usual place of residence. The OECD (2011) believes that, although the jurisdiction is not necessarily the place of consumption for B2C transactions, it is the most practical option within the digitalised economy. In order to evaluate the global tax response in relation to the digitalisation of the economy, various elements were considered in order to assess the status quo of the tax reform in response to the digitalisation of the economy.

The first element that was evaluated was whether tax authorities changed their indirect tax legislation and policies in order to make provision for the challenges discussed in the preceding paragraph. The analysis for the selected countries is set out in Figure 4.



**Figure 4: Indirect tax legislative reform in response to the digitalised economy.**

Source: Author’s own (2020)

The analysis reflects that the majority of tax authorities globally responded to the digitalisation of the economy by including special indirect tax rules based on the broad principle that digital services will be taxed at their place of consumption. Limited literature was identified for indirect tax reform in relation to the digitalised economy for the African continent. The literature further suggests that, although the reform of indirect taxes in relation to digital services was based on the consumption principle, as per OECD recommendations, but there is a significant amount of inconsistencies among tax authorities globally in relation to the specific content of the legislative amendments made. Examples of the latter include the countries’ definitions of “digital services” as well as the scope that includes or excludes certain digitalised services. Furthermore, the legislative and policy reform for some countries makes a distinction between indirect tax treatment



The analysis in Figure 5 demonstrates the lack of consistency in relation to applicable indirect tax rates levied on digital services globally. A further complexity to the situation depicted in Figure 5 is that some tax authorities levy different indirect tax rates for different types of digital services. Examples include Austria, China, Greece, Finland, France and Italy. There are also major inconsistencies in terms of the revenue thresholds that trigger indirect tax registration with regards to digital services. Some countries do not have registration thresholds and where registration thresholds are applicable, major inconsistencies exist. Figure 5 indicates that the indirect tax reform that took place to date is still based on traditional tax principles which are informed by physical borders. Evaluated from the perspective of a highly digitalised MNE, the complexity and compliance cost are expected to be phenomenal and is the latter confirmed by the international business community (Hartley, 2019:1).

The collective synthesis and analysis in relation to indirect tax reform suggest that while all countries adopted the recommendation of the OECD in principle to collect indirect tax at place of consumption, a lack of uniformity in global tax reform remains. The inconsistency mainly relates to the definitions and scope of digital services, indirect tax rates and the thresholds that trigger indirect tax registration. The latter international inconsistencies regarding indirect taxes may complicate tax compliance for highly digitalised MNEs which might further result in tax non-compliance within the digitalised economy.

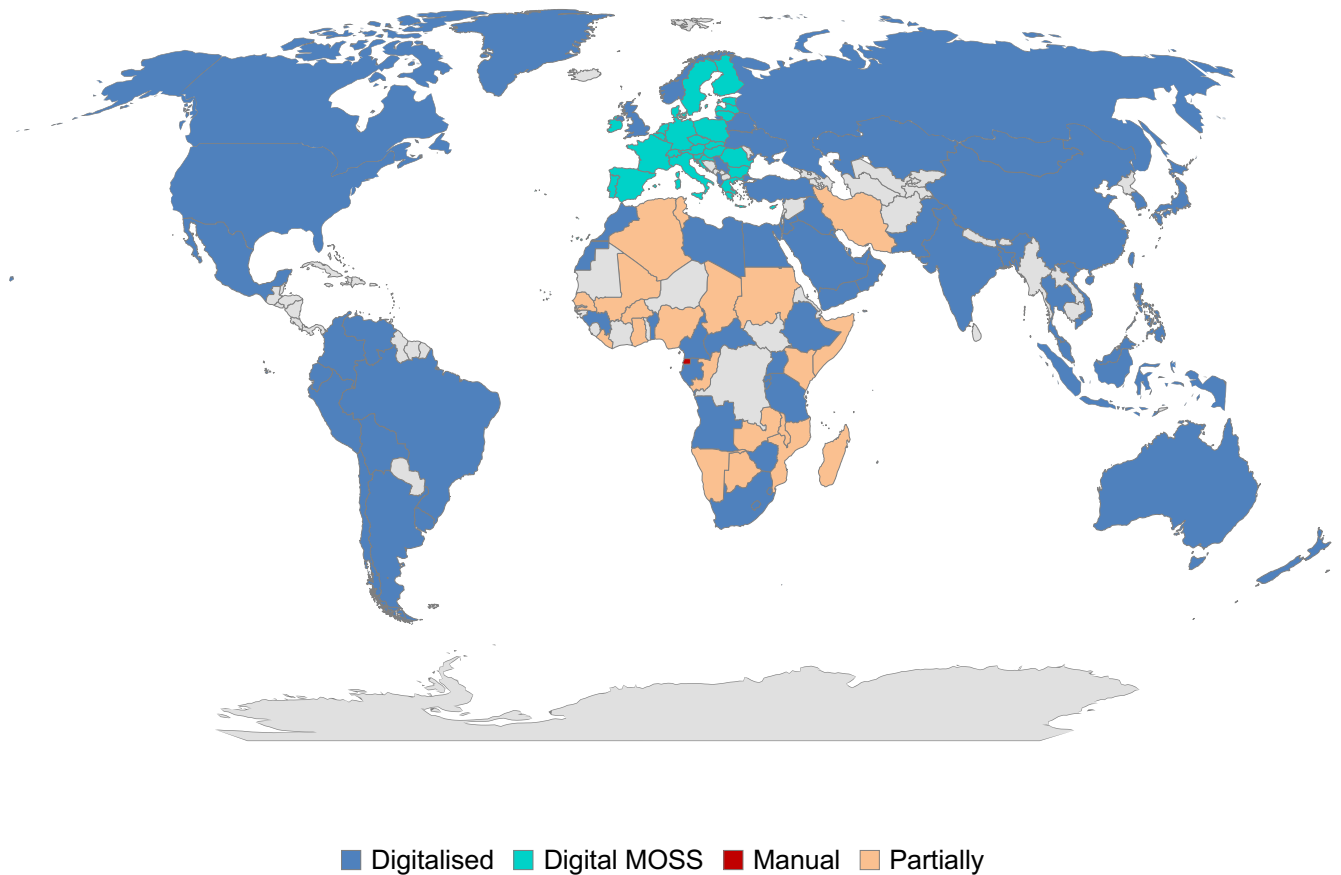
The concerns relating to complexity of the tax reform relating to indirect taxes were echoed by international response in March 2019 during a survey conducted by the International Tax Review (Hartley, 2019:1). The survey results indicated that companies, tax advisors and software providers requested global uniformity regarding the taxation of digital services as well as tax administration mechanisms implemented by the various tax authorities.

Although it is accepted that various countries have different economic strategies and priorities that are reflected by their tax policy, the characteristics of the digitalised economy and the related business models should be taken into account when domestic and global tax reform takes place. The analysis of the indirect tax reform within the digitalised economy indicate that the characteristics of digitalisation was only taken into account to the extent that definitions such as “*digital services*’ were added to the legislative frameworks. However, limited literature could be identified that indicate that, digitalisation as a unique environment, were considered. Limited literature could, furthermore, be identified that considers the fact that cyberspace might be a jurisdiction by itself and should consequently be considered for tax reform purposes.

### **3.5 The impact of digitalisation of tax administration methods and related reform**

Tax legislative and policy reform are only as effective as the ability of the tax authority to enforce and enable compliance to these changes. While the digitalised economy is synonymous with digital trade and a lack or limited physical presence of the enterprise or individual, it would be expected that tax authorities would make provision for digital tax compliance facilities. The two elements consequently evaluated in this regard were the level of digitalisation of global tax administrations and whether MNEs or non-resident individuals are enabled to manage their own tax affairs remotely versus the appointment of a country-based tax representative.

Electronic tax filing and payment systems imply a reduction in time and effort to file a tax return and the subsequent payment of taxes. Due to the fact that the digitalisation of the economy enabled global trade, it is expected that highly digitalised MNEs, as well as other participants within the digitalised economy, might have tax obligations in various tax jurisdictions without necessarily having a physical presence within the respective jurisdictions. The first element that was considered therefore related to the availability of electronic tax filing and payment services. The analysis of the level of global digitalisation of tax administrations' tax filing and payment systems are presented in Figure 6.



**Figure 6: Global level of digitalisation of tax administrations' filing and payment systems.**

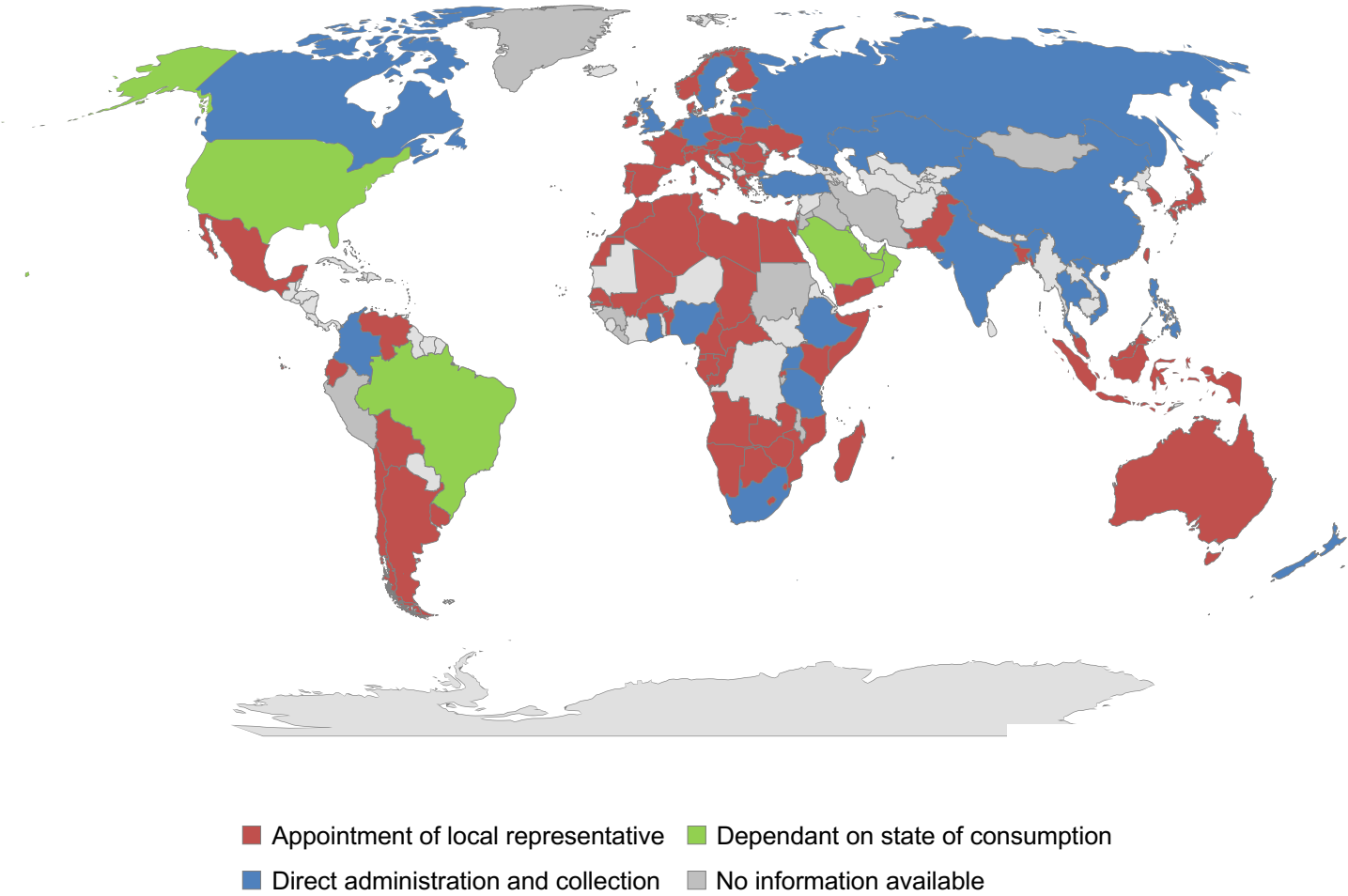
Source: Author's own (2020)

The analysis indicates that the majority of global tax authorities have digitalised their filing and payment systems. A significant amount of tax authorities in the African continent have digitalised their systems partially, and only one tax administration per the study sample selected (1/120) could be identified that still utilises a manual filing system. Electronic filing and payment systems were regarded as fully digitalised in cases where the main tax types (corporate income tax, personal income tax, VAT/GST and employee taxes) could be filed and paid electronically. Partial digitalisation of the filing and payment systems were listed in cases where the submission and payment of all main tax types cannot be done electronically, yet.

On the other hand, manual submission systems were regarded as such where none of the tax types' returns can be submitted electronically, but requires the taxpayer to visit the tax office's branch. The EU countries implemented the MOSS system that is fully digitalised and allows for central tax administration among EU states. It was designed with the objective to reduce the tax administrative burden and cost on businesses that supply telecommunications, broadcasting and electronic services to non-taxable persons. The MOSS system is available to businesses that

supply services within the EU without a physical presence in the specific EU country where services are delivered (Irish Tax and Customs, 2020). It should be noted that the effectiveness and efficiency of the electronic filing systems were not evaluated during this particular study.

The second element evaluated in relation to tax administration within the digitalised economy relates to the ability of highly digitalised MNEs to remotely or directly manage their taxes, versus the appointment of a local tax representative. This was evaluated as the appointment of local tax representatives would impact the tax compliance cost of highly digitalised MNEs. The result of the analyses is presented in Figure 7.



**Figure 7: Legislative requirements regarding tax administration/management by highly digitalised MNEs.**

Source: Author’s own (2020)

The analysis in Figure 7 indicates that the minority of global tax authorities’ legislation allows for the direct tax administration by foreign suppliers or MNEs. The majority of tax authorities therefore still requires the appointment of a local tax representative which not only directly impacts MNEs’

tax compliance cost, but to some extent contradicts tax authorities' service offering of electronic tax filing and payment systems. Furthermore, countries such as Brazil and the USA differ in their approach in relation to direct tax management versus the appointment of a local tax representative. Foreign suppliers will therefore be required to evaluate the requirements per state.

Other research observations in relation to tax management and the remote submission of tax returns that were identified include requirements that tax returns must be accompanied by audited financial statements and that the audit must have been conducted by a local country-registered auditor (Deloitte, 2019). It was furthermore observed that the submission dates and fiscal year-ends differ from one country to another, which further complicates tax compliance and administration for highly digitalised MNEs and consequently increases the tax compliance cost. Evaluated from the perspective of highly digitalised MNEs, the compliance cost to appoint local tax representatives and to comply with additional country-specific requirements is expected to be significant, which is confirmed by White (2019:1).

#### **4 CONCLUSION**

Throughout the study it was observed that business models within the digitalised economy have a hybrid set of characteristics. These models have a digital component and a traditional component that should be taken into consideration (as documented in section 3.1). The research results suggest that the tax reform that took place to date in response to the digitalised economy considered the traditional elements. These include, but are not limited to, elements, such as physical borders, country-specific tax rates, legislative definitions as well as tax registration thresholds. The digital component of business models within the digitalised economy was considered in as far as it relates to the inclusion of definitions of, for example, "digital services" and "cryptocurrencies". However, the fundamental fact that digitalisation created a unique environment that can be regarded as a unique jurisdiction, as stated by Johnson and Post (1996) seems to be overlooked by current tax reform within the digitalised economy. Instead, the research results show that the current global reform is still very much bound to country borders and traditional taxing principles.

Consequently, the research results reflect major inconsistencies and complexities regarding direct and indirect tax reform in response to the digitalised economy. With regards to tax reform in response to the introduction of cryptocurrencies, the inconsistencies relate to the definition and scope of cryptocurrencies, thresholds that trigger tax implications and tax rate differences. Important concerns in relation to the nexus of businesses whose main source of income stems from cryptocurrencies and assets also remain unanswered.

The research results with regards to global tax reform relating to direct tax in response to the digitalised economy suggest that only a few tax authorities globally responded to the challenge and that the response from these leading tax authorities vary significantly. The reform is, however, inconsistent if evaluated from a global perspective. The differences are vast and based on different concepts of value creation and place of taxation. Similar results were identified in relation to indirect taxes. While, in principle, the response is consistent with the OECD's recommendations, the application thereof varies significantly. Inconsistencies relate to the definition and scope of digital services, registration thresholds and applicable rates levied.

Global inconsistencies in tax reform within the digitalised economy are further highlighted by the results of the evaluation of tax administration systems that are in place to enforce the amended tax legislation and policy. A positive observation is, however, that the majority of tax authorities globally digitalised their tax submission and payment capabilities in full or partially. The legislative requirements to enable direct tax management versus the appointment of a local tax representative, however, remain inconsistent on a global scale. Evaluated from the perspective of highly digitalised MNEs that in most instances operate in multiple jurisdictions, the identified inconsistencies create a complex and expensive tax environment that, in turn, increases tax authorities' risk of tax non-compliance.

It can therefore be deduced that the current global response to tax administration within the digitalised economy is not optimal for a borderless and digitalised economy. A major contributor is the fact that the digital element of the business models within the digitalised economy are not fully embraced and factored into the current global tax reform.

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## **CHAPTER 4 (RESEARCH ARTICLE 2)**

# **AN EVALUATION OF THE DIGITAL RESPONSE OF TAX AUTHORITIES TO OPTIMISE TAX ADMINISTRATION WITHIN THE DIGITALISED ECONOMY**

The reader is requested to take note of the following:

This research article has been submitted for publication to the following IBSS indexed, peer-reviewed and Australian department of education accredited academic journal as follows:

Strauss, H., Schutte, D. & Fawcett, T. An evaluation of the digital response of tax authorities to optimise tax administration within the digitalised economy. eJournal of Tax Research (School of Taxation and Business Law (Atax), UNSW Business School), Published (ISSN 1448-2398).

The article was researched and written by the first author as the candidate. The second and third authors fulfilled a “reviewer” function thereto as the study’s promoter and assistant promoter. Estimated weightings of contribution are as follows:

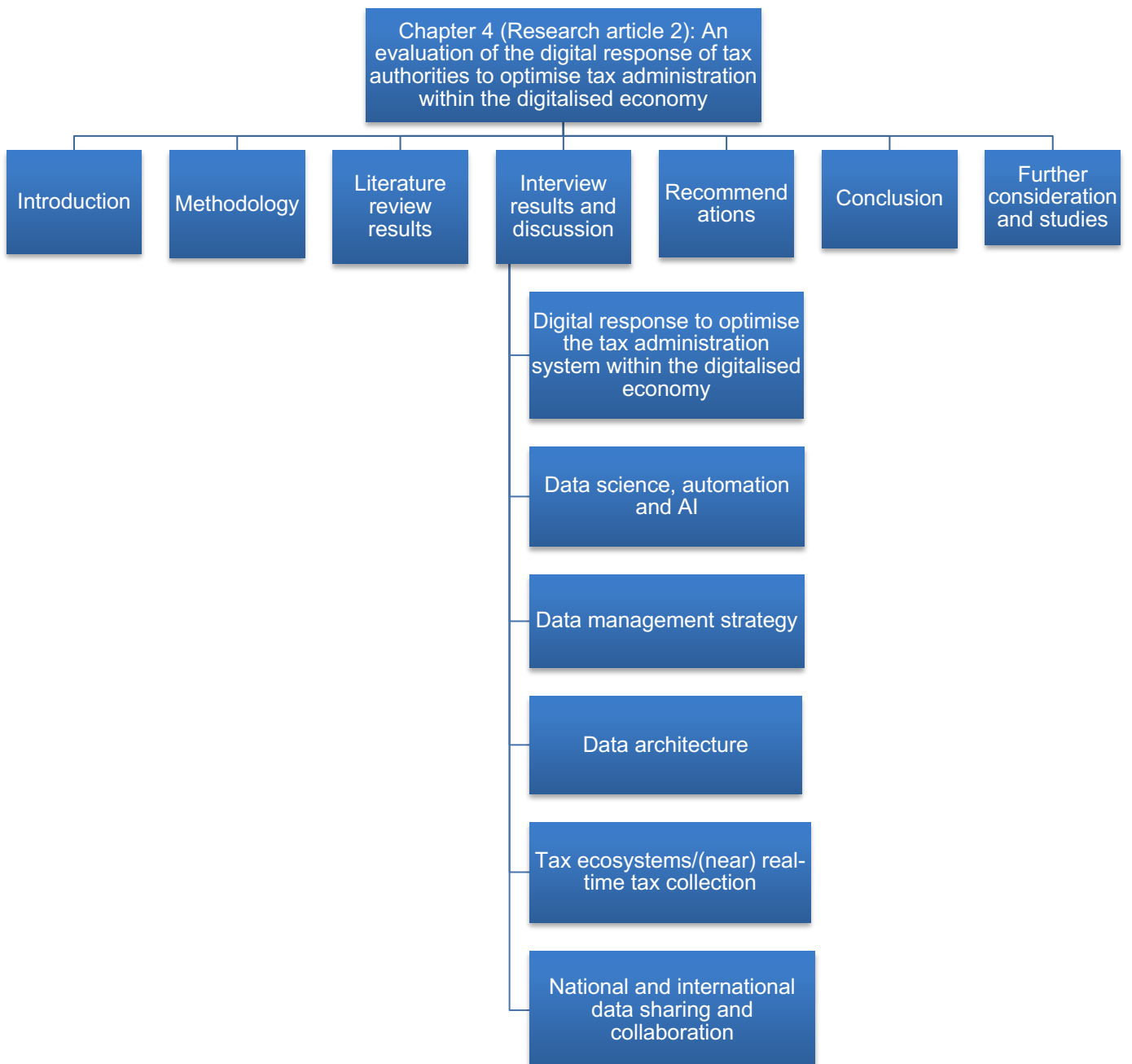
Strauss, H. (80%)

Schutte, D. (10%)

Fawcett, T. (10%)

Confirmation of receipt of the article from Atax was received and is presented as part of Annexure D on page 266. The article was written in line with the journal’s submission guidelines, which are included as part of Annexure D on page 266.

## CHAPTER 4 (RESEARCH ARTICLE 2) OUTLINE



## **Abstract**

This study provides insight into the international digital response of tax authorities to optimise tax administration within the digitalised economy. While the legislative and policy responses to the digitalisation of the economy establish a legal right to collect taxes, an optimised tax administration system to administer this legal right is critical. The research results reflect major discrepancies in the level of response and sophistication of tax administration systems that have been implemented among tax authorities globally. Furthermore, none of the participating tax authorities' tax administration systems currently reflect an optimised tax administration system, as defined, within the digitalised economy.

**Key words:** Information and communication technology; tax administration; digitalised economy; digital ecosystems; real-time tax collection; data science; data analytics

## 1 INTRODUCTION

Unlocking the full potential of information technology and data has never been as critical for tax authorities as it is today (PwC, 2019, p. 12). The evolving digital landscape of the global economy has rapidly changed the world and it has since become critically important for tax administrators to redesign and adapt to these changes in order to ensure efficient and effective tax administration. The digitalisation of economies globally allows us to imagine a world where 'tax is effortless' and part of the 'normal' business and digital ecosystem. It allows the business world to move beyond a siloed, period-based and retrospectively reactive tax environment. A new reality can now be created where services are seamlessly integrated and where the integrity of the broader system is assured within these integrated services (OECD, 2019, pp. 51-57).

The digitalisation of the economy, however, also poses major challenges from a tax administrative perspective due to the transformation in business structures and the high dependence on intellectual property and intangible assets, as well as the disappearance of physical borders (ACCA, 2018, pp. 12-20). While the majority of tax authorities have made amendments to their tax legislation<sup>1</sup> and policies in order to take the changing business landscape associated with the digitalised economy into account, the enforcement of these legislative and policy amendments relies heavily on the data and technological response of the tax authorities. Technological innovations associated with the Third and Fourth Industrial Revolutions<sup>2</sup> therefore provide tax authorities with the opportunity to utilise these tools to their full potential. Emerging technologies are challenging revenue authorities to think differently about their business and to critically look at whether their products, services and business models are sufficiently aligned to support tax administration within the digitalised economy. This fundamental re-examination of the tax system as a whole reaches far beyond simply facilitating existing operations with new technologies or adding digital services to existing products and business processes (OECD, 2016, pp. 5-7).

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<sup>1</sup> The international legislative reform in response to the digitalisation of the economy differs globally. In general, the majority of international tax authorities changed their indirect tax legislation with regard to VAT/GST to tax digital services at place of consumption. Other examples of reform relating to direct taxes include but are not limited to the (intended) introduction of digital services taxes, the introduction of the concept of digital economic presence and significant economic presence. Global consensus has, however, not been reached regarding corporate income tax reform in response to the digitalisation of the economy (OECD, 2018; OECD, 2020a, pp. 1-30).

<sup>2</sup> The phrase originated from an early analysis of the evolution of technology to enhance manufacturing processes. The Third Industrial Revolution is generally associated with computerisation and web-based interconnectivity and emerged in the 1980s and 1990s. The Fourth Industrial Revolution is often described as arising as 'a result of the integration and compounding effects of multiple exponential technologies'. Examples of these technologies include, but are not limited to, artificial intelligence (AI), biotechnologies and nanomaterials (Penprase, 2018).

'Big Data' technology offers tax authorities the opportunity to extract business value from existing data and to identify the relevant data for tax administration. Investment in innovative capabilities creates the opportunity to develop new and convenient services for taxpayers, together with the ability to create new tools that will assist the revenue authority to provide proactive services (OECD, 2016, pp. 7-10). Furthermore, the availability of (near) real-time data creates excellent opportunities for revenue bodies. Instead of capturing and analysing past transactions, revenue bodies can now consider how they might support tax assessment in (near) real-time. Tax authorities should consider options where features of the tax system are incorporated into the natural systems used by taxpayers for business purposes (for example e-invoicing) or to complete personal transactions, such as banking. These technologies also offer tax authorities the opportunity to differentiate the service offering to taxpayers and other stakeholders based on the inherent risk of a transaction, a taxpayer or an event (OECD, 2016, pp. 15-45).

As in the case of the transformation of any business information technology infrastructure, tax authorities, in general, also demonstrate a step-by-step approach to digital transformation, although not always in the same order. Various information technology maturity levels can be observed among international tax authorities, ranging from the mere digitisation of manual tax returns to a maturity level where tax returns are pre-populated for taxpayers and taxes are collected and verified in (near) real-time. Ernst & Young (2017, p. 1) categorised this journey towards a digital tax authority in terms of the following five maturity levels: 'E-file', 'E-accounting', 'E-match', 'E-audit' and 'E-assess'. While the correlation between revenue collection and effective tax administration systems is indisputable, the digital maturity levels of tax authorities globally are still at various levels that directly affect their ability to collect taxes within the digitalised economy (Regan, 2018, p. 1). Some of the leading countries with regards to digital tax ecosystems include, but are not limited to, Australia, China, Italy, Russia, New Zealand and the United Kingdom (HMRC, 2020, p. 1; Hartley & Stanley-Smith, 2019; OECD, 2019, pp. 11-16). However, on the other side of the spectrum, some African and Asian Pacific countries are only in the inception phases of digitising traditional tax returns for selected tax types.

The objective of the study was to analyse and evaluate the data and technology response of selected international tax authorities as a critical measure to optimise<sup>3</sup> tax administration within the digitalised economy. The scope of tax administration, for the purposes of this study, included

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<sup>3</sup> For the purposes of this study, the 'optimisation' of tax administration, with reference to data and technology, refers to the best or most effective use of data and technology available, taking into consideration optimised data and technology architecture and design and the design and implementation of new and innovative tax ecosystems, as well as tax submission, payment and collection models. The 'advanced' response, as defined in sections 4.1 and 4.2 of this study, is regarded as an optimised tax administration system.

digital service offerings to taxpayers for tax filing and payment purposes, the provision of tax administration digital infrastructure and the collection and analysing of digital taxpayer information for tax administration purposes. Section 2 of this article describes the methodological assumptions and methods applied in this study. The results of the literature review are set out in section 3, and in section 4 the interview results are summarised. The recommendations based on these results are set out in section 5. The article concludes with section 6 and recommendations for future research are presented in section 7.

## **2 METHODOLOGY**

A qualitative, inductive research approach was followed to collect data and knowledge in relation to international digital reform having the aim to optimise tax reform within the digitalised economy. First, a systematic literature study was conducted in order to collect data regarding the digital strategic objectives of eight global tax authorities. The data synthesis and analysis were conducted in order to identify five generic, digitally-driven strategic goals regarding tax administration within the digitalised economy. These goals were used to inform and formulate questionnaires that were used during the second phase of the study, which comprised interviews with officers of selected international tax authorities. The tax authorities selected for the literature review were those from Australia, China, Finland, India, the UK, the United States, New Zealand and South Africa. These tax authorities were selected based on the fact that they are regarded as leading tax authorities in terms of their response to the digitalisation of the economy and/or due to their global economic influence or leadership role among developing economies.

Following from the literature study, semi-structured, one-on-one and/or group interviews were conducted with representatives of 30 international tax administrations. The sample size of 30 tax administrations was regarded to be sufficient as the literature suggests that a level of saturation is reached between 20 and 50 interviewees. The sample was selected in two phases. Some tax authorities were specifically selected based on their data and technology response, as informed by literature and discussions with international tax administration experts. The sample was subsequently supplemented by a random sample selection. In order to ensure that the tax authorities that were selected were representative of the global population of tax authorities, the final sample that was selected was that comprising authorities considered representative of Africa, Asia, Australasia, Europe and North America. The classification of developed versus developing economies, as indicated by the United Nations (2020, pp. 165-166), was used. One selected participant from a country classified as 'economies in transition' according to the United Nations (2020, p. 165) classification was categorised under 'developing economies' for the purposes of this study. This was mainly due to the fact that the country shared a significant number of tax

administration challenges with those of the other countries that were categorised as 'developing economies'.

The interview questions and the purpose and background of the study were sent to the selected tax authorities together with the request for participation in the study. The participants were nominated by the tax authorities themselves and were from senior management level or above and were key role players within the field of data and technology. Interviewees were offered the option of being interviewed in person, in one-on-one or group sessions, by telephone, via secure digital communication channels and/or to respond in writing. The preferred approach of each participant was followed.

The majority of the content of the research data that was collected through the interviews related to the internal systems and internal information technology controls of the participating tax authorities. These systems and controls are privileged and confidential information and possible weaknesses in internal systems, processes and controls shared during the study by participants could put the participating tax authorities in a compromised position. In this context, it was agreed that the participants in the study would remain anonymous in order to ensure a safe environment for the participants, but simultaneously allow for the collection of accurate research data in order to advance documented literature in the research area without publicly exposing possible weaknesses within the participants' internal control environment.

The organisational development theoretical framework as developed by Kessler (2013, pp. 542-547) was applied during the study due to the fact that an external factor, the digitalisation of the economy, requires tax authorities to reform their tax administration systems to optimise tax administration within a new economic and technological environment.

The results of both the systematic literature review and the interviews were synthesised, analysed and evaluated in order to obtain a holistic view of the global digital response to optimise tax administration within the digitalised economy. The reliability and credibility of the research results were tested with the application of various triangulation methods, including the collection, synthesis, analysis and evaluation of data obtained from various data sources and the application of different data collection methods. The research results were discussed and reflected upon with and by independent experts in the area. Independent observers were invited to interviews and the results of both the literature review and interviews were tested against the available literature and the tax authorities' online service offerings.

### 3 LITERATURE REVIEW RESULTS

Technology, as well as the possibilities it provides, is a very powerful tool in the hands of tax authorities. In order to optimise and possibly transform the way that data and technology are used by tax administrators as a tax administration tool, tax administrations should first build a business strategy/model that is initiated by the tax authorities' strategic decision-makers (Hillman, 2017, pp. 31-33). An inference can therefore be made that the strategic goals of tax authorities will provide insight in relation to their intention to utilise digital tools with the aim to optimise tax administration. The strategic goals with a digital undertone were consequently identified and synthesised in order to determine what the strategic focus of the selected tax authorities is for at least the next five years and to identify the top five strategies notable per evaluated strategy. A synthesis of the identified strategic goals is set out in Table 1 below.

**Table 1: Strategic Goals with a Strong Digital Focus for Selected Tax Authorities**

<p style="text-align: center;"><b>Australian Taxation Office (ATO)</b></p> <ul style="list-style-type: none"> <li>• Master Data Management (data backbone) that requires the development of data management infrastructure to cope with increasing data needs;</li> <li>• Insight by using analytics integration;</li> <li>• Data democratisation and visualisation;</li> <li>• Artificial intelligence and automation;</li> <li>• Data governance and ethics;</li> <li>• Improving the ATO IT systems;</li> <li>• Strengthening security capabilities (Australian Tax Office, 2019).</li> </ul>	<p style="text-align: center;"><b>China</b></p> <ul style="list-style-type: none"> <li>• The reform of tax collection and administration systems;</li> <li>• Deepening tax reform by modernising tax systems and the utilisation of big data to support tax reforms;</li> <li>• Building consensus on international tax cooperation (State Taxation Administration, People's Republic of China, 2018, p. 1).</li> </ul>
<p style="text-align: center;"><b>Finland (Vero Skatt)</b></p> <ul style="list-style-type: none"> <li>• Ensuring tax revenue by acquiring and utilising tax data;</li> <li>• Ensure the ease of tax filing, fair tax assessment and a positive taxpayer experience;</li> <li>• Focus will be shifting to analytics and AI, global cooperation and interfaces as well as the acquiring and optimised utilisation of data (Vero Skatt, 2019).</li> </ul>	<p style="text-align: center;"><b>HM Revenue and Customs (HMRC) UK</b></p> <ul style="list-style-type: none"> <li>• Transformation of tax and payment systems for its customers;</li> <li>• Transforming its approach to compliance by designing and implementing digital systems and processes;</li> <li>• The optimised utilisation of data;</li> <li>• Acquire information from online intermediaries (HMRC, 2017, p. 1).</li> </ul>
<p style="text-align: center;"><b>India</b></p> <ul style="list-style-type: none"> <li>• Developing data warehouse and business intelligence solutions;</li> <li>• Meeting the challenges of international tax administration by ensuring surveillance of fund flow (Income Tax</li> </ul>	<p style="text-align: center;"><b>New Zealand</b></p> <ul style="list-style-type: none"> <li>• Information and intelligence gathering by ensuring that decisions and actions are intelligence-led;</li> <li>• Digital by fully embracing their place in the digitally connected world (Inland Revenue, New Zealand, 2019, p. 1).</li> </ul>

Department: Government of India, 2011:1).	
<b>South Africa</b>	<b>United States</b>
<ul style="list-style-type: none"> <li>• Modernise systems;</li> <li>• Provide seamless online digital services</li> <li>• Make it easy for taxpayers to comply and difficult and costly not to comply;</li> <li>• Use data for insights, risks and improved outcomes;</li> <li>• Work with and through national and international stakeholders to improve tax systems (South African Revenue Service, 2020, pp. 11-24).</li> </ul>	<ul style="list-style-type: none"> <li>• Simplify the process of tax filing, correction and payment as well as modernising and expanding of service channels;</li> <li>• Optimise the use of data and technology;</li> <li>• National and international collaboration in order to address global compliance concerns;</li> <li>• Advance data and analytics by updating data collection and retrieval capabilities and processes;</li> <li>• Drive efficient operations by modernising and integrating technologies and systems (US Internal Revenue Service, 2018, p. 1).</li> </ul>

Source: Author.

From the summary in Table 1, it can be deduced that the successful execution of international tax authorities' mandate and the achievement of the related strategic goals rely heavily on the optimised use and implementation of data and technology. It can be deduced that the digital focus of tax administrations is aimed at improving the following five key generic strategic goals.

*1. Make it effortless to comply and a burden not to comply.* The strategic goals of authorities of Finland, India, Australia, New Zealand, South Africa, the UK and the US mention the fact that tax authorities should ensure the ease of tax compliance and increase the difficulty to evade taxes. All of the strategies imply that tax compliance should be effortless for the taxpayer and burdensome for the non-compliant taxpayers. Digital strategic goals to acquire information and intelligence from online intermediaries, third parties and other stakeholders are regarded as efforts to make tax non-compliance a burden.

*2. Modernisation and integration of technology and systems in order to optimise tax administration.* The modernisation and integration of technologies and systems in order to ensure agility, as well as a secure and accurate tax administration system, are a common goal among all eight evaluated tax authorities. This goal is specifically included in the strategic objectives of Australia, South Africa and the US, but implied indirectly by the rest of the evaluated countries.

*3. Utilisation of data, engineering, analytics and science in order to improve taxpayer services, systems and operating systems.* Although the details provided about how data will be utilised in order to ensure effective and efficient tax administration vary according to country, it is clear that

optimal use of data for tax administration purposes is a key strategic objective. Australia, China, South Africa, the UK and the US specifically refer to data engineering, analytics and science in their strategic goals.

*4. International cooperation among tax authorities, as well as other key stakeholders.* The digitalisation of the economy enables taxpayers to globalise their business and financial presence. International cooperation and digital information-sharing among tax authorities and other key stakeholders globally will become a critical tool for optimised tax administration. While China, New Zealand, South Africa and the US are the only countries that specifically mentioned international collaboration, cooperation is implied by all other evaluated tax authorities and supported by international organisations, such as the Organisation for Economic Co-operation and Development (OECD).

*5. Seven-hundred-and-twenty-degree (national and international) view of taxpayers.* This approach allows tax authorities to have a full 360-degree view of the taxpayer, both domestically and internationally. This 360-degree view will be achieved by data collection and sharing efforts on both a domestic and international level and by collaborating with various parties, ranging from international tax authorities to global financial institutions and digital platforms. While none of the above tax authorities specifically noted this goal in their strategic objectives, it can be deduced from the other four digital strategic goals listed above. International collaboration and the modernisation of technologies and systems, together with the optimisation of data engineering, analysis and science will inevitably result in a holistic national and international view of taxpayers. This enhanced view of taxpayers will mainly be achieved by the consolidated interaction of digital and legal systems, such as e-invoicing, Country-by-Country (CbC) reporting and the automatic exchange of information, among other things.

#### **4 INTERVIEW RESULTS AND DISCUSSION**

In order to identify the reform of international tax authorities towards their alignment to the five digital strategic goals listed above and optimised tax administration within the digitalised economy, interviews with representatives of selected tax authorities were conducted. In cases where limited response was provided by the interviewee, the data collected during an interview was supplemented with a review of existing literature. It became clear during the interviews that the digital response from the participating tax authorities from developed and developing economies differed substantially. In order to prevent the distortion of the research results, the data that was collected was documented in three categories to reflect the results for participants from developed economies, participants from developing economies and the combined research results. The results are set out in sections 4.1 to 4.6 below.

#### **4.1 Digital response to optimise the tax administration system within the digitalised economy**

In order to obtain a general view of the participating tax authorities' information technology response to ensure optimised tax administration within a digitalised economy (strategic objective 1 as set out in section 3 above), the following question was posed: *'How did your tax authority respond, in general, from an information technology perspective, to ensure efficient and effective tax administration?'*

The evaluated responses were categorised according to three categories, namely 'advanced', 'intermediate' and 'limited' responses. An 'advanced' digital response was allocated to a participant in the following circumstances. These are, first, that the tax administration system integrates and consolidates with the natural ecosystem of business and regulatory framework (e.g., accounting systems, financial institutions, digital service platforms, cryptocurrency platforms and payment systems). The system, furthermore, allows taxes to interact seamlessly as a business transaction occurs, whereby taxes are collected and verified in (near) real-time. Tax returns for all tax types are pre-populated and assessed based on the data collected within this digitally connected ecosystem. Tax assessments are issued by the tax authority and the taxpayer verifies and confirms the accuracy of the assessment within a specified timeframe. The tax administration system therefore reduces the time and money spent by the tax compliant taxpayer, but significantly increases the time and money spent by non-compliant taxpayers.

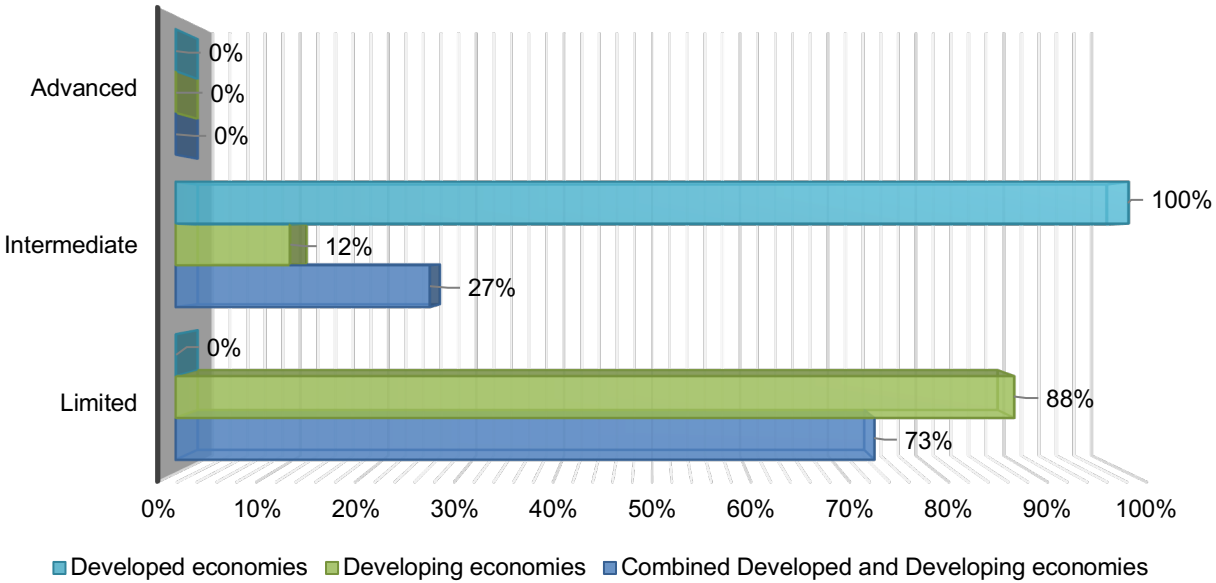
An 'intermediate' digital response was allocated to participating tax authorities whose tax administration systems have the ability of advanced data analysis of data collected from taxpayers and third parties coupled with the information technology that supports advanced data input and analysis. Taxpayers either receive electronic tax assessments with limited time to confirm the accuracy and completeness or the tax authority calculates the due taxes in (near) real time and provides taxpayers with limited time to verify the accuracy and completeness of the tax authority's tax calculations<sup>4</sup> for at least the three main tax types (personal income tax, value added tax/goods and services tax (VAT/GST) and corporate income tax). The registration, submission and payment process for all tax types are, however, digitalised.

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<sup>4</sup> It should be noted that the limited time period provided to a taxpayer to verify the accuracy and completeness of the assessment is only for administrative purposes. It does not take away the taxpayer's legal right to re-open the assessment within a three to five-year period (guided by jurisdiction-specific tax legislation) in cases where the taxpayer would like to make adjustments to the tax assessment.

A 'limited' digital response was allocated where the participating tax authorities' tax administration systems are digitalised with the ability to access third party data, pre-populate tax returns and calculate the tax liability, but the data used is inaccurate and incomplete. A 'limited' response was, furthermore, allocated to tax authorities in cases where the tax administration system was either partially digitalised (not all tax types were digitalised yet) or not digitalised at all, which requires the taxpayers to physically visit the tax branches in order to register, submit or pay their taxes. The results of the interviews are presented in Figure 1.

**Fig. 1: Digital Response to Optimise the Tax Administration System within the Digitalised Economy**



Source: Author.

None of the participants operated at an advanced or optimised tax administrative level, as defined in this study. All (100%) of the participating tax authorities from developed economies and 12% of the participants from developing economies reflected an intermediate digital response to optimise tax administration within the digitalised economy. However, 88% of participants from developing economies reflected a limited digital response to optimise tax administration within the digitalised economy.

Other observations that were made include the fact that advanced technology is applied to inaccurate and incomplete taxpayer data. An example includes the application of self-assessment and government calculated taxes by using inaccurate and incomplete taxpayer data. This imbalance in technology and data maturity increased the taxpayer's time and money spent to be tax compliant instead of reducing the taxpayer's expenses and therefore it lowered the

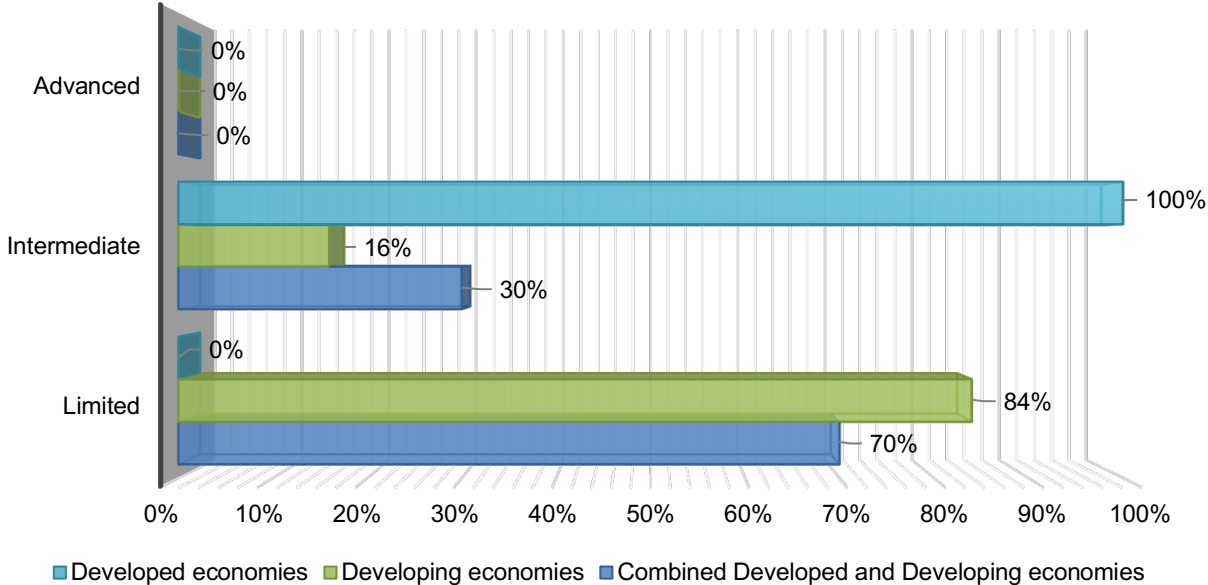
participants' overall digital response. A number of participating tax authorities that reflected limited digital responses were observed to offer online tax submission and payment services for only the main tax types, such as employee taxes, corporate income taxes and personal income taxes. These services are, however, not extended to other tax types, such as estate, dividend and/or donation taxes and are not currently digitalised service offerings to taxpayers. Therefore, the services are only partially digitalised. The basic digital service offerings, such as the respective official websites, online tax registration and tax submission and payment processes (if available) of the majority of participants with 'limited' responses were observed to be complex in comparison to the simplicity of the participants with 'intermediate' response ratings.

In addition, a culture of creativity and innovation was observed among participants with intermediate digital responses. Creative spaces and 'sandboxes' were created that allow the workforce to share, innovate and design new ideas and service offerings. A culture of multi-functionality was also observed in some instances where the digital workforce had multidisciplinary backgrounds, which aligned with the tax administration process spanning from operations, digital and data to customer service offerings. Furthermore, the respective tax authorities' leaders demonstrated their understanding of the impact of digital transformation on an optimised tax administration system by implementing clear and focused long-term digital strategies supported by the required capital investment.

#### **4.2 Data science, automation and artificial intelligence (AI)**

Data science, automation and AI are critical elements with regard to the achievement of the five digital strategic objectives identified in section 3. In order to assess the current level of utilisation of these tools by the selected tax authorities, the following question was posed to the participants: *'To what extent does your tax authority use big data, automation and artificial intelligence? (limited, intermediate, advanced)'*. The results are summarised in Figure 2 below.

**Fig. 2: Level of Utilisation of Big Data, Automation and AI**



Source: Author.

The utilisation of big data, automation and AI was regarded as ‘advanced’ in instances where only critical data (right data) was collected by the participants, while the tax authority securely connected to other data required (refer to section 4.3 below). Data is processed and is consolidated in order to maximise the benefit of data science and analysis. The data is then used at an enterprise level for tax administration purposes instead of being used in functional siloes. The participants’ tax administration system, furthermore, has the ability to collect and ingest structured and unstructured data from traditional and digital platforms with the capability to share data nationally and internationally. All stages of the data lifecycle,<sup>5</sup> where possible, are automated. The tax authority’s data integrity is high and utilises AI across the organisation to its maximum extent, with limited human intervention for governance purposes.

In cases where the participating tax authorities collected data from various data sources (internally and externally, including digital platforms) and where the data is accurate, complete and of good quality, the authority’s utilisation of big data, automation and AI was deemed ‘intermediate’. In these cases, the data is further utilised across the organisation for various purposes, spanning the enhancement of service offerings, analysis of taxpayer behaviour, risk management, informed

<sup>5</sup> Data lifecycle refers to the phases by which the data enters the system until it leaves. This cycle typically consists of the following seven phases: data generation, data transmission, data storage, data access, data reuse, data archiving and data disposal (El Arass, Tikito & Souissi, 2017, pp. 1-9).

decision-making and policy reform. Automation is used to some extent, and the use of AI is limited or absent.

A 'limited' response was allocated in cases where the data was not accurate and complete and/or it was not considered or used across the organisation. The data was, furthermore, stored in siloes with limited ability to collect data from platforms associated with the digitalised economy. The use of automation was limited, and the use of AI was absent. A 'limited' response was also allocated in cases where participants have not automated the tax submission and payment process, which resulted an imbalance between technology and data maturity levels.

None of the participating tax authorities reflected an advanced big data, automation and AI response to tax administration within the digitalised economy. This was in most instances due to the fact that an optimised data management strategy was not followed and/or data was stored in siloes and advanced AI was not implemented to its full extent by any of the participants, despite a fairly advanced implementation of big data science. An intermediate rating was allocated to all (100%) of the participants from developed economies and 16% of the participants from developing economies regarding the utilisation of big data and automation as tools for tax administration within the digitalised economy. A limited response was allocated to 84% of participants from developing economies with regards to the utilisation of data science and automation as tax administration tools within the digitalised economy.

#### **4.3 Data management strategy (data collection vs. data connection)**

Data management and governance within the digitalised economy has become an imperative and critical function of tax authorities globally. This is mainly due to the increased amount of data that is and will be collected in future, the sensitive nature of data collected by tax authorities and the related legislative requirements associated with data collection and storage. The establishment of a balance between collected data vs. data connection is therefore becoming a critical consideration to tax authorities worldwide. Therefore, the following question was posed to the participants: *'Does your tax authority collect all data or collect only critical (right) taxpayer-related data and connect to the rest of the data as and when needed (collection vs. connection)?'*

The majority of tax authorities interviewed still collect and store all tax-related data collected from either taxpayers and/or third parties such as financial institutions, international authorities and government institutions. Some of the leading tax authorities also started to collect data from digital and cryptocurrency platforms, payment intermediaries and e-invoicing data. The latter significantly increases data storage, management and processing costs as well as the related governance risks such as cyber-security and data integrity breaches. It was, furthermore,

observed that the majority of participating tax authorities maintain redundant data that are not utilised to add value to the tax administration process.

In order to address the above challenges, an optimised data management strategy that identifies critical tax administration data that must be collected and other relevant data which can be accessed through secure data connections, is thus critical. Data connection refers to the collaboration with relevant third parties and stakeholders in order to have (near) real-time access to relevant tax data and information on demand without having to collect and store the data. This will enable tax authorities to have access to standard tax administration and special purpose tax data without the related cost and risks associated with collecting and storing it onsite. Technology such as secure automated programming interfaces can be used to enable the recommended connection(s).

#### **4.4 Data architecture (data stored in siloes or consolidated data warehouses)**

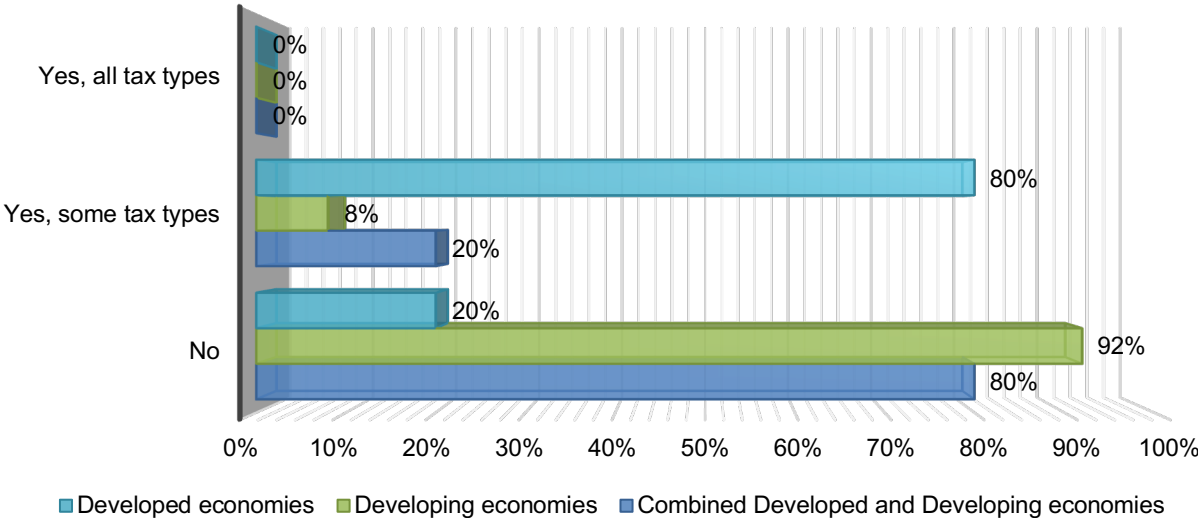
The utilisation of consolidated data will be critical for efficient and effective risk analysis as well as enhanced taxpayer service delivery (strategic objectives 1, 2 and 3). The following question was posed to the interviewee: *'Is your tax authority's data used for data analysis consolidated or in siloes?'*

Of the participating tax authorities, 90% store their collected data in siloes or islands, which limits the optimal use of data for purposes of tax risk identification, taxpayer service delivery and any other application of data science. The three participants that use consolidated data warehouses were of the opinion that the specific option is associated with an increased infrastructure and storage cost, as well as a significantly higher cyber security risk. Cybersecurity is in these cases especially high due to the highly confidential nature of taxpayer information collected. The benefits, however, outweigh the associated cost and the cybersecurity risks are mitigated by relevant internal controls. Another observation made during the study is the underutilisation of collected customs data due to the siloed data or island storage architecture adopted by the majority of the participants.

#### **4.5 Tax ecosystems/(near) real-time tax collection**

It is predicted that tax administration will become part of normal business transactions and that tax authorities will collect taxes in (near) real-time (strategic goals 1 and 2). The following questions were posed to the selected tax authorities: *'Does your tax authority currently collect tax in (near) real time? (No, some tax types, all tax types)'*. The results are presented in Figure 3 below.

**Fig. 3: (Near) Real-Time Tax Collection**



Source: Author.

None of the participants reflected an ‘advanced’ digital response with regards to the implementation of a natural tax ecosystem and/or (near) real-time tax collection systems in terms of which all tax types are collected in (near) real-time. Eighty per cent of the participants from developed economies and 8% of the participants from developing economies have started to collect some of the tax types in (near) real time. The participants that are currently collecting taxes in (near) real-time implemented it per tax type and started with pay-as-you-earn or employment taxes. They subsequently phased in (near) real-time tax collection of indirect taxes. Twenty per cent of participants from developed economies and 92% of participants from developing economies do not yet apply (near) real-time tax collection.

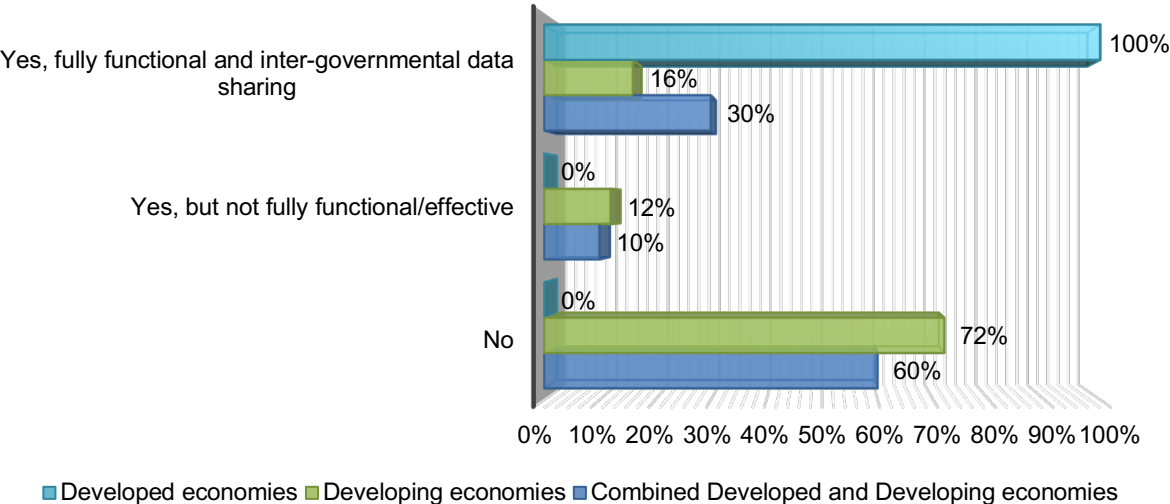
The participants from developing economies noted challenges for the implementation of (near) real-time tax collection, such as budgetary constraints, capability shortages, insufficient internet connectivity, lack of political support, political interference, IT illiteracy of taxpayers and cultural preferences of taxpayers. The majority of participants, however, indicated that they would like to move to a (near) real-time tax collection system in the near future.

**4.6 National and international data sharing and collaboration**

The digitalisation of the economy allows tax authorities to collect and connect to relevant taxpayer data from other government entities, as well as key stakeholders, such as financial institutions and digital platforms, both locally and internationally. The extent to which the tax administrations are able to collect and ingest tax-related national and international data (strategic objective 3) will also enable them to reach strategic objective 1. Digitalised governments are enabled by the

digitalisation of the economy and will play an imperative role in tax authorities' ability to collect tax-related data. The following question was posed to the participants: 'Does your country have an "e-government" strategy where all relevant departments are digitalised and where common information regarding a taxpayer can be shared inter-governmentally? (No, yes, but limited effectiveness to date, yes, fully functional and inter-governmental data sharing)'. The results follow in Figure 4

**Fig. 4: E-Government and Inter-Governmental Data Sharing**



Source: Author.

The results indicate that 100% of participants from developed economies and 16% of participants from developing economies share tax-related data inter-governmentally on a domestic level. Data sharing may, however, only be to, from or between specified agencies, as guided by the relevant legislation. Twelve per cent of participants from developing economies indicated that inter-governmental data sharing is to some extent used. Participants in this category indicated that data is shared cross-governmentally in instances where the departments have been digitalised, but that challenges are experienced regarding the quality of the data. All departments, furthermore, have not digitalised their systems which impacts the completeness of the collected taxpayer data. Seventy-two per cent of the participants reflected that no inter-governmental data sharing is possible due to the lack of digitalised governmental systems. The majority of participants indicated that their governments are considering, or are in the process of, digitalising their systems.

The results (as set out in Figure 4), however, only provide insight regarding domestic digital exchange of tax-related information. The interviews and literature study indicated that international sharing of tax-related information among tax authorities and other relevant stakeholders has also commenced. In order to prevent base erosion and profit shifting, the OECD recommends CbC reporting under Action Plan 13 of its Base Erosion and Profit Shifting (BEPS) project.<sup>6</sup> In terms of this initiative, multinational entities (MNEs) that fall within the scope of the specified reporting requirements must submit specified company-related information in terms of the CbC reporting framework. The submission of the required information is mandatory and should be submitted in terms of the tax authorities' available submission platforms.<sup>7</sup>

In addition, 90 countries globally have already amended their legislation and 25 countries have proposed the required amendments in order to make provision for CbC reporting, as at 15 February 2020 to the multilateral competent authority agreement on the exchange of CbC reports (OECD, 2020b, p. 9). The collected information is, however, not consolidated into a global database, nor is it exchanged automatically. This is due to both digital and legal challenges associated with the sharing of data. Information can currently only be shared among tax authorities upon request in terms of a multilateral competent authority agreement of which 86 agreements have been signed globally, as at 23 July 2020 (OECD, 2020c, p. 31; OECD, 2020d, p. 1). Another OECD-led initiative to curb tax evasion on foreign income is the Automatic Exchange of Information (AEOI) agreement. Financial institutions around the world are obliged to collect information on financial accounts held by non-residents and share prescribed information with their local tax authorities. The latter, in turn, share it with the relevant tax authority of the foreign account holders.<sup>8</sup> There are currently 112 countries that undertook to do their first exchange of information by at least 2023, with 45 developing countries that have not yet set a date for their first automatic exchange (OECD, 2020e, p. 1).

The feedback from the participants suggested that, although international tax authorities share information as per the above initiatives, challenges are experienced regarding the integrity and

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<sup>6</sup> See, for example, Australian Taxation Office, 'Country-by-Country reporting', <https://www.ato.gov.au/Business/International-tax-for-business/In-detail/Transfer-pricing/Country-by-Country-reporting/> (accessed 20 October 2020).

<sup>7</sup> Australian Taxation Office, 'Country-by-Country reporting', <https://www.ato.gov.au/Business/International-tax-for-business/In-detail/Transfer-pricing/Country-by-Country-reporting/>.

<sup>8</sup> Findex, 'Global tax authorities to begin sharing information', <https://www.findex.co.nz/insights/article/global-tax-authorities-to-begin-sharing-information> (accessed 20 October 2020).

format of the data that is received, as well as with the effective and efficient utilisation of the data in order to identify tax risks. While national and international information sharing will be critical for optimised tax administration within a digitalised economy, the above results indicate that national and international tax-related data and information sharing is not yet optimised due to both digital and legal challenges that still require further development and discussion.

## **5 RECOMMENDATIONS**

The research results (as set out in sections 4.1 to 4.6 above) reflect a major difference between participants from developed and developing economies with regard to their digital response to optimise tax administration within the digitalised economy. These results are symptomatic of a general observation made during the study regarding a major difference in the digital maturity levels among the participants. Internal imbalances among data and technology maturity were, furthermore, identified within the participating tax authorities, which negatively influenced their overall ability to administer and collect taxes within the digitalised economy.

Due to the fact that digitalisation eliminated country borders and globalised the economy, it might be argued that a global minimum standard for digital tax administration systems should be set in order to regulate the particular environment. This will serve a dual purpose by first ensuring a minimum, standardised tax administration service offering for highly digitalised MNEs and tax-compliant participants within the digitalised economy. Secondly, it will reduce the tax administration and collection gap among tax administrations from developed and developing economies.

Black (2002, p. 25) defines regulation as ‘the sustained and focused attempt to alter the behaviour of others according to defined standards and purposes with the intention of producing a broadly identified outcome or outcomes’. Black (2002, p. 25) states that this may be achieved by using mechanisms, such as standard-setting, information-gathering and behaviour modification. Reflecting on the research results and the objective of regulations, as defined by Black (2002, p. 25), the first recommendation we make is the independent formal assessment of international tax authorities’ current digital (and possibly other such as organisational and political) maturity levels in order to identify the global level of assistance required to optimise tax administration within the digitalised economy. It is recommended that a standard list of elements for consideration are provided in order to ensure that international tax authorities consider the same digital (and other) maturity elements.

Secondly, we recommend that minimum digital maturity standards are set for tax authorities globally and regulated by an independent or international body in order to ensure tax

administration systems adhere to at least a minimum level of standard within the digitalised economy. Third, it is recommended that international consensus is reached on what an 'optimised' tax administration system should look like within the digitalised economy and how tax authorities globally will achieve this goal considering the various digital and legal challenges, as well as the specific challenges of tax authorities from certain developing economies. A global, long-term strategy should be compiled, implemented, monitored and adjusted as and when required in order to optimise tax administration within the digitalised economy.

## **6 CONCLUSION**

The research results highlight the fact that data and technology will play a fundamental role in the realisation of tax authorities' strategic goals regarding the digitalisation of the economy. While these identified goals are all necessary building blocks towards an optimised tax authority, there was only limited literature which could, however, be identified regarding the composition, architecture and key features of an optimised tax administration within the digitalised economy and how international tax authorities envision reaching such an advanced state of operation.

Section 4 above indicates that the digital responses to administer taxes within the digitalised economy of participants from developed economies and a minority of participants from developing economies are in most instances on an intermediate level. The digital responses of the majority of participants from developing countries to administer taxes within the digitalised economy are limited. General challenges indicated by these participants include budgetary constraints, digital connectivity limitations (across data and technology), political interference and the taxpayers' cultural preferences.

None of the participants reflected an 'advanced' response as defined for the purposes of this study in relation to their tax administration systems within the digitalised economy. The majority of participants from developed economies and a minority of participants from developing economies reflected an 'intermediate' digital response. The majority of the participants from developing economies reflected a 'limited' digital response in this regard and the overall response for the combined sample was 'limited'.

The research results, furthermore, indicate that none of the participants utilised big data, automation and AI on an 'advanced' level, as defined for the purposes of this study. The combined research results indicate that 30% of the participating tax authorities utilised big data and automation on an intermediate level, while 70% utilised it to a limited extent due to challenges, such as data integrity and the partial digitalisation of tax administration systems. A significant number of participants also still utilise data in siloes, which prohibits them from realising the full

potential of data science, automation and AI. The research results further indicate that national and international data sharing is not currently on a standard that will ensure optimised tax administration within the digitalised economy. This is due to both digital and legal challenges and considerations.

An interesting observation of the study is that the overall digital maturity of tax authorities is negatively influenced where an imbalance exists between either data availability and/or quality and technology capability. The opposite is also evident as a balanced ecosystem between quality data and technology seems to lead to an increase in the efficiency and effectiveness of tax administration. The overall expectation is that tax authorities that follow a balanced and innovative approach to introduce and use data and technology can expect a systematic increase in the taxes that are collected.

In summary, the research results suggest that some participating tax authorities have demonstrated commendable responses to enhance their existing tax administration systems. However, none of the participants' responses resulted in an optimised tax administration system within the digitalised economy (as defined in section 4.1).

## **7 FURTHER CONSIDERATION AND STUDIES**

The study's findings suggest that there might be a direct correlation between the balance in maturity levels between data and technology and the successes experienced in administering and collecting taxes. The study further suggests that tax administration and collection are negatively affected in cases where an imbalance exists in maturity levels between the data and technology. The testing of the latter theory and quantification of the various outcomes with reference to the impact on increased taxes collected and the decrease in auditor investigation cost would add valuable information to the business sector and the academia alike.

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**CHAPTER 5 (RESEARCH ARTICLE 3)**

**TAX RISK ASSESSMENT AND ASSURANCE REFORM IN RESPONSE  
TO THE DIGITALISED ECONOMY**

The reader is requested to take note of the following:

This research article has been submitted for publication to the following IBSS indexed, peer-reviewed and Australian department of education accredited academic journal as follows:

Strauss, H., Schutte, D. & Fawcett, T. Tax risk assessment and assurance reform within a digitalised economy. Journal of Telecommunications and the Digital Economy (JTDE). Published (ISSN 2203-1693).

The article was researched and written by the first author as the candidate. The second and third authors fulfilled a “reviewer” function thereto as the study’s promoter and assistant promoter. Estimated weightings of contribution are as follows:

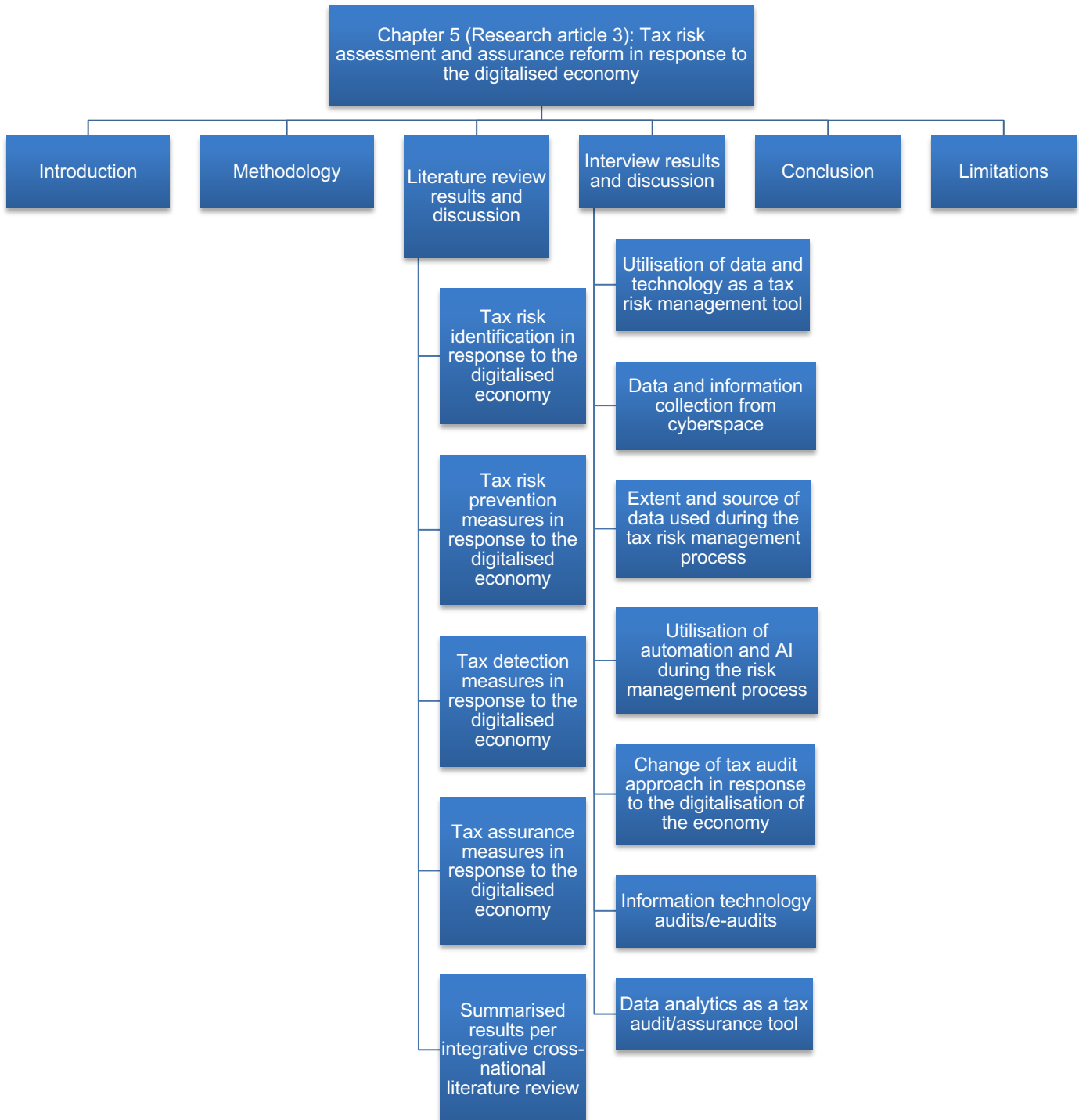
Strauss, H. (80%)

Schutte, D. (10%)

Fawcett, T. (10%)

Confirmation of receipt of the article from JTDE was received and is presented as part of Annexure E on page 271. The article was written in line with the journal’s submission guidelines, which are included as part of Annexure E on page 271.

## CHAPTER 5 (RESEARCH ARTICLE 3) OUTLINE



## **Abstract**

The digitalisation of the economy has increased tax administrations' traditional tax risks and introduced new tax non-compliance risks, such as the use of income suppression software and tax fraud associated with the use of alternative payment methods, such as cryptocurrencies. This study focuses on the global reform that took place among tax authorities from a tax risk management and assurance perspective. The study was executed in two phases, including a cross-national literature review to synthesise international reform regarding tax risk management and assurance in response to the digitalisation of the economy. This process was followed by interviews with risk, technology and data experts of 30 global tax authorities in order to evaluate the level of implementation of the global reform measures identified in the first research phase. The research results suggest an imbalance in reform among participants from developed and developing economies. An inability to optimise tax risk and assurance management within the digitalised economy will negatively impact the tax authorities' ability to maximise tax collection within the digitalised economy. This is especially concerning if the significant role of digital platforms on future global economic value creation is considered.

**Keywords:** Data science, digitalised economy, information technology audit, risk management, tax reform

## 1 INTRODUCTION

Few other organisations besides tax administrations have to deal with such a significant number of risks, not only including the standard array of enterprise risks such as economic, financial, strategic, operational, fraud, compliance and information technology risks, but also tax risks ([Boitnott, 2019](#); [European Commission, 2006](#)). The digitalisation of the economy has increased the risk of tax fraud and tax evasion and, as such, an agile and innovative risk management approach has never been as important as it is now ([Barbantini & Savini, 2018](#)).

Digital tools that are specifically designed to defraud tax authorities, as well as to disrupt the economy, have increased the risk of anonymity and the non-detection of tax fraud and evasion ([Ainsworth, 2016](#), [ICAEW, 2019](#); [OECD, 2013](#); [OECD, 2017a](#); [OECD, 2017b](#)). The digitalised economy introduced new business models to the global economy. Highly digitalised multi-national entities' (MNEs) main generators of income have shifted from tangible products and services coupled with a physical presence in specific jurisdictions to intangible assets, intellectual property, globalised digital services and digital or crypto currencies that lack physical presence and substance ([OECD, 2018](#)). The biggest companies in the world used to be manufacturers, retailers and property investment companies, but digitalisation changed this reality. Today, some of the biggest companies in the world are platform providers, data collectors and digital advertisers – all with limited physical presence and alternative value creation models ([ICAEW, 2019](#)).

Risk management is the process of managing a range of uncertainties about the outcomes of situations that affect value creation. The process's objective is to manage and control uncertainty and threats to value creation. The latter ensures that the operational process continues and effectively manages the possible impact of risk on organisational achievement ([Sithipolvanichgul, 2016](#)). The organisational achievement or mandate of tax authorities worldwide is to administer and enforce the revenue laws, which generally results in the collection of the bulk of revenues required to support a state or country ([Crandall, 2010](#)). Inference can therefore be drawn that a redundant and outdated risk management process and approach will impact tax authorities' ability to optimise tax revenue collection. This statement is supported by the compliance risk management guidance issued by the OECD ([2004](#)).

The risk management process can be divided into four main categories, namely risk identification, risk prevention, risk detection and correction ([Tripathi, 2013](#)). An optimised risk management process assists tax authorities to achieve their mandate, but also to ensure the equal treatment of taxpayers, to focus the assurance process on non-compliant taxpayers, to utilise the available resources (human, technology and finance) effectively, to increase the level of voluntary compliance, to ensure agility within the risk management system and to evaluate the probability

of compliant taxpayers becoming non-compliant ([European Commission, 2006](#)). It is expected that this risk management process will remain valid within the digitalised economy, because the objectives of the risk management process remain unchanged. However, the approach to identify, assess, prioritise and correct tax risks within the digitalised economy requires change. This required reform is mainly due to the way that highly digitalised enterprises create value and transact. These business models' global impact, and the strong reliance on and creation of data further made tax risk management reform essential ([European Commission: 2006](#)).

Information sources that are used by tax authorities during the risk management process are increasingly based on data sourced from third parties and information generated in foreign jurisdictions. This data is often unstructured. The timing of tax risk management has also changed from ad-hoc, annual processes to (near) real-time ([OECD, 2017c](#)). The type of treatment changed along with simpler tasks becoming increasingly more automated and the application of methods to manage tax risk where new tools and models are allowing administrations to manage “complete right datasets” rather than using risk-based approaches to allocate scarce resources ([OECD, 2017c](#)). The extent to which information or the collection of right data can be used during the tax risk management process is, however, limited by various factors. These factors include the tax authority's ability to ingest the information, the legality of the process, the value that new information or data can add in addition to what is already available (risk of information overflow), the capacity of information technology systems in use and the cost associated with obtaining new data ([European Commission, 2006](#)).

Although the pre-existing tax risk of non-registration, the understatement of taxable income, the overstatement of tax-deductible expenses and disguised transactions as a result of criminal activity remain relevant, the digitalisation of the economy has increased these risks significantly. This is mainly due to the business model changes and digital tools designed to manipulate taxable income. The literature, however, indicates that additional challenges were introduced with the digitalisation of the economy. The first challenge relates to tax authorities' legal right and ability to access and exchange data from digital platforms to enable them to identify and detect possible tax risks. Another challenge relates to the enforceability of country-specific tax legislation to non-registered international individuals or enterprises ([Azam, 2007](#); [European Commission, 2018](#)).

Furthermore, tax authorities must ensure that they appropriately respond to identified and/or detected tax risks. Risk covering or the correction process focuses on non-compliant individuals or enterprises and usually results in the recovery of tax shortfalls to the tax authority in cases where an identified or detected tax risk was realised. Rectification can take place in monetary terms by issuing or amending a tax assessment to recover the evaded tax and related penalties. In some cases, other sanctions such as criminal sanctions are available ([European Commission,](#)

[2006](#)). Criminal sanctions as corrective measures usually fall within the assurance or audit ambit. If executed successfully, these sanctions might have a deterrent effect that not only applies to the behaviour of the individual or enterprise but, via its social and commercial network, influence other individuals or enterprises that have adopted similar tax positions ([European Commission, 2006](#)).

A tax audit or assurance is “an examination of whether a taxpayer has correctly assessed and reported their tax liability and fulfilled other obligations” ([OECD, 2006](#)). The assurance process of the majority of tax authorities can generally be divided into at least three categories. The first category refers to a verification process or single-issue audits where the verification is confined to only one potential non-compliance risk. These verifications take less time to perform and are used to review large numbers of taxpayers. The second category is “limited scope” audits where the assurance process is confined to specific risks per tax return submitted. The third category is “comprehensive/full audits”. The scope of these audits is all-encompassing and entails a comprehensive examination of all the information that is relevant to calculating the taxpayers’ tax liability and may include criminal investigations ([OECD, 2006](#)).

The World Economic Forum (WEF) ([2020](#)) estimates that 70% of new value created in the global economy over the next ten years will be based on digital platform business models. This change requires that reform takes place in not only international and domestic tax policy, legislation and the related systems to optimise tax administration, but it also requires a change in relation to the way that tax authorities manage tax risks and the related assurance process.

One of the questions that, however, arises is to what extent have tax authorities globally changed their risk management and assurance approach in order to optimise their ability to execute their mandate in response to the digitalised economy. The objective of this paper is to evaluate and analyse the reform of the tax risk management and assurance process of tax authorities, globally in response to the digitalisation of the economy.

Section 3 synthesises and evaluates the available literature in relation to international reform that took place regarding the tax risk assessment and assurance process in response to the digitalisation of the economy. The level of implementation of the main reform measures identified in section 3 are subsequently measured among selected international tax authorities. These research results and discussions are documented in section 4. The overall conclusion relating to global reform among tax authorities relating to tax risk management and assurance in response to the digitalisation of the economy is documented in section 5. Section 6 sets out the limitations on the scope of the study. Matters for future consideration and research are set out in section 7.

## 2 METHODOLOGY

An inductive, qualitative, cross-national study was executed to collect data with the intention to build new knowledge with regards to the research topic. The study was conducted in two phases. The first phase of data collection comprised a semi-structured and integrative literature review in order to identify, collect and synthesise data regarding tax authorities' tax risk management and assurance reform in response to the digitalisation of the economy. The objective of the literature review was to synthesise the cross-national data that is available in order to identify the main tax risk management and assurance reform measures implemented in response to the digitalisation of the economy. These identified measures were subsequently used to inform and formulate interview questions posed to selected global tax authorities in order to evaluate the level of global reform of tax authorities on the subject matter. Sources identified for the cross-national, integrative literature review were balanced between international organisations, such as the Organisation for Economic Co-operation and Development (OECD) and the European Commission, as well as important stakeholders within the business sector. It was found that documented academic literature on the research topic was limited. The literature review results were synthesised, analysed and documented in section 3, as per the four tax risk processes identified in section 1: tax risk identification, tax risk prevention, tax risk detection and tax risk correction measures.

The objective of the second phase of the study was to evaluate the level of global tax risk management and assurance reform against the main technologies and data-related reform measures identified in the first phase of the study. The second phase of the study therefore comprised the collection of data and knowledge by means of semi-structured, qualitative interviews whereby open-ended questions were posed to selected tax authorities. Data was collected from conducting group interviews, one-on-one interviews and by means of direct observation. Manson ([2010](#)) confirms the relevance and applicability of interviews as a method of data collection. Secondary objectives of the interviews were to confirm the credibility and reliability of the data collected during the literature review. It was, furthermore, to collect rich and multi-layered data on the research topic that is not available from open source data resources.

Green and Thorogood ([2004](#)) indicate that limited value will be added to a qualitative study when more than 20 participants are interviewed. Ritchie *et al.* ([2003](#)), furthermore, state that researchers should not interview more than 50 participants in order to enable the researcher to manage the complexity of the analysis and the communication of research results. Based on the preceding literature, a sample size of 30 tax authorities was considered to provide a sufficient level of saturation that would provide reliable research outputs.

The sample was selected by firstly identifying and specifically selecting the leading tax authorities with regards to tax risk management and assurance reform in response to the digitalisation of the economy, as identified during the integrative cross-national literature review. The sample was subsequently supplemented by random sample selection. In order to ensure that the sample was representative of the global country population, tax authorities from both developed and developing economies were selected. The classification of developed versus developing economies, as indicated by the United Nations (2020), was used. For the purpose of this study, one selected participant from a country classified as “economies in transition” in terms of the United Nations’ (2020) classification was categorised under “developing economies” because it shared more characteristics with the participants of the developing economies. Further consideration was given to the fact that 36 countries from of a total of 195 countries globally are regarded as developed economies (United Nations, 2020; Worldometer, 2020). These 36 countries represent approximately 18% of the total geographical population. The sample of participating tax authorities consequently included five tax authorities from developed economies (18% of the total sample of 30 participants) and 25 tax authorities from developing economies.

The tax authorities selected for interview purposes are representative of Africa, Asia and Australasia, Europe and North America. The participants who were identified for interviews within the various tax authorities were key senior employees and experts within the field of tax risk management and assurance and were nominated by the tax authorities themselves. These participants were afforded the opportunity to respond in person, via digital platforms, telephonically or in writing. The preferred interview method of the interviewees was adopted, and the interviews were conducted in person, telephonically or per digital communication platforms. The interview questions, together with the purpose of the study were circulated to the respective tax authorities prior to the interviews. A minimum set of open-ended questions was posed to all the interviewees to ensure a minimum amount of knowledge and data would be collected.

Tax authorities, globally, follow different approaches regarding the level of transparency relating to tax risk and assurance management processes and measures. Some follow a transparent approach where the various tax risk measures and processes are shared openly (through publications) with the public. Other tax authorities, however, restrict access to these measures and processes to approved employees within the tax authorities only. While respecting these vastly different internationally adopted approaches, cognisance was also taken of the fact that possible weaknesses in the general environment and internal controls shared during the study by participants might put the participating tax authorities in a compromised position in some form or another. In order to ensure a safe environment for the participants that allows for the collection of

accurate data without publicly exposing the possible weaknesses of participating tax authorities, it was agreed that the participants of the study would remain anonymous.

The reliability and credibility of the research results were tested with three different triangulation methods. Supplementary literature reviews were conducted to verify the results, the research results were discussed with other international experts in the field and different sources were used to collect and verify the research results. Observers were also invited to the interviews to ensure unbiased interpretation of interview results.

### **3 LITERATURE REVIEW RESULTS AND DISCUSSION**

#### **3.1 Tax risk identification in response to the digitalised economy**

In the literature, three main “platforms” introduced by the digitalisation of the economy are cited. These platforms are e-commerce, the shared or gig economy and transacting with digital currencies or assets ([Azam, 2007](#); [OECD, 2020](#); [PwC, 2018](#)). It is suggested that the main tax risks associated with a digitalised economy include the fact that the taxpayer might not be registered within the tax jurisdiction where taxes are due. The lack of visibility of business activity within the digitalised economy increases this risk significantly ([OECD, 2017b](#)).

Another risk cited by the literature is the incomplete or inaccurate declaration of taxable income due to either a lack of knowledge of the specific tax requirements per tax jurisdiction or due to intentional tax evasion ([European Commission, 2006](#)). The utilisation of digital currencies or asset platforms also poses a major risk for intentional or unintentional tax evasion due to the (perceived) anonymous nature of the transactions and due to the uncertainty regarding the tax implications of these transactions ([Smith, 2018](#)).

Globally, there is a risk for either double or the non-taxation of businesses and individuals who operate within the digitalised economy ([PwC, 2018](#)). The current inconsistency among tax authorities globally regarding the legislative and administrative response to tax administration within the digitalised economy further increases the abovementioned tax risks ([Ernst & Young, 2019b](#); [OECD, 2017d](#)).

The risk identification process is followed by the design and implementation of mitigating measures to prevent, detect or correct the identified tax risks ([Frame, 2003](#)). International reform and controls that are put in place in order to prevent, detect or correct the identified tax risks, as per the literature, are discussed in sections 3.2 to 3.4.

### 3.2 Tax risk prevention measures reform measures in response to the digitalised economy

The objective of preventative measures is to stop a threat from occurring and is specifically applicable to risks that are regarded as high priority with a major impact ([Frame, 2003](#)). While preventative measures are not always 100% effective, they do provide the tax administration with the first line of defence to prevent base erosion and profit shifting (BEPS) and/or possible tax fraud or evasion. From the literature, it is clear that the main preventative measures used by tax authorities in order to prevent the realisation of tax risks identified in section 3.1 include legislative reform, access to data of digital platforms, digital invoicing solutions and taxpayer education. These measures are discussed below.

**Legislative amendments - direct and indirect taxes:** Several countries either amended their tax legislation in order to make specific provision for tax within the digitalised economy and/or issued practice notes in order to address the identified tax risks associated with the digitalised economy. Examples of countries that made legislative amendments in relation to direct and indirect taxes in order to prevent the tax risks associated with the digitalised economy from occurring include Albania, Argentina, Armenia, Australia, Austria, Bangladesh, Belarus, Bulgaria, Botswana, Brazil, Canada, Chile, China, Croatia, Denmark, Finland, France, Germany, Ghana, Guatemala, Iceland, India, Israel, Italy, Japan, Kenya, Malta, Malaysia, Moldova, New Zealand, Nigeria, Norway, Pakistan, Philippines, Poland, Portugal, Romania, Russia, Serbia, Singapore, Slovakia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Turkey, United Kingdom (UK), United States of America (USA), Uganda, Uruguay and Zimbabwe ([Ernst & Young, 2019b](#); [Huang, 2019](#); [IBFD, 2019](#); [KPMG, 2019](#); [Taxamo, 2019](#); [The law library of Congress, 2018](#)).

In the literature, however, it is cited that the legislative reform associated with the digitalised economy is complex and lacks uniformity ([Ernst & Young, 2019b](#); [European Commission, 2006](#); [Katz, 2015](#); [United Nations, 2019](#)). The complexity of legislative reform might therefore have exacerbated the tax risk of non-compliance within the digitalised economy.

**Access to data of digital platforms:** Digital platforms are “systems that entities can build on, that are open and not proprietary” ([Accenture, 2016](#)). Digital platforms are foundational to the majority of digital retail enterprises and it can be expected that the extraction and analysis of tax-related data should yield a high level of success in preventing and detecting tax non-compliance and fraud.

Australia and Argentina amended their legislation in order to ensure access to tax related data and make electronic distribution platforms liable for the collection of VAT/GST with regards to specified digital goods and services ([Musgrove, 2019](#); [OECD, 2018](#)). The European Union (EU) submitted a proposal for an implementation regulation in order to achieve the same results, effective from December 2020. The EU also made provision that these digital platforms share tax-relevant information with them in order to assist with tax compliance ([OECD, 2018](#)). The province of Ontario in Canada partnered with Airbnb to launch a new pilot project where Airbnb will educate its hosts through an email notification during tax season to remind them of their tax obligations ([OECD, 2017b](#)). Withholding tax arrangements made with platform sellers in order to prevent tax evasion was also identified by the Italian and Mexican tax authorities ([OECD, 2019](#)).

In the literature it is suggested that the lines and responsibilities between government and business with regards to tax collection and tax risk prevention and detection are “blurring” due to the digitalisation of the economy. Limited literature could, however, be identified that communicates the successes of the implementation the abovementioned preventative measures.

***Electronic invoicing solutions:*** Electronic invoicing solutions are based on the “online” authorisation of invoices and other documents. The taxpayer has to apply to the tax authority for authorisation to issue the invoice before the approval of a business operation like, for example, the sale of goods or services. Authorisation is required by the tax authority in order for the invoice to be considered a valid invoice with fiscal value. The information is validated online and if the invoice is authorised, an authorisation code or digital signature is allocated to it. Some models allow for the tax authority to store all the information entered on their database, while other models allow access to the information stored on the taxpayer’s database.

These tools provide the tax authority with the information of the issuer and the receiver of the invoice, which, in turn, allows the tax authority to issue pre-populated tax returns based on verified transactions. It should be noted that the e-invoicing rules applied by the various tax authorities globally differ with regards to the method, tax types, taxpayers and parties of the business transactions ([Czingege, 2019](#), [Deloitte, 2017](#); [OECD, 2017b](#), [Palazzi, 2018](#)). This is important to note as the application and implementation of e-invoicing as a preventative and detective measure will depend on the specific country’s risk evaluation per tax type, industry and enterprise.

Examples of tax authorities cited to have implemented electronic invoicing solutions as a preventative tax risk measure include Albania, Argentina, Armenia, Austria, Belgium, Brazil, Chile, China, Czech Republic, Columbia, Greece, France, Germany, Hungary, Indonesia, India, Italy, Kenya, Mexico, Peru, Russia, Singapore, Spain, the Slovak Republic and the UK. France will implement mandatory e-invoicing and pre-populated VAT returns from 2023 onwards ([Deloitte,](#)

[2020](#)). E-invoicing varies at scale on implementation between these countries and the objective of the solution is not only to prevent tax fraud, but also to detect it in cases where the preventative measure was unsuccessful.

From the literature, it can be pointed out that the majority of the tax authorities introduced the new tool by means of a phased-in approach. Cognisance should furthermore be taken that this preventative tool will have to be evaluated and adapted continuously to adapt to new technology and related tax evasion or fraud risks. E-invoicing can, furthermore, not currently be legally enforced upon non-resident businesses operating within the digitalised economy ([Deloitte, 2020](#); [OECD, 2017b](#); [Stanley-Smith, 2019](#)).

**Taxpayer education:** From the literature, it was found that tax authorities in countries, such as Australia, Denmark, France, Greece, Hungary, Ireland, Italy, Japan, the Netherlands, Norway, Singapore and the UK, have launched comprehensive education campaigns as a preventative tax risk management measure. Various platforms and technologies are used in order to educate individuals, businesses and tax representatives regarding the various tax implications and considerations within the digitalised economy ([OECD, 2019](#)). New platforms used by these tax authorities include LinkedIn, Facebook, Twitter, digital webinars and online courses and workshops with relevant learning manuals.

### **3.3 Tax risk detection reform measures in response to the digitalised economy**

In the literature, it is highlighted that leading tax authorities rely heavily on Internet data collection or scraping tools, data science and analysis to detect tax risks within the digitalised economy. Tax risk detection reform measures that are cited in the literature follow in the discussion below.

**Digital data collection tools:** Examples of tax authorities cited in the literature that use tools to collect data from cyberspace include but are not limited to Austria, Belgium, Japan and the UK. These tax authorities monitor the internet using different Internet scraping tools (web harvesting or web data extraction), some of which are open source and others that are custom-made tools. The intelligence that is gathered is fed into compliance projects, such as letters to presumptive taxpayers and information campaigns. The collected data is furthermore used to analyse and is matched to existing taxpayer information, records and registers ([HM Revenue & Customs, 2018](#); [OECD, 2017b](#)).

The Belgium tax authority obtain the necessary data by either asking for data from the taxpayer or the owner of the platform on which the data is stored, or the data is “harvested” by the tax authority itself. According to the Belgium tax authority, the request for information from platforms is not necessarily a good approach, as the information that may be requested is limited to “power

users”, users with an extended amount of activity and users with a turnover of more than their VAT threshold ([Dierickx, 2017](#)). E-forensic techniques are used to collect data in cases where the platform or the taxpayer refuse to provide the requested data. According to Dierickx ([2017](#)), the harvesting of Internet data, even from compliant taxpayers, is not a “protection of privacy” challenge, because the data is publicly available and is therefore regarded as “open source intelligence data”.

**Data matching and predictive data analytics:** Jacobs ([2017](#)) recommends strategies (from a digitalisation perspective) that can improve the tax risk identification and detection process. The first recommendation is the linking of data to the taxpayer’s consumption. Tax authorities can obtain the data relating to taxpayers’ consumption that is predicted to be digitalised to a large extent in the near future in order to project the possible income of consumers and compare it to the actual income that is declared for tax purposes. One foreseen challenge regarding this approach is the tendency of consumers to spend more than what they earn.

Another detection measure that is cited is to link taxpayer data to wealth and capital income. Assets, such as publicly traded assets, closely held assets, home ownership, pensions and bequests or estates can be used to analyse the overall wealth of the taxpayer against its tax records ([Jacobs, 2017](#)).

A third tax non-compliance detection measure that is recommended by Jacobs (2017) is the cross-border linking of data on wealth and capital. By way of global collaboration, taxpayer information in relation to asset ownership (shares, property and pensions) and capital income (interests, dividends, capital gains, property values and pension accrual) can be obtained for further analysis. Studies predict that, globally, we are headed towards a mainly cashless economy ([Achord, et al., 2017](#)). The utilisation of consumers as third party reports might consequently also be a source of data that can be utilised to implement tax risk detection measures.

If the prediction regarding a cashless economy is accurate, the majority of consumer transactions will be in a digital format. Therefore, tax authorities can estimate the aggregate sales of particular businesses either through electronic payment information or with the use of information on consumption from digital platforms. The estimated revenue and taxable income can be predicted with data that is obtained according to the abovementioned recommendations and compared to declared tax returns and/or the taxpayer register in cases where the individual or enterprise is not registered for tax.

Some of the abovementioned recommendations have been actioned to some degree in terms of the country-by-country (CbC) reporting that forms part of action 13 of the OECD’s BEPS

initiatives. This enables tax authorities to exchange cross-border information in relation to company revenue, income, tax paid and accrued, employment, capital, retained earnings, tangible assets and activities ([Deloitte, 2016](#)). CbC reporting, however, only applies to multinational entities with a revenue of €750 million and above. The current requirements therefore exclude high-net-worth individuals and enterprises that fall below the reporting threshold. Furthermore, not all countries currently participate in the initiative ([KPMG, 2020](#)).

Tax authorities that are cited in the literature that implement advanced data matching and predictive analytics as a tax risk detection tool in response to the digitalisation of the economy, include, but are not limited to, Australia, Finland and Canada.

Australia makes extensive use of third-party data. The tax authority has access to information held in the Australian Transaction Reports and Analysis Centre (AUSTRAC), which is Australia's financial intelligence unit with a regulatory responsibility for anti-money laundering and counter-terrorism financing ([Australian Tax Office, 2020a](#)). This information was used to trace the flow of funds to drivers and renters from abroad to local banks from where they are distributed.

The information is subsequently matched to the tax returns submitted by the businesses or individuals and other related information in order to detect any discrepancies in income declared for tax purposes ([Australian Tax Office, 2020a](#)). As a result, the tax authority identified various unregistered business activities. In addition, the tax authority is working with major platform facilitators, such as Uber and Airbnb in order to collect tax-related data (i.e. drivers and lessors of properties) ([OECD, 2017b](#)).

Finland utilises comparative data extensively to control both the digitalised and "traditional" economy. The data includes payment provider data that is received from credit card companies and other data from Finnish payment service providers. The tax authority also receives data from multiple digital platforms, such as digital currency brokers and intermediaries and sharing economy platforms ([Ruuhonen, 2017](#)). In this way, the Finnish tax authority is able to identify, detect and respond to the risks associated with VAT non-compliance by analysing credit card payment providers' data. They also implemented detective measures with regards to digital currency transactions that led to the identification of over 300 cases related to digital currencies, together with the personal income taxation process in 2016 ([Ruuhonen, 2017](#)). In addition, they have increased the analytical ability concerning bitcoin blockchains by using software tools that are designed for the specific purpose. The main objective of the detection measure is to obtain an overall view of the taxpayer's cryptocurrency activity. The tool enables the tax authority to discover trade by Finnish bitcoin users in foreign markets ([Ruuhonen, 2017](#)).

**Data visualisation:** In the literature, it is cited that certain countries' tax authorities, such as Malaysia, New Zealand and Singapore, use social network analysis that includes the visualisation of connections between individuals and entities in order to detect tax fraud. The social network analysis also identifies links between taxpayers, joint bank accounts, addresses and/or shared telephone numbers that are used to detect possible tax non-compliance ([Ernst & Young, 2016](#); [OECD, 2017b](#)).

Limited literature could be identified with regards to the specific use of artificial intelligence (AI) and machine learning as a tool for tax risk detection by specified tax authorities in response to the digitalisation of the economy.

### **3.4 Tax assurance reform measures in response to the digitalised economy**

Findings in the literature indicate that leading tax authorities reformed their assurance processes in response to the digitalisation of the economy by changing their assurance approach, digitalising assurance tools and utilising data analytics as an assurance tool. The reform measures that are cited in the literature are discussed below.

**Standard audit file for tax:** Angola, Austria, Czech Republic, France, Germany, Kazakhstan, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Singapore and Slovakia have been cited as countries that have adopted the "Standard Audit File for Tax" (SAF-T) to either its full extent or according to modified version ([Gampl, 2019](#); [Deloitte, 2017](#); [Ernst & Young, 2019a](#)). The standard was defined by the OECD in 2005 and the objective is to assist with the exchange of transactional data between tax authorities and taxpayers. It, furthermore, improves substantive testing within the tax authorities' audit and assurance units ([Ernst & Young, 2019a](#)).

Three implementation approaches were cited, which include data to be provided at the request of the tax authority (usually prior to the audit or assurance process), submission of data on a periodical basis in addition to the indirect tax return, and the submission of transactional data as a replacement of the periodic indirect tax return ([Trowbridge, 2019](#)).

**Multi-disciplinary assurance teams:** Belgium was cited as following an integrated audit approach with multi-disciplinary, digital teams. The teams consist of experts in five specialisations: e-commerce in order to obtain and analyse unstructured data from the Internet, e-audit in order to obtain and analyse structured data from digital bookkeeping systems (such as enterprise resource planning (ERP systems)), in most instances with the co-operation of the taxpayer; e-forensics, in order to obtain and analyse non-structured data in cases where there is a lack of co-operation of the taxpayer and/or in cases of serious fraud; e-cash registers, in order to obtain and analyse structured data from cash-registers; and e-audit mining that includes data analysis and

the evaluation of electronic stored information for content and context, including key patterns, topics, people and discussions. Predictive analyses and AI are utilised in this latter process ([Dierickx, 2017](#)).

**e-audits:** e-audits were introduced in 2018 by the Australian taxation office (ATO). An e-audit or information technology (IT) audit is a system-based auditing method that is used to understand the clients' business, systems and processes, governance and controls. The method extracts and analyses the client's data and obtains an understanding of the business using computer-assisted verification (CAV) methodologies. The ATO conducts e-audits as part of their "top 320 private groups and top 1 000 performance" programme ([Australian Tax Office, 2020b](#)). An e-audit enables the ATO to assess and appropriately address the tax and audit risks that large market entities may pose from a tax perspective.

The e-audit process also adds value to taxpayers, as they receive a report with the outcome of the engagement, a risk rating that is assigned to their information technology systems and recommendations to mitigate these risks. While the e-audits form an integral part of the ATO's assurance process, the results can be used by the taxpayer in order to address the vulnerabilities in their digital system(s) ([Dyce, 2017](#)). The ATO evaluates the accounting systems used by the taxpayer, the system architecture and how the data flows through the system(s), the format and extent of taxpayer electronic records, and the documentation available to assist in the auditors' analysis ([Australian Tax Office, 2020b](#)).

An e-audit generally has two objectives, namely: the review of the organisation's computer and information systems in order to evaluate the integrity of its production systems and potential security weaknesses; and, secondly, to undertake a tax audit where data analytics are used as a tool within the assurance process ([Australian Tax Office, 2020b](#)).

**Specialised assurance software and data analytics:** In the literature, it is cited that the tax authorities of Austria, Australia, Denmark, Canada, Finland, Mexico, the Netherlands, New Zealand, Slovenia, Sweden, the UK and the USA have implemented advanced assurance and audit tools that harness the advantages of big data analysis, expert knowledge building, and sharing and digital customised audit software and toolkits ([OECD, 2006](#)). In this way, the traditional audit and assurance function has consequently been digitised, to a large extent.

### **3.5 Summarised results per integrative cross-national literature review**

The tax risk and assurance measures implemented by leading tax authorities in response to the digitalisation of the economy, as cited in the literature, are synthesised in Table 1.

**Table 1: Synthesis of identified tax risk and assurance reform measures in response to the digitalisation of the economy**

<b>Tax prevention reform measures</b>	<b>Tax detection reform measures</b>	<b>Tax assurance reform</b>
Legislative reform	Digital data collection tools	Standard audit file for tax
Access to data: digital platforms and subsequent data ingestion and analytics	Data matching and predictive data analytics	Multi-disciplinary assurance teams
E-invoicing	Data visualisation	E-audits
Taxpayer education		Specialised assurance software and data analytics

Source: Author’s own (2020).

In order to test the extent of global reform and the implementation of the measures identified, as per the integrative literature review, selected international tax authorities were interviewed. The reform measures were limited to technology and data-related reform only. Legislative reform and taxpayer education were therefore excluded from the interview results. The results are documented in section 4.

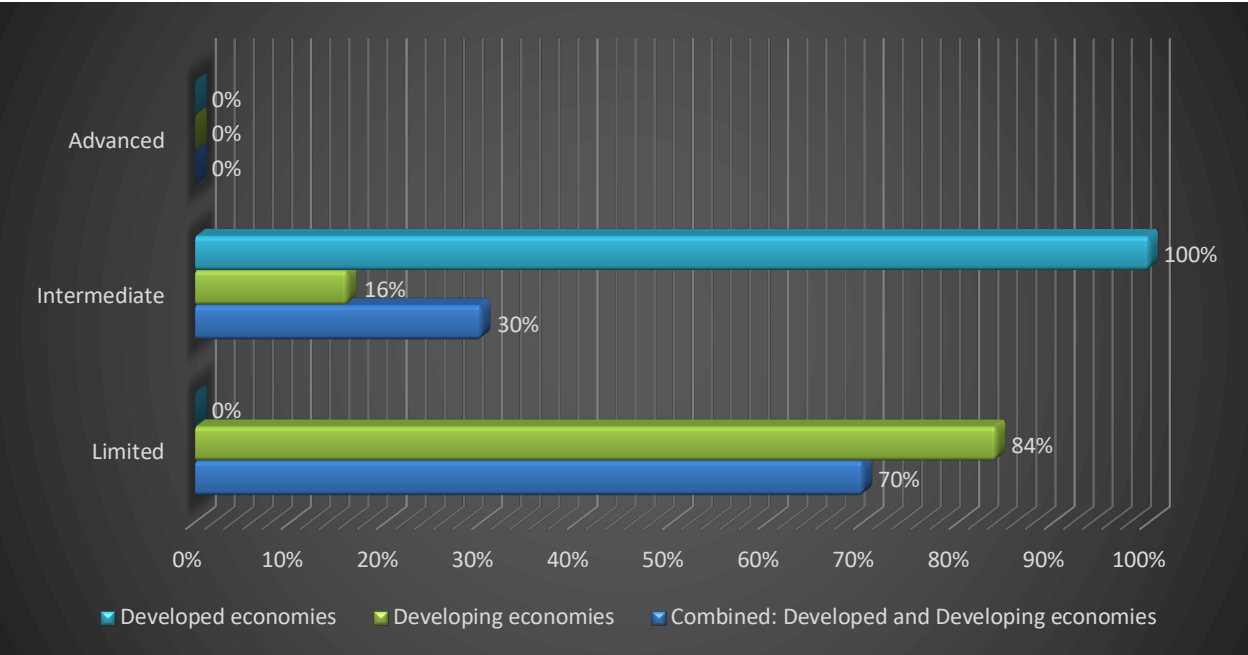
**4 INTERVIEW RESULTS AND DISCUSSION**

During the interviews, it became apparent that there is a major difference in the response levels among participating tax authorities from developed and developing economies. Due to the fact that, globally, there are more developing economies than developed economies and that this is reflected in the sample, there is a possibility that the interview results may be distorted if the results of the participating tax authorities from developed and developing economies are combined without first providing the reader with results that are categorised according to their economic classification. Consequently, the interview results were documented according to three categories, namely “participating tax authorities from developed economies”, “participating tax authorities from developing economies” and “Combined: Developed and Developing economies”. The combined results reflect the synthesized study results of the interviews of both the developed and developing economies. These results will not be discussed individually per interview question below as it is a combination of the results of the participating tax authorities from developing and developed economies that are discussed in detail below.

**4.1 Utilisation of data and technology as a tax risk management tool**

Sections 3.2 and 3.3 highlight the critical role of technology and data in the tax risk management process. Measures identified in section 3 include data matching and predictive analytics, e-invoicing and data visualisation. In order to establish whether the participating tax authorities utilise technology and data as a tool for tax risk management, the following question was posed

to the participants: “To what extent does your tax authority use technology and data in order to identify, prevent and detect tax risks within the digitalised economy? The results are illustrated in Figure 1.



**Figure 1: Extent to which participating tax authorities use technology and data in order to identify, prevent and detect tax risk within the digitalised economy**

Source: Author’s own (2020).

An “advanced” response was allocated to participants where an array of data sources was utilised to identify tax risks. These sources included, but were not limited to digital and cryptocurrency platforms, payment intermediaries, financial institutions, data collected with the use of web crawlers, internally collected data through the tax submission and payment process, as well as international data sharing programmes. Data is accurate, complete and consolidated into one database or data warehouse and is used across the organisation. The use of tools, such as data matching, predictive analytics and data visualisation, was optimised. Automation and AI were also used to their full extent in order to identify tax risks.

An “intermediate” response was allocated to participants who collected data from an array of sources associated with the digitalised economy, such as digital platforms and utilised tools, including automation, data matching, analyses and data visualisation tax risk management tools. However, AI was not implemented in full and data was not in all instances consolidated but, in some instances, used in siloes.

A “limited” rating was allocated to tax authorities that utilise older versions of technology and data science in order to identify risk with the utilisation of data and information. These tax authorities

also store and have access to various sources of data and information, but do not utilise it optimally for tax risk management purposes. An example where data is not utilised optimally is where data is collected from various sources, but not fully integrated into the risk management process. A “limited” rating was also allocated to tax administrations who have not yet digitalised their tax risk management process or are in the process of digitalisation. Furthermore, a “limited” rating was allocated to tax authorities who initiated the implementation of tools and data in order to manage risk and where the data utilised for this purpose was limited.

None of the participating tax authorities demonstrated an “advanced” use of technology and data in order to identify, prevent and detect tax risk within the digitalised economy. All the participants from developed economies and 16% of participants from developing economies use technology and data on an “intermediate” level to manage tax risks within the digitalised economy. Eighty-four percent of the participating tax authorities from developing economies utilise technology and data for tax risk management purposes, to a limited extent. Some observations in this regard follows.

One of the participants buys data from data collection enterprises and makes use of these businesses to identify, for example, high volume transactions exceeding a certain amount of bandwidth. This data is then used to identify and detect tax risks. Customs data is also extracted by two of the participating tax authorities where a specific focus is placed on large consignors with low value imports to identify possible digital sales rendered within the country. This data was not only used to identify and detect possible tax risks, but also to educate the identified enterprises on a one-on-one basis in relation to the tax consequences and tax liabilities associated with the identified transactions.

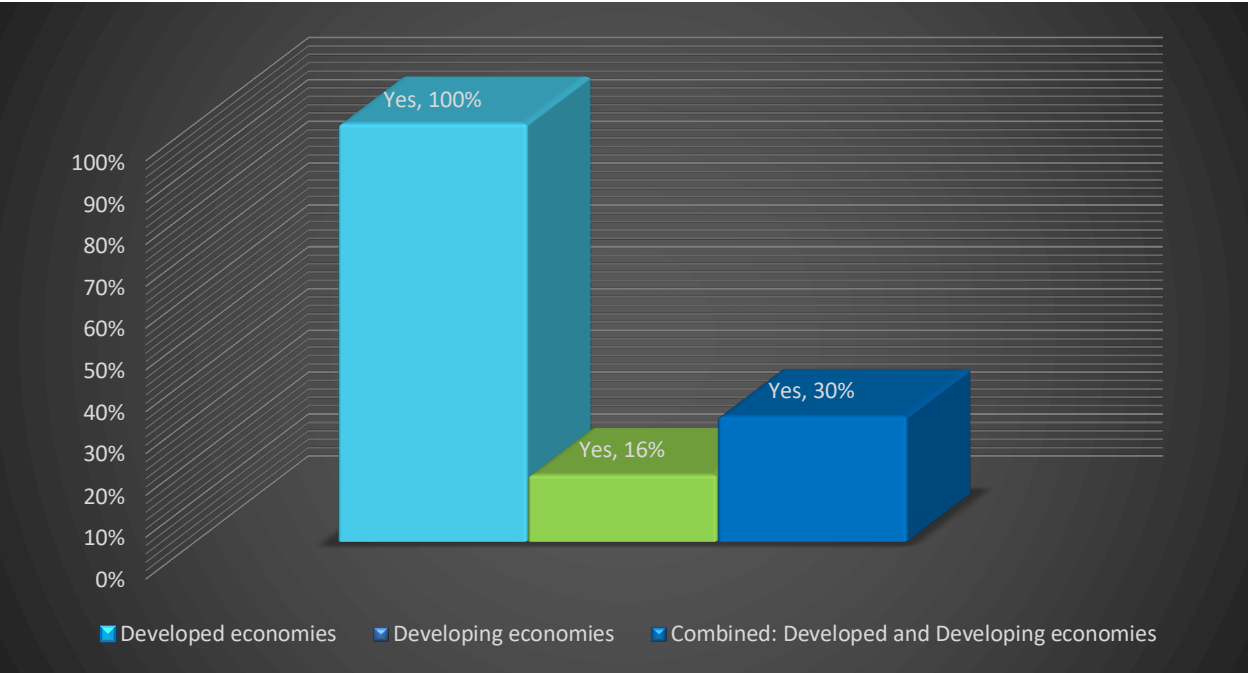
Another participant demonstrated the extent to which they use technology and data in order to identify tax risks within the digitalised economy. Risks are assessed on a (near) real-time basis, predictive analytics are utilised, risk scoring is used to identify high-risk taxpayers, benchmarking and dynamic benchmarking are also done with the use of technology and data. Two of the participants stressed the importance of the integrity of data used during the tax risk management process and confirmed that they use the taxpayers themselves in order to verify the accuracy of their data, which not only confirms the accuracy of taxpayer data, but also builds the trust relationship between the taxpayer and the tax authority. They also utilise third-party information and match it to the in-house data to perform “test audits” on the data in order to ensure the accuracy and completeness.

Finally, data visualisation is also used by most of the participating tax authorities from developed economies in order to identify and detect tax risks. Although some participating tax authorities

from developing economies also make use of data visualisation, the results of the visualisations are not in all instances actioned into risk identification, prevention and detection tools. Reasons for low digital maturity levels and limited utilisation of technology and data as a risk management tool include the lack of political support, political interference, budgetary constraints and a lack of the required skills and experience.

#### 4.2 Data and information collection from cyberspace

In order to identify non-compliant individuals and enterprises that operate within the digitalised economy, the use of digital data collection tools as a critical tax risk detection measure is identified in section 3.3. In order to assess to which extent technology is used to monitor and gather data from the internet and related platforms, the following question was posed to the participants: *“Does your tax authority survey transactions within the digitalised economy for purposes of effective and efficient tax risk management?”* The results are demonstrated in Figure 2.



**Figure 2: Utilisation of technology in order to collect data and information from cyberspace**

Source: Author’s own (2020).

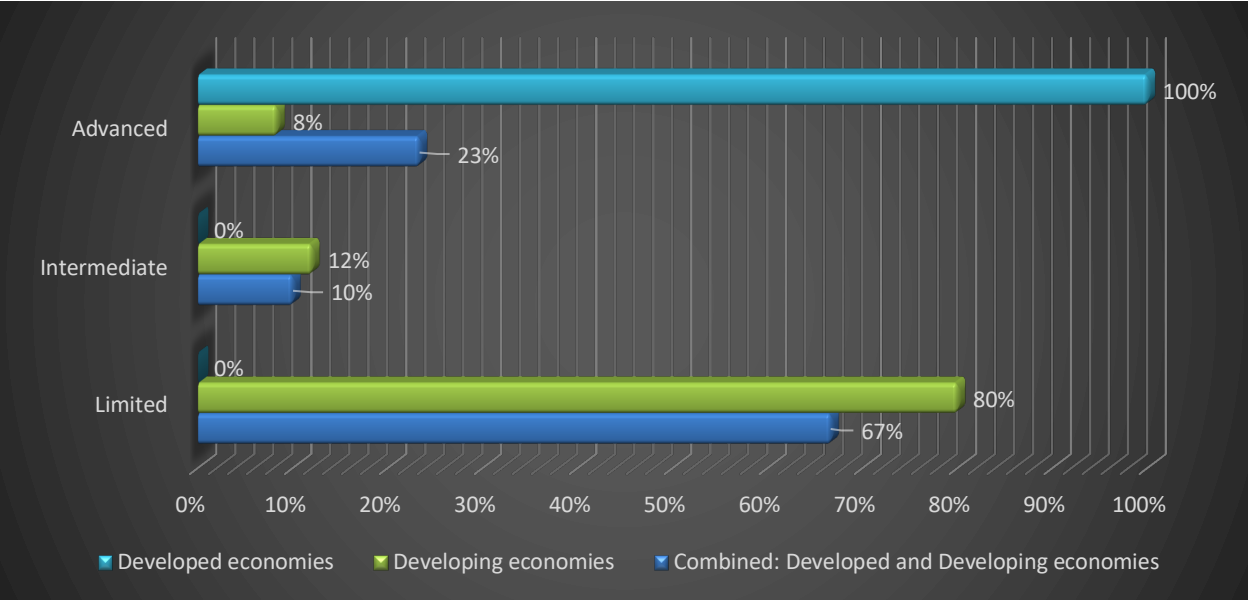
All participating tax authorities from developed economies use software to obtain data and information from cyberspace. Only 16% of the participants from developing economies obtain information and data from cyberspace for tax risk management purposes, while 84% do not currently utilise technology at all in order to obtain information and data from cyberspace.

One of the participants from a developing economy established an e-commerce department that only focuses on the identification and detection of tax risks within the e-commerce environment. The tax authority uses various Internet scrapers and web-crawlers to identify taxable activity and utilises technology and data techniques in order to process the data into usable information and knowledge. The collected data is used in order to register the identified individuals and enterprises who are not registered for tax and/or to issue revised tax returns through the assurance process where discrepancies are identified.

The use of open source versus custom-made Internet scrapers varied among the participants. A challenge identified by participants from developing economies is legislative constraints (privacy concerns) with regards to taxpayer data collection within the digitalised economy.

**4.3 Extent and source of data used during the tax risk management process**

In sections 3.2 and 3.3 it is indicated that various new data sources are used in response to the digitalisation of the economy in order to manage tax risks. In order to establish what reform took place with regards to the access to data, data types and sources used in the tax risk management process, the following questions were posed to the participants: *“What type of data and information sources are used by your tax authority for tax risk identification and analysis? Is the data limited to taxpayer and return data collected internally or are other data sources, such as third-party data accessed and utilised as well?”* The results are illustrated in Figure 3.



**Figure 3: The extent and sources of data and information utilised during the tax risk management process**

Source: Author’s own (2020).

Data wrangling encompasses the technical and business processes that are used to generate valuable insights from disparate data sources, including extraction and transformation from structured, semi-structured and unstructured data sources ([Altair, 2020](#)). In cases where this process is applicable to the participating tax authority, an “advanced” rating was allocated.

All the participating tax authorities from developed economies extensively utilise data and information from disparate data sources during the risk management process. Eight per cent of participating tax authorities from developing economies apply data wrangling. The data sources in these instances include data from online platforms, payment intermediaries and some also collect data from digital currency platforms.

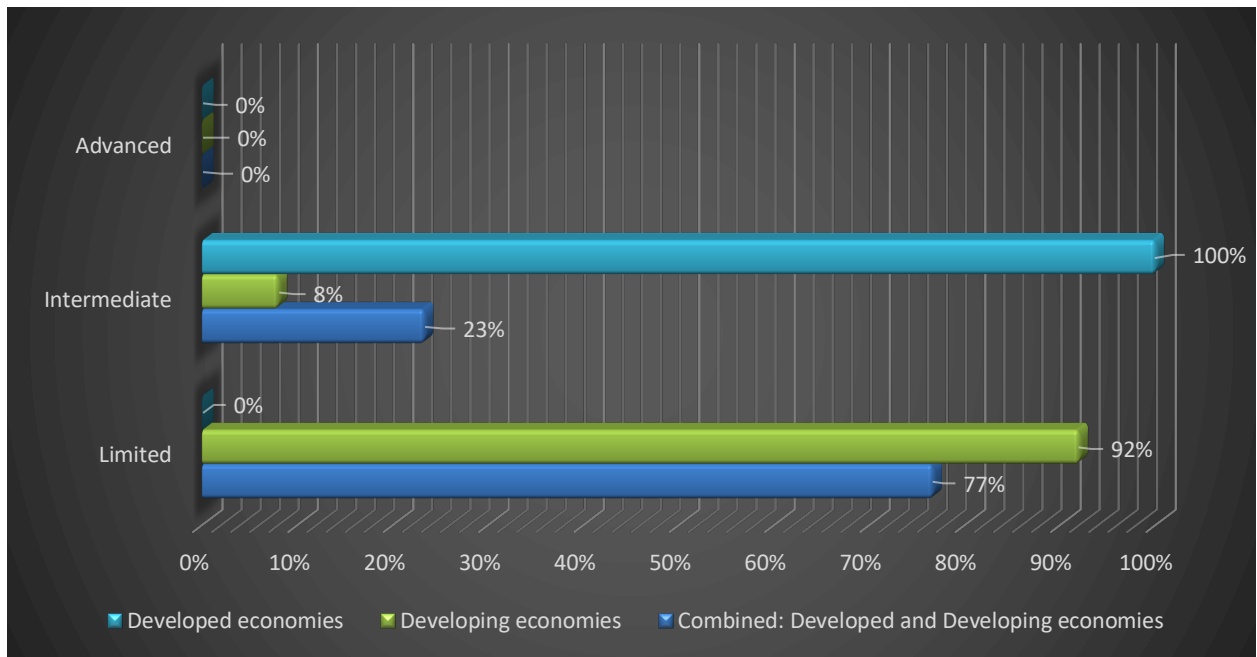
An “intermediate” rating was allocated in cases where internally generated data was utilised during the tax risk management process, and data from third parties was obtained, but not utilised to its full extent. Twelve per cent of participating tax authorities from developing economies utilised data that was generated externally and collected third-party data, but its usage was not optimised.

In cases where a “limited” response was allocated to the tax authority, the utilisation of internal data for tax risk management was limited, and, in cases where third-party data and information was available, it was not utilised optimally. Most of the tax authorities that were interviewed and are at least on an intermediate level of digital maturity, collect data from traditional financial institutions, but do not use this data optimally in order to identify and detect tax risks. It should be noted that, essentially, the absence of data collection from digital platforms implies limited reform in relation to the digitalised economy and would imply a weakened tax risk management process.

Two of the participants indicated that the significant increase of collection and storage of taxpayer data drastically increased the tax authority’s cyber-security risks. One of these participants also implemented e-invoicing and stores all e-invoicing data.

#### **4.4 Utilisation of automation and AI during the tax risk management process**

One of the benefits associated with the digitalised economy is the utilisation of AI and machine learning. This capability enables tax authorities to continuously build new intelligence and knowledge based on data and information collected from various parties and platforms with limited human intervention and cost. In order to establish the extent to which tax authorities are utilising AI and machine learning in the tax risk management process, the following question was posed to the participants: *“To what extent does your tax authority use automation and advanced applications, such as artificial intelligence to identify and analyse risk?”* The results are demonstrated in Figure 4.



**Figure 4: The extent of automation and AI utilised during the risk management process**

Source: Author’s own (2020).

The research results reflect that none of the participating tax authorities utilise AI and machine learning to its full extent. An environment where AI and machine learning is used to such an extent during the tax risk management process that it requires only human oversight with maximum risk identification, prevention and detection outputs would be regarded as an “advanced” application.

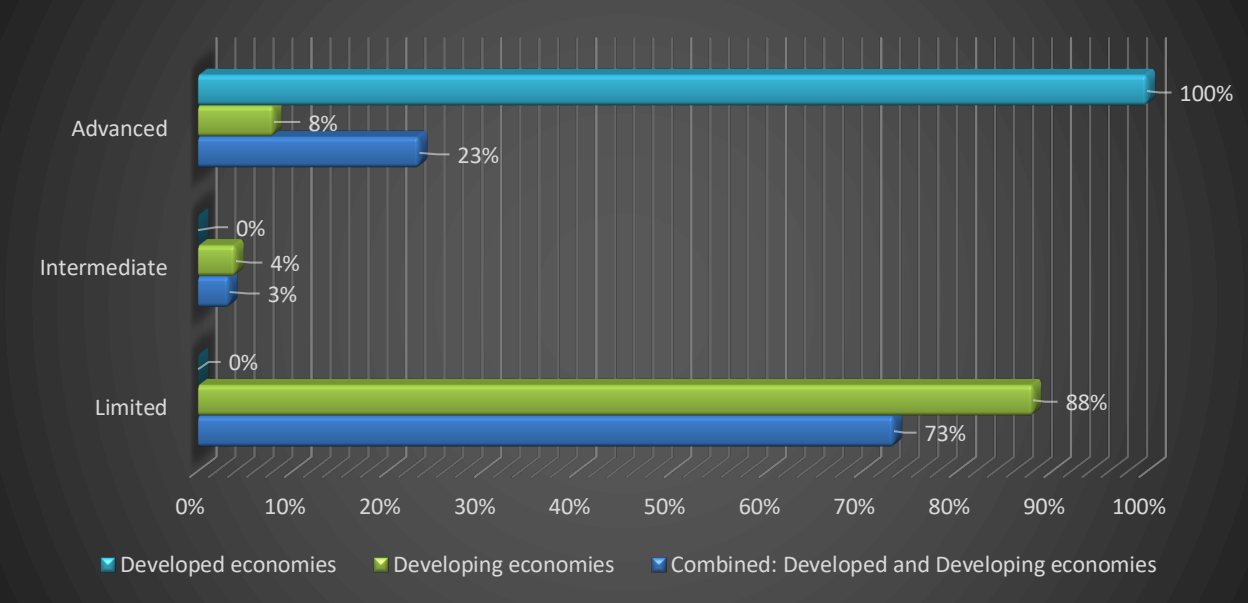
An “intermediate” response was regarded as one where the use of AI and machine learning or segments of machine learning are utilised in some instances, or in parts of the tax risk management process. All the participating tax authorities from developed economies (100%) and 8% of participants from developing economies utilised AI and machine learning to some extent.

A “limited” response was allocated in instances where AI and machine learning were not used at all. Ninety-two percent of the interviewed tax authorities in developing economies do not make use of AI or machine learning in any form. The optimised utilisation of AI and machine learning requires accurate and complete datasets that are currently not present at the majority of participating tax authorities from developing economies. This was confirmed as one of the reasons for the low implementation rate by participants from developing economies, at this stage.

#### **4.5 Change in tax audit approach in response to the digitalisation of the economy**

Section 3.4 indicates that leading tax authorities have changed their audit approach and methodology in response to the digitalisation of the economy. Identified measures include the use

of multi-disciplinary audit teams, the implementation of e-audits, audit software and the application of data analytics as an assurance or audit tool. In order to establish the reform that took place with regards to the assurance process among the participating tax authorities, the following question was posed to the participants: *“To what extent did your tax authority change your audit or assurance approach in response to the digitalised economy?”* The results are set illustrated in Figure 5.



**Figure 5: Participating tax authorities’ response from an audit/assurance approach and methodology perspective**

Source: Author’s own (2020).

An “advanced” response from a tax assurance perspective was allocated to cases where the audit approach and methodology were changed in order to consider the IT environment of the taxpayer, audit or investigation software is utilised and if the utilisation of data science was introduced as an integral part of the assurance process. An advanced response was observed among 100% of the participants from developed economies and among 8% of the participants from developing economies.

An “intermediate” response was allocated where tax authorities did not change their audit approach, but only their methodology. Of the interviewed tax authorities from developing economies, only 4% changed the methods used during the audit and assurance process in response to the digitalised economy, while 88% of tax authorities interviewed did not make any changes to their audit approach or methodology. A “limited” response was allocated to these tax authorities.

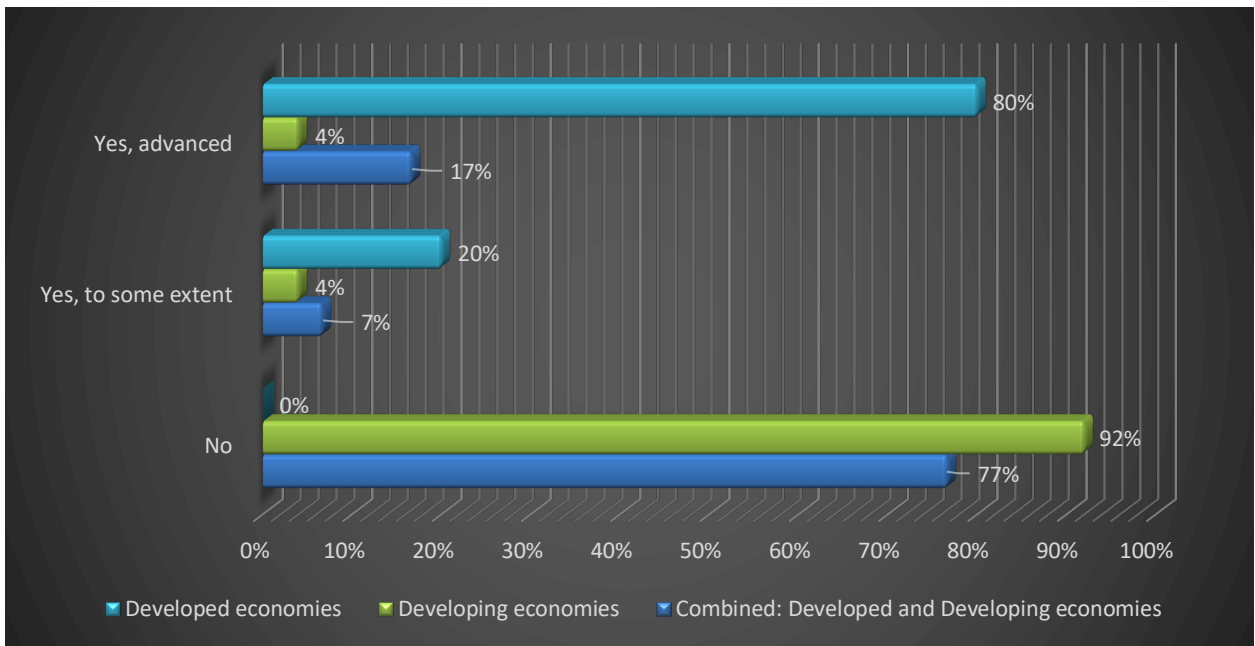
Some of the participants from developing economies indicated that they use “paper-based” audits in the absence of audit software. A lack of audit software is associated with risks, such as the loss or tampering with audit evidence. A paper-based audit is also not regarded as an optimised audit method within a highly digitalised environment associated with high data and transactional volumes.

One of the participants noted that the increased access to open source data and information enhanced the assurance process significantly. The tax authorities that conducted audits for highly digitalised multinational entities raised a concern regarding the accessibility to accounting data across borders. In order to assess the completeness and accuracy of, for example, declared taxable revenue, the ideal is to have access to the population of, for example, sales, and to calculate the amount of taxable sales that took place within a specific jurisdiction. However, challenges exist regarding the legality to request the population of sales in cases where this data is hosted in a different jurisdiction. The participants further stated that although the exchange of information among tax authorities is possible, such requests in terms of the current methods and channels are time consuming and impractical within a digitalised economy.

One of the tax authorities is in the process of migrating the assurance process and related tools and data to a cloud application as they are of the view that it would streamline the process. Seven of the tax authorities that were interviewed indicated that they make use of multi-disciplinary teams during the assurance process.

#### **4.6 IT audits or e-audits**

In section 3.4, the implementation of e-audits in response to the digitalisation of the economy is identified. In order to assess to which extent tax authorities have adopted the use of information technology or e-audits, the following question was posed to the participants: *“Does your tax authority execute information technology audits/e-audits?”* The results are demonstrated in Figure 6.



**Figure 6: The application of IT audits/e-audits**

Source: Author's own (2020).

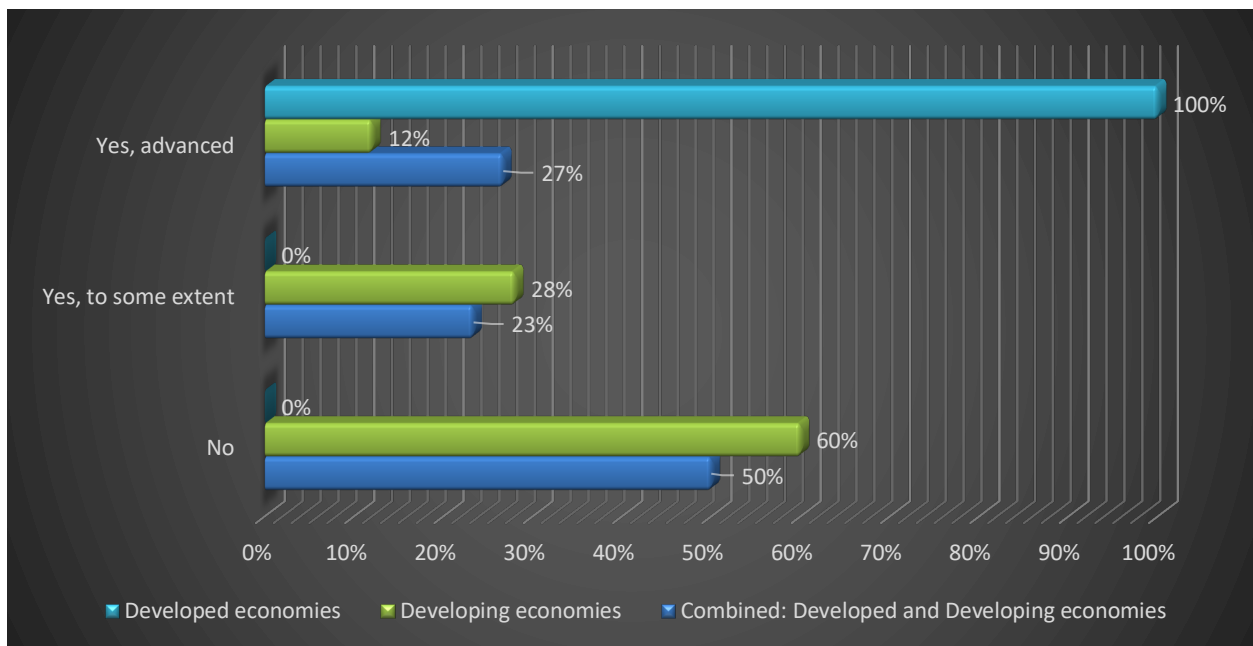
Eighty percent of participating tax authorities from developed economies indicated that they have introduced IT audits or e-audits as part of the assurance process, while 4% of participating tax authorities from developing economies implemented IT audits. These audits are based on the risk profile of the taxpayer and the approach is consequently not applicable to all taxpayers under audit.

Twenty percent of participating tax authorities from developed economies and 4% of interviewed tax authorities from developing economies indicated that they implemented IT audits to some extent. In these instances, the tax authorities implemented computer-assisted audit techniques, but not the evaluation of the general IT and security environment of the taxpayer.

Ninety-two percent of participating tax authorities from developing economies did not implement IT audits as part of the assurance process. The lack of IT audits or e-audits is associated with an increased risk of inaccurate and/or incomplete financial information provided for audit and assurance purposes ([Deloitte, 2018](#)).

#### **4.7 Data analytics as a tax audit/assurance tool**

Section 3.4 indicates the use of data analytics as an assurance tool in response to the digitalised economy. In order to assess whether tax authorities use data science during the assurance process, the following question was posed to the participants: *“Does your tax authority use data analytics during the assurance processes?”* The results are illustrated in Figure 7.



**Figure 7: Utilisation of data analytics during the assurance process**

Source: Author's own (2020)

The research results reflected that all participating tax authorities from developed economies and 12% of participants from developing economies make extensive use of data analytics during the assurance process. Twenty-eight percent of participants from developing economies indicated that they make use of data analytics as an assurance tool, to some extent, while 60% of them indicated that they do not make use of it at all.

One of the participants indicated that pre-built analytical tools are provided to the assurance teams in order to optimise the use of data analytics during the assurance process.

## 5 CONCLUSION

The research results suggest that some international tax authorities responded to the changing global external environment which, in this case, is the digitalisation of the economy. These tax authorities are embracing the benefits of digitalisation in order to address the tax risks associated with the digitalised economy, although there is certainly scope for enhancement. The identified measures that were put in place by some international tax authorities include legislative reform, e-invoicing, taxpayer education, access to data of digital platforms, advanced application of data science, analytics and visualisation.

A significant amount of reform with regards to tax assurance was also identified and include, but is not limited to, the implementation of assurance software, e-audits, the use of multi-disciplinary audit teams and the application of data analytics as an audit tool. The research results, however,

indicate that the level of implementation of the identified tax risk and assurance measures are inconsistent if they are evaluated from a global perspective. The research results, as per section 4, highlight the fact that there is a sharp contrast between the level of tax risk management and assurance reform between participating tax authorities from developed and developing economies.

The research results indicate that the reform that took place to date among the participating tax authorities from developed economies was, overall, on an intermediate to advanced level. Advanced utilisation of AI and automation could, however, be considered as a further advancement to the current tax risk and assurance measures in place. In contrast, the research results reflect that, in general, participating tax authorities from developing economies find tax risk management and assurance within a changed digitalised landscape challenging. Their response in order to keep up with an exponentially changing digitalised economy therefore remains limited in most instances.

The fact that participants from developing economies' response, in relation to the tax risk management and assurance process was, in general, rated as limited, raises concerns relating to these tax authorities' ability to protect their tax base and recover tax losses from highly digitalised MNEs that create value within their respective jurisdictions. It further raises concerns regarding these tax authorities' current and future ability to successfully deliver on their mandate as national revenue collectors. This concern is especially raised in light of the WEF's ([2020](#)) estimate that 70% of the new global economic value created over the next ten years will be based on digital platform business models.

## **6 LIMITATIONS**

The scope of the research was limited to the tax risk management process and full-scope audit and assurance process. Although tax authorities manage an array of risks and conduct various levels of assurance, as per the introductory discussion in section 1, this study and the related literature review were limited to the tax risk management process and the full-scope or comprehensive audits or assurance processes due to the significance of their impact on the tax authorities' ability to fulfil their mandate as revenue collectors.

The scope of interviews with tax authorities to measure tax risk and assurance reform in response to the digitalisation of the economy, as documented in section 4 was, furthermore, limited to technology and data reform only. Tax legislative as well as digital tax administrative reform in response to the digitalisation of the economy, as identified in section 3, will be addressed in a separate study.

## **7 FURTHER CONSIDERATIONS AND STUDIES**

Studies in human behaviour and psychology with regards to cyberspace suggest that human behaviour within this environment differ in some instances and under certain circumstances ([Amichai-Hamburger, 2005](#)). It further suggests that an array of new tools and techniques are used in order to commit various criminal offences which include but is not limited to tax fraud ([Goodman, 2016](#)).

Limited literature could, however, be identified regarding taxpayer behaviour within the digitalised economy and their propensity to commit tax evasion within cyberspace. Research regarding taxpayer behaviour within the digitalised economy and their inclination to commit tax fraud or tax evasion will thus contribute richly to the business community and academia alike.

Further research with regards to the development and utilisation of software and tools such as AI and machine learning in order to identify possible “high-risk” non-compliant taxpayers within the digitalised economy might further enrich the scientific and business community.

## **8 ACKNOWLEDGEMENTS**

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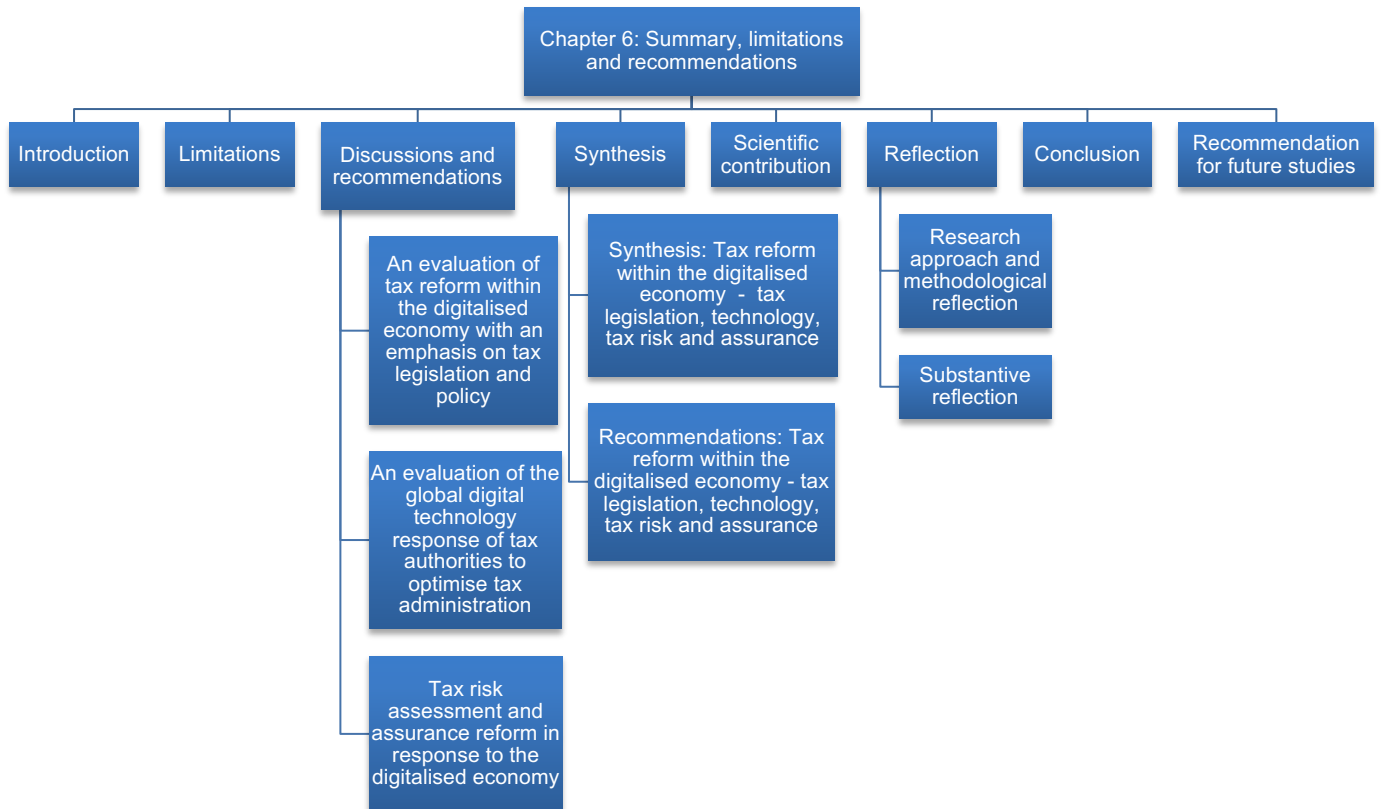
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## **CHAPTER 6**

### **SUMMARY, LIMITATIONS AND RECOMMENDATIONS**

## CHAPTER 6 OUTLINE



## 1 INTRODUCTION

The purpose of this chapter is to conclude and make recommendations based on the three research articles and research results as set out in Chapters 3 to 5. The research results are, furthermore, synthesised in this chapter to obtain a global and holistic view of the current tax reform that is taking place within the digitalised economy. The conclusions drawn in this chapter are made according to the research objectives.

The primary research objective, as set out in Chapter 1, was to investigate, evaluate and analyse the extent of tax reform within the digitalised economy. In order to reach the primary objective, secondary objectives were identified. The first secondary objective was to evaluate the global tax reform within the digitalised economy with an emphasis on tax legislation and policy (Chapter 3, Research article 1). The second secondary objective was to evaluate the global data and technology reform of international tax authorities in response to the digitalisation of the economy to ensure relevant, efficient and effective tax administration (Chapter 4, Research article 2). The third secondary objective was the evaluation of global tax risk management and assurance reform among international tax authorities in response to the digitalisation of the economy (Chapter 5, Research article 3).

The above research objectives were formulated from the main problem statement, as set out in Chapter 1, where the question was asked whether the current global tax reform within the digitalised economy optimised global tax administration. In order to address this problem statement and collect research data to reach the research objectives, there was a focus on three main areas that individually, but also collectively, have a significant impact on optimised tax administration within the digitalised economy.

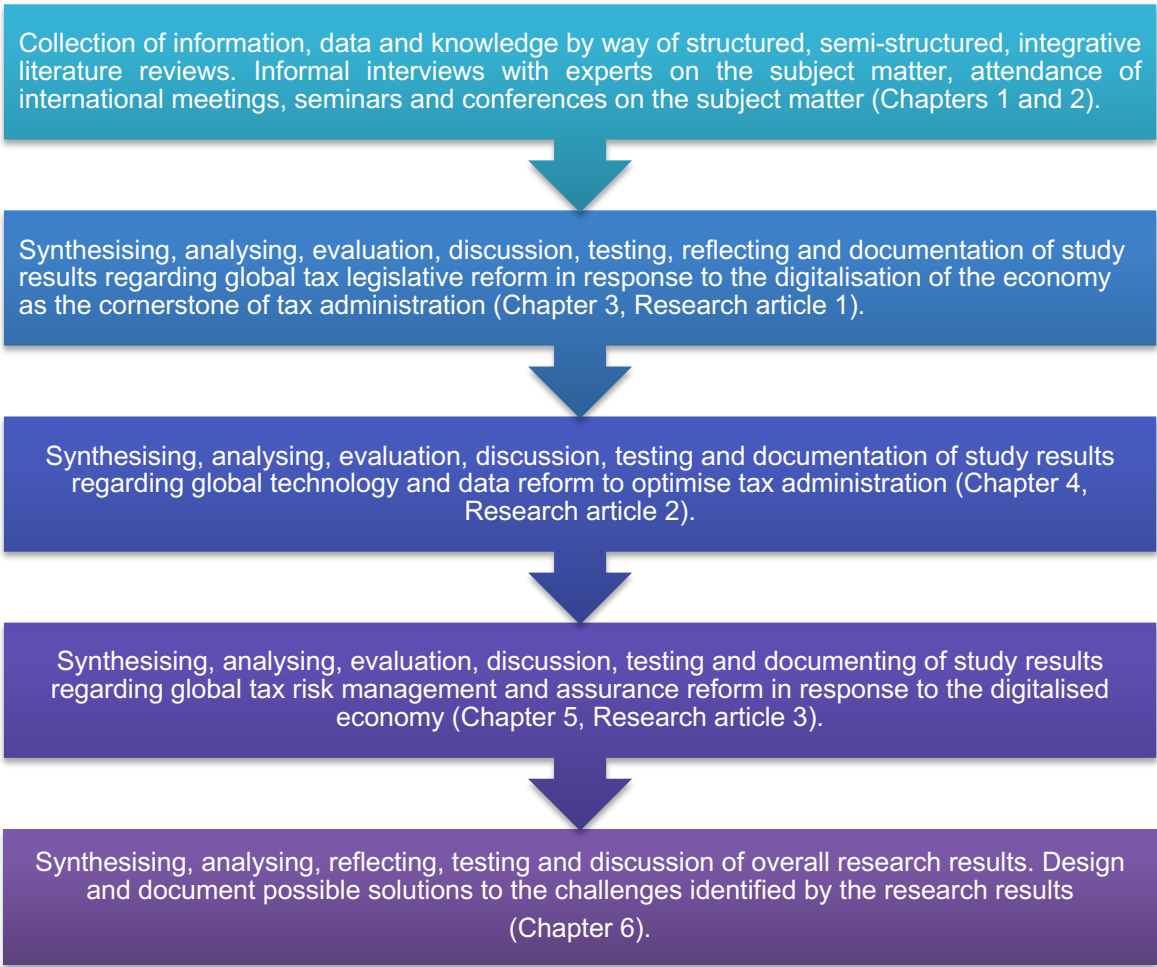
The first area is addressed in Chapter 1 (Research article 1) of the study and relates to global tax legislative and policy reform in response to the digitalised economy. The second focus area is addressed in Chapter 3 (Research article 2) and relates to global digital reform with regards to the utilisation of technology and data to optimise tax administration within the digitalised economy. The third area is addressed in Chapter 4 (Research article 3) and relates to tax risk and assurance reform in response to the digitalisation of the economy.

The research data was collected following an inductive qualitative research approach, as described in Chapter 2. This approach was informed by an interpretivists' philosophy in relation to what knowledge is and how objects and human beings interact and influence reality. A qualitative approach was followed to collect data due to the fact that the objective was to collect quality, multi-layered and in-depth knowledge with regards to the research subject.

Structured, semi-structured and integrative literature reviews, together with one-on-one and group interviews with selected international tax authorities were conducted to collect the research data and knowledge. The specific research methodology and approaches followed to reach each secondary research objective per research article were, however, documented under section 2 of Chapters 3, 4 and 5 respectively.

The reliability and credibility of the research results were tested on an ongoing basis over an extended period of time. Triangulation and other methods, as described in Chapter 2, were implemented to ensure that the research results are reliable and credible. The study was conducted in five main phases that are set out below.

**Figure 1: Main research or study phases**



Source: Author’s own (2020).

A logical and structured, but agile approach was followed to collect, synthesise, analyse and document the data and research results. An extended amount of research was initially conducted to understand the holistic and multi-faceted mechanism and interaction of the international tax

system, the digitalised economy and its related business models and technology, as well as the concept and elements of tax administration.

Following the initial knowledge and data collection process regarding the general environment concerning the digital economy, the international tax system and tax administration in general, global tax legislative and policy reform within the digitalised economy were researched and evaluated (Chapter 3, Research article 1). Tax legislation was evaluated first because it is the cornerstone of tax administration, because tax legislation gives tax authorities the legal framework that informs the “how, when, where and what” of tax administration (Thuronyi, 1996:1).

Secondly, digital reform with regards to technology and data to optimise tax administration within the digitalised economy was evaluated (Chapter 4, Research article 2). Digital reform provides tax authorities with the ability to optimise tax administration with the assumption that the required and relevant legal framework is in place to do so.

Further to the first two researched topics, the literature suggests that the digitalisation of the economy further enables tax evasion and fraud. The mere change in tax legislation and the implementation of technology and data to administer taxes would therefore not be sufficient to address these risks. International tax authorities’ tax risk management and assurance reform (Chapter 5, Research article 3) were consequently evaluated as a third element to optimise tax administration within the digitalised economy.

## **2 LIMITATIONS**

Successful organisational development (OD) and reform requires a holistic approach that includes tangible capital, human capital, organisational capital and social or political capital (DFID, 2005:3). Similarly, tax reform within the digitalised economy requires a holistic approach and various elements will have to be considered to ensure successful reform from a tax administrative perspective.

This study is, however, limited to tax reform with regards to tax legislation and policy, technology and data, as well as the risk management and assurance process within the digitalised economy. Elements, such as human capital, social and political capital and organisational capital and parts of tangible capital, were not the main focus of the research. However, some of these elements inevitably surfaced during the study process due to the integrated nature of OD and the reform of tax administration. In these cases, it was documented as a support element to the evaluations and analysis executed to reach the primary research objective.

With regards to the digital reform of tax authorities to optimise tax administration within the digitalised economy, the study was limited to digital service offerings to taxpayers for tax filing and payment purposes, the provision of tax administration digital infrastructure and the collection and analysing of digital taxpayer information for tax administration purposes. “Back-office” functions of tax administrations, debt collection and tax arbitration services were therefore excluded from the scope of this study.

With regards to the evaluation of global risk and assurance reform among tax authorities in response to the digitalised economy, the study was limited to tax risk management and full scope or comprehensive tax audits and assurance processes only. Organisational risk management and other types of assurance processes executed by tax authorities were therefore excluded from the study. Specific focus was placed on tax risk management as the digitalisation of the economy impacted this area significantly, while organisational risk management is expected to continue as per the traditional economy except for the management tools, which might be digitalised to a large extent. In addition, specific focus was placed on comprehensive audits or investigations due to the impact that these have on tax authorities’ ability to recover tax losses due to tax fraud and evasion within the digitalised economy.

### **3 DISCUSSIONS AND RECOMMENDATIONS**

#### **3.1 An evaluation of tax reform within the digitalised economy with an emphasis on tax legislation and policy**

The first critical matter evaluated in this study was the global tax reform within the digitalised economy with a specific emphasis on tax legislation and policy reform. The results are presented Chapter 3 (Research article 1) and addresses the first secondary research objective. The global tax legislative and policy reform in response to the digitalised economy was first evaluated, because tax legislation and policy form the basis of tax administration.

The OECD (OECD, 2001:3-5; OECD, 2014:10) stated, as early as 2001, that the same taxing principles that guide governments in relation to conventional international tax policies should apply to tax reform and policy setting with regards to the digitalised economy. These principles include neutrality, efficiency, certainty and simplicity, effectiveness and fairness as well as flexibility. While it was not the objective of this study to test the current reform against these principles, these principles are relevant in terms of the evaluation of the research results and the recommendations that are made in this regard and are therefore shortly discussed in the context of tax legislation and policy reform. A short discussion of these principles follows below.

**Neutrality** implies that taxation should seek to be neutral and equitable between all forms of business activities. Neutrality also entails that the tax system raises revenue while minimising discrimination in favour of, or against, any particular economic choice. The latter implies that the same principles of taxation should apply to all forms of business, but should also address specific features that may otherwise undermine an equal and neutral application of those principles. The OECD also states that business decisions should be based on economic considerations rather than tax considerations (OECD, 2001:4; OECD, 2014:11).

**Efficiency** implies that the tax compliance cost for taxpayers and tax authorities must be minimised as far as possible (OECD, 2001:4; OECD, 2014:11).

**Certainty and simplicity** imply that tax rules should be clear and simple to understand in order for taxpayers to anticipate the tax implications of their transactions in advance. Certainty and simplicity also play a major role in tax risk management as complexity favours aggressive tax planning (OECD, 2001:4; OECD, 2014:11).

**Effectiveness and fairness** of international taxation requires that it should produce the right amount of tax at the right time and simultaneously avoid double taxation or universal non-taxation. The practical enforceability of tax rules is critical (OECD, 2001:5; OECD, 2014:11).

**Flexibility** requires that systems for taxation should be flexible and dynamic to ensure that these systems remain compatible to technological and commercial developments. From a tax reform perspective, these systems should be flexible and dynamic enough to allow tax authorities to respond and remain relevant within a changing environment (OECD, 2001:5; OECD, 2014:11).

Furthermore, horizontal and inter-nation equity are also critical considerations from a tax reform perspective. Horizontal equity suggests that taxpayers under similar circumstances should bare the same or similar tax burdens. Inter-nation equity is concerned with the allocation of national gain and losses within a global context. It aims, in theory, to ensure that each country receives an equitable share of tax revenues from cross-border transactions (OECD, 2001:5; OECD, 2014:11).

The overall research results were considered by taking the above, as well as the theoretical framework of organisational development (as stated in Chapter 2), into account. These results are presented in the following section.

### 3.1.1 Summarised research results with regards to tax legislative and policy reform within the digitalised economy

#### **(a) The impact of digitalisation on organisational forms and business models**

The study results that are documented in Chapter 3, section 3.1 confirm that substantial reform with regards to business and organisational models have taken place due to the digitalisation of the economy. These changes include, but are not limited to, the way digitalised businesses are structured, how value is created within the digitalised economy, the lack of physical substance of highly digitalised MNEs, the high reliance on intangible assets and the high reliance on user participation. The business model reform enables highly digitalised MNEs to register high value and profit-generating organisations in low or no tax havens and consequently increases the risk of BEPS.

In the literature, it was further found that taxpayers globally are taking advantage of the tax avoidance and, in some cases, tax evasion opportunities that are associated with the digitalisation of the economy. An observation that was made during the study is that there is a lack of literature regarding the hybrid nature of digital business models. The majority of the literature relates to the different types of new business models associated with the digitalised economy, but it does not address the fact that these different business models operate within a new environment, which is the digitalised economy or cyberspace, which might be regarded as a separate legal jurisdiction.

#### **(b) The impact of new payment methods (cryptocurrencies) and related tax reform**

Another aspect of the digitalised economy that was evaluated with both a direct and indirect tax implication relates to cryptocurrencies or crypto-assets. As set out in Chapter 3, section 3.2, the main legislative and policy challenges relate to the definition and scope of cryptocurrencies or assets, the education of taxpayers with regards to the tax consequences and the identification of non-compliant taxpayers.

The majority of the literature suggests that limited changes were made to direct tax legislation globally, as the same tax rules in principle apply to the trade in, mining of, transacting with, the facilitation of digital currency transactions and the investment in cryptocurrencies. Unaddressed concerns were however identified in relation to the nexus rules in instances where the trade in, and facilitating of trade, in cryptocurrencies, are the main source of business income.

The research results indicate that tax reform did take place in some countries, with regards to indirect tax pertaining to cryptocurrencies or crypto-assets. However, major inconsistencies were identified with regards to the definitions and scope of cryptocurrencies or crypto-assets, the

applicable tax rates and the thresholds that would trigger a taxable event related to cryptocurrencies or crypto-assets. These inconsistencies are illustrated in Chapter 3, Figure 1. Leading tax authorities, such as the ATO were identified as already being in the process of enforcing the applicable legislation. This is achieved by collaborating with the relevant digital platforms and, as the literature review suggests, a substantial amount of penalties was expected to be collected relating to non-compliance to the relevant tax rules related to cryptocurrencies or crypto-assets. Similar actions were observed in the UK and the USA.

Overall, the reform lacked the consideration of the digital environment (cyberspace) in which the mining, investment and trade of cryptocurrencies take place. In addition to this critical omission, the tax reform, evaluated from a global perspective with regards to cryptocurrencies and measured against the tax principles of “neutrality”, “certainty and complexity” as well as “effectiveness and “fairness”, does not seem to be achieved, yet. The research results indicate that global consistency has not been reached with regards to the tax treatment of cryptocurrencies, which might be indicative that the taxing principle of “neutrality” might not be achieved.

The results furthermore reflect that taxpayers are uncertain and that there are still various unanswered taxation complexities associated with cryptocurrencies that might impact negatively on the tax principles of “certainty and simplicity”.

The overall research results further suggest that some international tax authorities experience challenges with regards to the enforcement of tax legislation related to cryptocurrency transactions and business models. These results suggest that the taxing principle of “effectiveness and fairness” therefore does not seem to have been reached to date, with regards to global tax reform relating to cryptocurrencies.

**(c) The impact of digitalisation of the economy on direct taxes and related tax reform:  
Corporate income tax**

The research results, as presented in Chapter 3, section 3.3.1, suggest that, from a corporate income tax perspective, it was mainly some identified developed countries and a few developing countries such as India and Israel that underwent and is still in process of undergoing significant tax legislative reform in response to the digitalisation of the economy. This reform was influenced by the various tax risks associated with highly digitalised MNEs that generate income within their respective jurisdictions.

The research results indicate that countries, such as Australia, Austria, France, Hungary, India, Israel, Italy, Turkey and the UK took the lead in designing direct tax measures that might be

suitable for the digitalised economy. The reform that did take place was in the form of multinational anti-avoidance laws, the implementation of diverted profit tax, digital and turnover taxes and the introduction of concepts, such as significant digital presence and significant economic presence.

From an organisational development point of view, and with regards to the response to external changes, such as the digitalised economy, it is applaudable that the tax authorities, as illustrated in Chapter 3, Figure 2, have designed and implemented tax legislation and policies to protect their tax base, despite the fact that global consensus has not been reached on the way forward in this regard. The research results also reflect that the tax authorities that did change their tax legislation and policies, collected substantial amounts of revenue thanks to the reform.

Limited evidence could be obtained to suggest that tax treaties were updated to make provision for the allocation of income within the digitalised economy. While all of the changes that took place bear merit and show a significant effort and agility on the parts of the respective tax authorities, the reform that took place, considered from a global perspective, is inconsistent and complex. Due to the complexities, one might argue that tax principles, such as “neutrality”, “efficiency” and “certainty and simplicity” as set out by the OECD (2001:4; 2014:11) have not been reached to date, especially if these criteria are evaluated from a highly digitalised MNE’s perspective.

“Neutrality”, as a taxing principle, does not seem to have been reached to date since there are still major differences between the taxation of “traditional” and digital businesses – even if it is only from the perspective of the various complexities and uncertainties surrounding the taxation of these entities. It does not appear that the taxing principle of “efficiency” has either been reached, since the overall research results indicate that the tax reform in response to the digitalisation of the economy has increased the tax compliance cost of highly digitalised MNEs. The research results further indicate that the current tax system is complex, which indicates that the taxing principles of “certainty and simplicity” might also not have been achieved to date.

**(d) The impact of digitalisation of the economy on direct taxes and related tax reform:  
Personal income tax**

The research results are set out in Chapter 3, section 3.3.2. The results indicate that the introduction of the gig or shared economy had consequential personal tax implications. The tax legislative and policy reform in response to the gig or shared economy related, to a large extent, to the systems implemented to identify and levy the required taxes, as well as to the classification of gig or shared economy workers.

Chapter 3, Figure 3 provides an analysis of the global reform in response to the digitalisation of the economy from a personal taxation perspective. Systems implemented or recommended by tax authorities include, but are not limited to withholding taxes, legislative changes that requires digital platforms to collect the taxes and/or simplified expense deduction systems. The classification of the gig economy workers as employees or contract workers for tax purposes, globally, differ as do the implemented systems to collect the related taxes.

The study, however, suggests that digital platforms that enable gig or shared economy transactions and the related participation will play a critical role to ensure transparency and even tax collection within the digitalised economy. This might impact negatively on the tax principle of “efficiency”, because the cost implications of the digital platforms might be significant.

“Certainty and simplicity” as a taxing principle might also arguably not be achieved due to the global inconsistency and limited reform in relation to tax legislation and policy regarding the gig or shared economy. “Neutrality” as a tax principle, furthermore, also does not seem to be achieved based on the research results for current global tax reform that took place due to the various systems implemented, as well as differences in classification of gig or shared economy workers or participants.

The reform that did take place from both a legislative and systems point of view, however, reflects the tax principle of “flexibility” in cases where the identified tax authorities changed and adapted to a new environment relating to personal income tax reform in response to the digitalised economy. This reform is, however, is not reflected from a global perspective, but only in specifically identified cases.

#### **(e) The impact of the digitalisation of the economy on indirect taxes and related tax reform**

Global tax reform relating indirect tax were documented in Chapter 3, section 3.4 and yielded similar results as the other tax types. The majority of countries applied the principle of levying taxes at the place of consumption, as recommended by the OECD (2001:23-26) and the related reform and implementation of this principle globally is illustrated in Chapter 3, Figure 4.

However, while the same principle was applied, the detailed implementation of the broad principle differed significantly when it was evaluated and analysed from a global perspective. Inconsistencies with regards to the definition of digital services, the scope of digital services included for tax purposes, the tax registration thresholds and the indirect tax rates levied on digital services differ significantly. The synthesis and analysis in Figure 5 in Chapter 3 illustrates this global inconsistency.

No evidence could, furthermore, be identified that the current tax reform took the hybrid characteristics of business models into account and that a unique environment (cyberspace) enables these business models to trade within the global digitalised economy, which might be regarded as a separate legal jurisdiction for tax purposes. The research results might also suggest that tax principles, such as “neutrality”, “certainty and simplicity”, “efficiency” as well as “effectiveness and fairness” were not met, as per the current indirect tax legislative and policy reform in response to the digitalised economy. This is due to the inconsistencies regarding scope, definitions, revenue thresholds and indirect tax rates levies associated with digital services.

If evaluated from the perspective of highly digitalised MNEs, these inconsistencies will complicate the administration of taxes that is, in turn, associated with additional tax compliance cost to the taxpayer and possible accompanied aggressive tax planning and/or tax evasion.

**(f) The impact of digitalisation of tax administration methods and related reform**

Another aspect that was evaluated during the study was the level of global reform that took place to enable highly digitalised MNEs, as well as other participants or taxpayers within the digitalised economy to administer their taxes remotely. The research results were documented in Chapter 3, section 3.5. The two elements that were evaluated were the level of digitalisation of tax submission and payment systems and the ability of highly digitalised taxpayers like MNEs to submit and pay their taxes independently versus the appointment of local representatives. These two elements were evaluated due to the impact they had on highly digitalised taxpayers and MNEs from a compliance cost perspective.

The research results, as illustrated in Chapter 3, Figure 6, indicate that the majority of international tax authorities have electronic tax submission and payment systems in place, while a minority of tax authorities are in the process of converting to fully digitalised tax submission and payment systems. Only one tax authority could be identified where it is still required to physically or manually submit a tax return at the relevant branch. The overall results regarding the digitalisation of tax submission and payment systems might reflect positively on the taxing principle of “efficiency” and “flexibility” of tax systems, as recommended by the OECD (2001:4; 2014:11).

While the above factors might have a positive impact on highly digitalised taxpayers’ tax compliance cost, the results with regards to the appointment of local tax representatives reflected a different view. Figure 7 in Chapter 3 illustrates that the majority of selected countries’ national tax legislation still requires the appointment of a local tax representative to manage foreign taxpayers’ tax affairs in the particular country.

In countries, such as the USA, Brazil and the Middle East, it depends on the state where digital services are delivered or the state of consumption. Other countries, such as Russia, India, South Africa and Canada do not require the appointment of a local tax representative, but some of these countries do have other requirements, such as local “fiscal representatives” or “tax agents”, which also impacts on tax compliance cost.

Although it is understandable, especially from a legislative enforcement and possible tax prosecution point of view, why countries require the appointment of local tax representatives, it does have significant cost implications for highly digitalised MNEs and other taxpayers. The relevance and practicality of this practice within a digitalised economy is therefore questionable.

The research results further suggest that tax principles, such as “neutrality”, “efficiency”, “certainty and simplicity”, “effectiveness and fairness” as well as “flexibility” might not have been reached to date. The method afforded to highly digitalised taxpayers to administer their taxes independently, therefore seem to still require a substantial amount of reform to be relevant and practical within a digitalised economy.

In essence, the tax legislative and policy reform in response to the digitalisation of the economy were in most instances focussed on achieving two objectives. The first objective was to ensure the taxation of digitalised MNEs, foreign suppliers and individuals operating within the digitalised economy. The second objective was to put the necessary legislation in place that would deter BEPS, intentional tax avoidance and fraud within the digitalised economy. The bulk of the reform in response to the digitalised economy seem to be based on the vertical equity principle at this stage, as new tax rules, in most instances, apply to companies with high-end revenues.

The OECD secretariat has issued various reports since 2019 (Chapter 3) with broad outlines of a possible solution to tax legislative and policy reform within the digitalised economy. It is anticipated that the proposed guidelines should be finalised by the end of 2020, if global consensus can be reached. These reports take the tax reform, in response to the digitalised economy, that took place to date into consideration in an attempt to find a solution to determine on what basis taxes will be levied (user participation, where value is created or where sales occur) and to find a system to ensure a minimum level of tax payable within the digitalised economy. These proposals are therefore in line with the research results that suggest that the reform that took place to date was directed to achieving two main goals, namely a) taxing income generated within the digitalised economy within the applicable jurisdiction and, b) deterring tax avoidance and evasion.

Overall, the research results suggest that the global legislative and policy response to the digitalised economy is still bound by country borders and “traditional” tax reform and does not reflect the hybrid characteristics of business models within the digitalised economy. Traditional elements, such as the inclusion of definitions for “cryptocurrencies” and “digital services” were addressed by the evaluated reform. Limited literature could, however, be identified that indicate that due consideration was given to the fact that digitalisation created a unique environment that could be regarded as a separate tax jurisdiction. This omission or oversight might be critical from a tax legislative and policy perspective.

The global legislative and policy reform in response to the digitalised economy is consequently inconsistent and complex. The inconsistency and complexity in reform also increases the tax compliance burden on highly digitalised taxpayers, including MNEs. It can also be concluded that the tax principles of “neutrality”, “efficiency”, “certainty and fairness” as well as “flexibility” might not have been reached to date in terms of the tax legislative and policy reform in response to the digitalised economy, if these are evaluated against the research results.

Limited data could be identified or collected in relation to the consideration and the interaction of other legislative frameworks, such as the Law of the Internet and its impact on legislative tax reform within the digitalised economy.

### 3.1.2 Recommendations with regards to tax legislative reform within the digitalised economy

Informed by the research results documented in Chapter 3 (Research article 1), the following recommendations are made in relation to global tax legislation and policy reform in response to the digitalisation of the economy.

#### **(a) A new, innovative and creative approach to tax legislation and policy within the digitalised economy**

History shows that country-specific tax policy is governed by a country’s unique economic, fiscal, institutional and political strategic goals (Kiser & Kareceski, 2017:75-92). Therefore, it can be expected that international countries’ tax legislation and policy reforms would differ from country-to-country, as per the research results in Chapter 3.

The digitalisation of the economy, however, has changed the economic, global and international tax landscape. Tax has changed from boundary-defined jurisdictions with limited connection and interaction with other nationalities to a globalised economy that is shared, highly connective, interactive and personalised. Inference can therefore be drawn that this fundamental change in

the global economy requires a similarly fundamental change in relation to the approach to tax reform on a global, and to some extent, on a domestic basis.

When considering possible solutions with regards to global tax legislation and policy reform in response to the digitalisation of the economy, it is important to take the historical tax legislative and policy guidance into consideration. However, the fact that digitalisation introduced a new “parallel universe” that requires new, innovative and creative thinking to accommodate and possibly, in some instances, consolidate it with the “traditional” tax systems, is just as important.

**(b) An agile tax system that take the heterogeneity of taxpayers into account**

Tax policies and legislation that are relevant to the digitalised economy need to take the lucrative nature and heterogeneity of taxpayers into account. Traditional tax legislation and policy are focussed on country-based enterprises and individuals with a high reliance on some form of physical presence with regards do the taxation of MNEs.

Traditional tax legislation was also designed for a business environment that changed at a slow pace. The research results, however, suggest that the focus has shifted from physical presence to value creation, user participation and economic presence. The research results further suggest that the Fourth Industrial Revolution is associated with exponential change that implies a continuous change in the nature of technology, business models and taxpayers. Traditional tax legislative and policy reform are, however, associated with a prolonged change process that delays its response time with the consequence of, in many instances, significant tax losses.

Tax legislative and policy reform within the digitalised economy should therefore make provision for an agile and lucrative process that enables tax authorities and the international tax system to respond in a timeous manner to the continuously changing agile and heterogeneous nature of taxpayers within the digitalised economy.

**(c) A revenue-neutral tax system and public involvement of tax policy reform**

Global tax reform within the digitalised economy should ensure a revenue-neutral tax system that is focussed on preventing tax losses rather than increasing (or decreasing) government revenue. Although it is expected that country-specific tax revenue might increase in some instances (possibly developing countries) due to users’ accessibility to the international markets enabled by digitalisation, tax legislation and policy reform, these countries should refrain from adopting a policy with the main focus of tax revenue increases and the digitalised economy as a vehicle of such increases.

Tax legislation and policy reform should, furthermore, take into consideration matters, such as the various levels of development of tax administrations, a level playing field among different jurisdictions, the consideration of the impact on taxpayer behaviour, tax compliance cost, agility of the reform and domestic and international alignment.

Furthermore, the engagement on tax reform and possible alternatives to traditional international tax legislation and policy between government and the governed should be intensified to address the current disconnect and inconsistencies that were identified in the research results.

Alt, Preston and Luke (2018:1201-1315) stress the need for a stronger and more democratic base for tax policymaking and reform. The authors emphasise the need for public debate to pursue sensible tax policies to ensure that all stakeholders see the tax system as a “system” instead of considering the various elements in isolation. Furthermore, public involvement is critical to ensure transparency and accountability and the improvement of tax policy changes (Alt, Preston & Luke, 2018:1201-1315).

#### **(d) A hybrid model for tax reform within the digitalised economy**

The research results indicate that global tax reform with regards to the digitalisation of the economy, in most instances, considered the “traditional” elements of tax reform. However, limited literature could be identified regarding the consideration of the digital environment or platform that enables trade within the digitalised economy, namely “cyberspace”.

Further to the fact that cyberspace, as the enabler of the digitalised economy, was overlooked, the bulk of the literature with regards to tax reform in response to the digitalised economy suggests that the subject matter was considered in isolation without considering other interacting legislation, such as cyberspace law or the Law of the Internet. Tax legislation and policy reform within the digitalised economy can, however, not be considered without taking into account the Law of the Internet, which regulates and enables among others, the digitalised economy (Azam, 2007:1-23).

According to Johnson and Post (1996, 1368-1378), “cyberspace” is a place of its own and should consequently have its own legal rules. Should this theory be applied, it can be deduced that transactions that take place within cyberspace take place within a unique environment, which might be regarded as the relevant tax jurisdiction. This principle of “cyberspace” as a different location is also supported by Azam (2007:21). The OECD (2015:11) indicates that it might not be feasible to ring-fence the digitalised economy from the rest of the economy for tax purposes. However, this might be a position that requires reconsideration as the digitalised economy is

substantially different from the traditional economy due to the unique hybrid environment in which it operates.

Although cyberspace might be a unique place or jurisdiction, human interaction remains the main driver of revenue within cyberspace and the digitalised economy. Users can, in turn, be traced to physical jurisdictions. Consequently, it should be considered whether a hybrid approach should be followed in terms of which cyber law and traditional international law and specifically tax legislation interacts and consolidates the various common elements. Should a hybrid model be applied where cyber law is taken into consideration together with the traditional international and domestic tax legislation and policy, a possible solution to tax transactions within the digitalised economy might present itself.

A solution, with regards to direct tax legislation within the digitalised economy, might be the international harmonisation of corporate taxes. In terms of this theory, cyberspace is regarded as a unique environment or tax jurisdiction with its own rules and legislation.

A minimum global income tax rate is recommended to eliminate the legislative inconsistencies in terms of the current legislative response, as well as tax rates identified by the research results. "Taxable income" should be defined and global consensus should be reached on methods of apportionment of taxes to eliminate complexities in the actual implementation of these taxing principles. Taxes should be levied within cyberspace and allocated to the respective countries in terms of agreed-upon apportionment formulas.

With regards to indirect taxes, the harmonisation of the definition of "digital services", a globalised registration threshold and the subsequent apportionment of income relating to digital services are recommended to address the inconsistencies identified in relation to the definitions and scope of "digital services" and registration thresholds. Similar to direct taxes, indirect taxes should be levied within cyberspace and allocated to the respective countries in terms of the agreed-upon apportionment formulas.

It is further recommended that the highly digitalised MNEs are considered as one single unit, enterprise or tax entity within cyberspace and not as fragmented enterprises per country for both direct and indirect purposes. Should the MNE have a global profit of, for example, AUS\$100 billion and 20% of the profits were generated in France, then France will be entitled to 20% of the taxes levied on the MNE's profits.

The profit drivers and subsequent apportionment can be determined by considering elements, such as its normal business activities, value created within a specific country or by the number of users that enabled the realisation of the profit. These profit drivers and the consequent

apportionment should, however, be guided by the specific MNE's income generators. The recommended apportionment therefore takes into account the physical jurisdiction of value generators as per traditional international tax legislation, while applying harmonised tax legislation and policy within a unique environment, which in this case, is cyberspace or the digitalised economy recognised as a tax jurisdiction in its own right. This recommendation addresses the tax legislative reform concerning the taxation of income generated within the digitalised economy. The recommendation takes into account both the traditional and digital elements of the business models that operate within the digitalised economy.

To ensure consistency in tax legislative and policy reform within the digitalised economy, a similar model is recommended for the taxation of the gig or shared economy as well as digital currency-related transactions. Accepting the theory that cyberspace is a unique environment with its own and specified legislative framework and tax jurisdiction, a harmonised approach to taxing gig or shared economy participants or workers should be recommended.

A globally uniform approach could be followed in terms of which gig workers or shared economy participants are either classified as employees or as contract workers. This classification should be guided by case law and international consensus. A hybrid tax model is recommended that takes into consideration and combines the elements of both the cyberspace and the physical reality within which we live.

In terms of this model, the income of globally identified participants within the gig or shared economy, should be taxed according to the country of resident's tax laws, which will specify the tax rate and tax-deductible expenses, among others. While domestic tax legislation will apply, the gig or shared economy workers will be regarded as employees or contract workers within a unique environment, which is cyberspace. A globalised uniform approach to the workers' and participants' classification will therefore take place within cyberspace and will be applied uniformly. This approach will support the taxing principles of "neutrality", "certainty and simplicity", as well as "effectiveness and fairness".

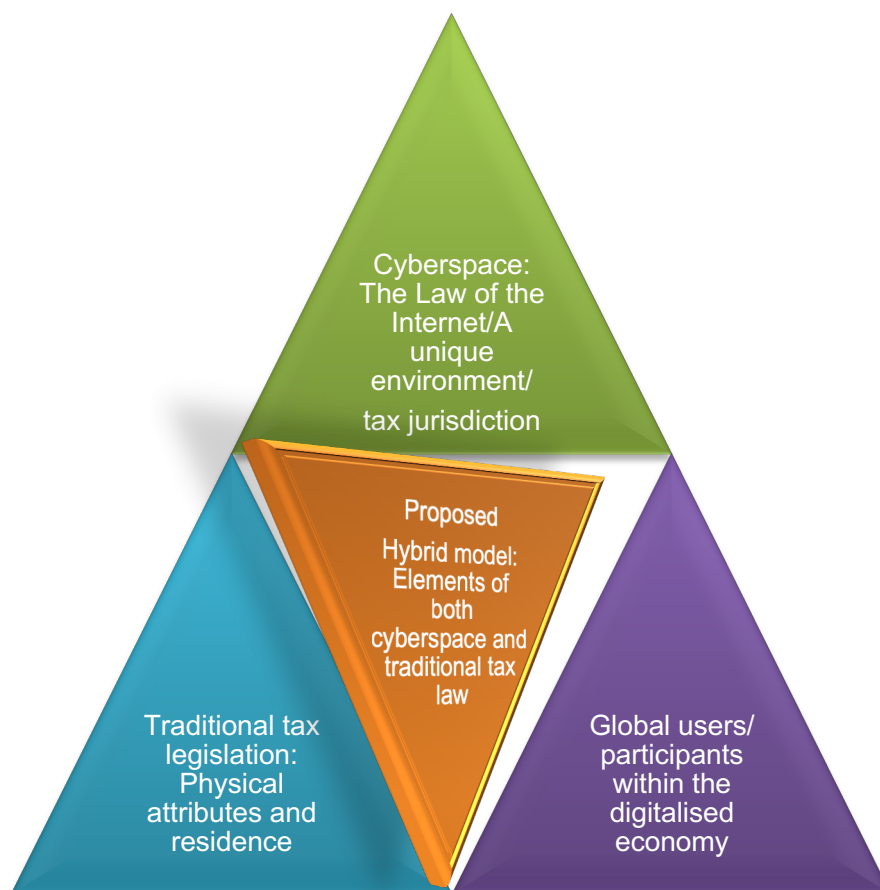
The same principles can be applied with regards to the taxation of cryptocurrencies or crypto-assets. A global harmonised approach is recommended whereby a uniform approach is followed with regards to the scope, the definition of cryptocurrencies and crypto-assets and taxable thresholds. Similar to the direct and indirect tax recommendation above, uniform tax rules should be applied within the cyberspace or the digitalised economy, but the taxes would be allocated to the country where value was generated with regards to the cryptocurrencies or assets. The jurisdiction where value was generated in instances where cryptocurrencies or assets are traded or mined should be agreed upon globally to ensure consistency.

**(e) A globally harmonised tax deterrent legislative framework applicable within the digitalised economy**

As part of the recommended hybrid model for tax reform within the digitalised economy, it is further recommended that a globally harmonised tax deterrent legislative framework is implemented that would be applicable in instances where intentional tax evasion and/or fraud is identified.

A solution based on the combined diverted profit tax models applied by the Australian taxation office (ATO) and the HM Revenue & Customs (HMRC) might be an appropriate model to apply globally. In terms of the model, contrived arrangements within the digitalised economy are targeted and taxed at a higher rate than the recommended globalised standard rate for corporate income tax, together with the country-specific applicable interest rates and penalties associated with the specific tax offense.

**Figure 2: Proposed hybrid model for tax reform within the digitalised economy**



Source: Author's own (2020).

Enforcement of this proposed legislative and policy reform would have to be supported by updated tax and international legislative treaties that also take the Law of the Internet into account. The proposed hybrid model for tax reform within the digitalised economy are illustrated in Figure 2 above.

**(f) Benefits of the proposed tax legislative and policy reform**

The recommended model takes into consideration the new environment that was created by the digitalised economy. It takes into account both traditional, as well as all of the digital elements associated with the digitalised economy. The benefits of the recommended hybrid model for tax legislation and policy reform within the digitalised economy include the achievement of the basic tax policy principles, as stated by the OECD (2001:4), including tax “neutrality”, “efficiency”, “certainty and simplicity”, “effectiveness and fairness” as well as “flexibility”.

The model further includes other possible benefits, such as limiting the risk of BEPS, equalising the playing field to a certain extent between various levels of economic development of tax administrations, international equity (to some extent), horizontal equity, vertical equity and the reduction of tax compliance cost. Furthermore, it is expected that the recommended model would influence taxpayer behaviour positively, as the research suggests that simplified tax legislation and policy coupled with a tax administration system that makes it easy to comply increase voluntary tax compliance (Kopczuk, 2007: 1-20).

Kopczuk (2007:1-20) indicates that a simplified tax model is, in essence, to the benefit of both the taxpayer and the tax administration. A complex tax system is associated with increased intentional tax non-compliance as well as non-intentional tax non-compliance (Kopczuk, 2007: 1-20). It is further stated by Kopczuk (2007:1-20) that a complex tax system is associated by increased enforcement and detection cost incurred by the tax authority. In order to reduce the stated risks and related costs, Kopczuk supports the simplification of the relevant tax system as far as possible (Kopczuk, 2007: 1-20).

**(g) Other considerations**

While it is not within the scope of this research, global environmental restoration and the role of taxes in funding this restoration is of international importance. Various studies suggest that digitalisation has a role to play in environmental deterioration (Achachlouei, 2015:1-59; Sikdar, 2013:85-92). The proposed hybrid model can therefore be used as a vehicle to withhold tax, similar to carbon taxes or rehabilitation funds applicable to mining industries that can be utilised to reverse the negative environmental impact of global digitalisation.

Furthermore, additional research is required to quantify the proposed model's global and domestic fiscal impact. It is believed that the above reform would, however, have an overall positive impact on global tax revenue collection, due to its simplicity and the anticipated impact on taxpayer behaviour.

The anticipated challenges are, however, regarding the acceptance and implementation of the recommended hybrid model and related tax reform. These challenges include matters such as sovereignty concerns, political realism, as well as state interests and achievement, as discussed by Azam (2013:1-57). These challenges, are, however not impossible to overcome in an ever-increasing globalised economy where different approaches can be followed to achieve sovereignty and political realism.

In section 3.1, the first secondary objective of the study, which is formulated in Chapter 1 as “an evaluation of tax reform within the digitalised economy with emphasis on tax legislation and policy” was addressed

Recommendations for practical tax management challenges, as identified in the research results, are provided in sections 3.2 and 3.3 below.

### **3.2 An evaluation of the global digital technology response of tax authorities to optimise tax administration**

The second element that was evaluated in the study is the global reform that took place to optimise tax administration in response to the digitalisation of the economy with specific reference to technology and data. This research section addresses the second secondary research objective of the study. The results are documented in Chapter 4 (Research article 2) and are summarised below.

#### **3.2.1 Summarised research results with regards to data and technology reform to optimise tax administration within the digitalised economy**

##### **(a) Global digital strategic alignment**

In the research results, as documented in Chapter 4, section 3, various commonalities with regards to the digital strategic direction of global tax authorities were identified. These are discussed in detail below.

The first generic digital strategic goal that was identified is the utilisation of technology and data to make it effortless for taxpayers to comply and a burden not to. A second generic digital strategic goal highlighted by the research results is that tax authorities, globally, prioritise the modernisation

and integration of technology and systems to optimise tax administration. A third digital strategic goal relates to the optimised utilisation of data engineering, analytics and science to improve taxpayer services and operating systems. The prioritisation of international cooperation and collaboration among tax authorities and key stakeholders, globally, was identified as a fourth digital strategic goal among international tax authorities. A fifth strategic goal indicated by the research results was tax authorities' goal to obtain a national and international view of taxpayers to optimise tax administration.

Overall, the analysis indicated that data and technology are critical tools that can be used to optimise tax administration and help ensure that tax authorities fulfil their mandate as tax collectors. Thirty selected international tax authorities were interviewed to evaluate the level of digital reform to optimise tax administration within the digitalised economy. The summarised research results follow.

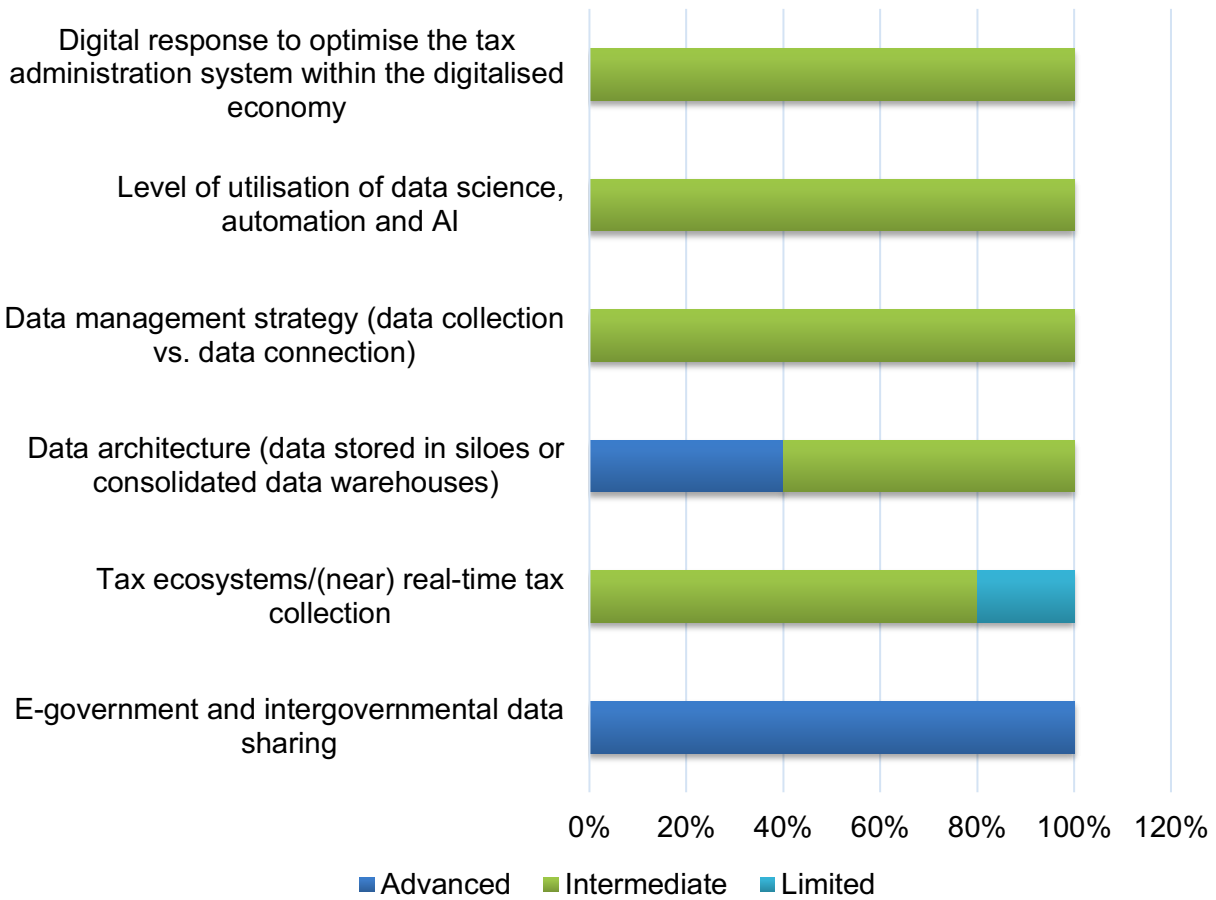
A large digital reform gap was identified between participating tax authorities from developed and developing economies. While it was not the primary objective of the study to distinguish between tax authorities from developed and developing countries, the research results suggest that the difference is significant enough to report upon separately. In order not to distort the research results, the results were categorised between participants from developed and developing economies. Specific digital elements were identified as critical to ensure optimised tax administration within the digitalised economy. These elements were also regarded as critical to reach the digital strategic goals, as identified in Chapter 3, section 3. The interview questions were therefore informed by the five identified generic digital strategic goals together with the latest and most relevant technology and tools available to ensure optimised tax administration within the digitalised economy.

The focus areas and the research results are documented in Chapter 4, section 4. The digital reform results for participants from developed and developing economies are discussed separately, except in cases where it is specifically indicated otherwise. A summary of the research results follows.

#### **(b) Summarised research results for participating tax authorities from developed economies**

A summary of the research results for participating tax authorities from developed economies are presented in Figure 3.

**Figure 3: Summarised research results for participating tax authorities from developed economies**



Source: Author’s own (2020).

(i) Digital response to optimise tax administration systems within the digitalised economy

An optimised or an “advanced” tax administration system was defined, for the purposes of this study, as a tax administration system that integrates and consolidates with the natural eco-system of business and regulatory framework. Taxes become part of the business transaction whereby taxes are collected and verified in (near) real-time. Tax returns for all tax types are pre-populated and assessed based on the data collected within this digitally connected eco-system. Tax assessments are issued by the tax authority and the taxpayer merely verifies and confirms the accuracy of the assessment. An advanced tax administration system, therefore, reduces the time and money spent by the tax-compliant taxpayer, but significantly increases the time, effort and money spent by non-compliant taxpayers to evade taxes.

The research results (as seen in Chapter 4, section 4.1) reflect that none of the participants demonstrated an advanced digital response with regards to tax administration systems implemented within the digitalised economy. All the participants from developed economies, however, reflected an “intermediate” digital response, as defined in section 4.1 of chapter 4. The level of technology and data response was regarded as intermediate in cases where tax authorities demonstrated the ability of advanced data collection and analysis of taxpayer and third-party sourced data, coupled with the information technology that supports the latter. In these instances, taxpayers either receive electronic tax assessments with limited time to confirm their accuracy and completeness, or the tax authority calculates the due taxes in (near) real-time and provide taxpayers with limited time to confirm the accuracy of the tax return.

(ii) Utilisation of data science, automation and AI

The digitalisation of the economy is synonymous with various digital and data tools available to advance tax administration. An “advanced” response was allocated in instances where only critical data (the right data) was collected by the participants while the tax authority securely connected to other data required for tax administration purposes. Data is, furthermore, wrangled and is consolidated to maximise the benefit of data science and analysis. The data is used at an enterprise level for tax administration purposes, instead of it being used in functional siloes.

The participants’ tax administration systems further have the ability to collect and ingest structured and unstructured data from traditional and digital platforms and have the ability to share data nationally and internationally. All stages of the data lifecycle are automated, where possible. The tax authority’s data integrity is high and utilises AI across the organisation to its fullest extent. Limited human intervention is required for governance purposes. The research results (Chapter 4, section 4.2) reflect that none of the participants utilised data science, automation and AI on an advanced level.

All participants from developed countries, however, utilise data science, automation and AI on an intermediate level. An “intermediate” level of data science and automation was allocated in cases where tax authorities collect data from various third-party sources within the digitalised economy that exceed the average third-party data sources, such as traditional financial institutions and government departments. These tax authorities, furthermore, utilise the collected data to its fullest extent with the use of data matching and data visualisation. The collected data is further consolidated into the overall tax administration system with the objective to increase the quality of services provided to taxpayers, to make it easier to comply, to inform tax legislative and policy reform and to identify or detect tax risks. The use of AI was, however, limited or absent.

(iii) Data management strategy: Participants from developed and developing economies

Tax administrations, in most instances, collect a significant amount of data. This is especially true in cases where e-invoicing systems have been implemented with the option to collect all the related data. A significant amount of data is, however, associated with increased data and technology infrastructure costs, as well as with increased cybersecurity risks. An alternative to data collection is data connection in terms of which the tax authority collects only critical data and connects to other data required during the tax administration process. It was therefore enquired from the participating tax authorities whether they collect all the necessary data or whether they follow a data strategy where only critical data is collected while connecting to other required data within the tax administration process.

The research results (Chapter 4, section 4.3) reflect that none of the participating tax authorities currently follow a data strategy where only critical data is collected and where it connects to other relevant data used during the tax administration process. This finding is applicable to participants from both developed and developing economies.

(iv) Data architecture: Participants from developed and developing economies

The research results (Chapter 4, section 4.4) reflect that 90% of the participating tax authorities store their collected tax-related data in siloes. The siloed storage of data influences the tax authority's ability to optimise the benefits associated with data science and analytics in relation to the collected data. These benefits include, but are not limited to, obtaining taxpayer insights, the enhancement of taxpayer services and tax-risk identification and detection.

Only three of the participating tax authorities have migrated to consolidated data sets, instead of a siloed approach. It was, however, indicated that the consolidated data sets also have various challenges, but the benefits outweigh the challenges.

(v) Tax ecosystems or (near) real-time tax collection

The data collection process, as per research phase one, as illustrated in Figure 1, section 1 to the current chapter reflects that tax authorities are moving towards (near) real-time tax administration systems. The research data collection process therefore included further enquiry from the participating tax authorities in relation to the reform that took place with regards to (near) real-time tax collection.

The research results (as seen in Chapter 4, section 4.5) reflect that none of the interviewed tax authorities from developed and developing economies currently administer all the tax types on a (near) real-time basis. The research results, as seen in Chapter 4, Figure 3, however, reflect that

80% of the participants from the developed countries have migrated some of their taxes to a (near) real-time tax administration model. Most of these tax authorities have migrated to (near) real-time tax administration systems in a phased-in approach, starting with employee taxes followed by indirect taxes.

(vi) National and international data collection

The last technology and data reform element that was evaluated during the study relates to the tax authorities' ability to collect data from national and international sources to enable them to obtain a 720 degree view of taxpayers (360 degrees x 2 (national and international view)) as per the five common digital generic strategic goals identified (Chapter 4, section 4.6). The research results, with regards to digitalised governments, reflect that 100% of the interviewed tax authorities from developing economies' governments have been digitalised. These governments are therefore able to ensure an optimised, inter-governmental exchange of data and information in terms of the applicable legislative frameworks. Data can thus be exchanged digitally among the various government and tax authorities as far as it is permitted by legislation.

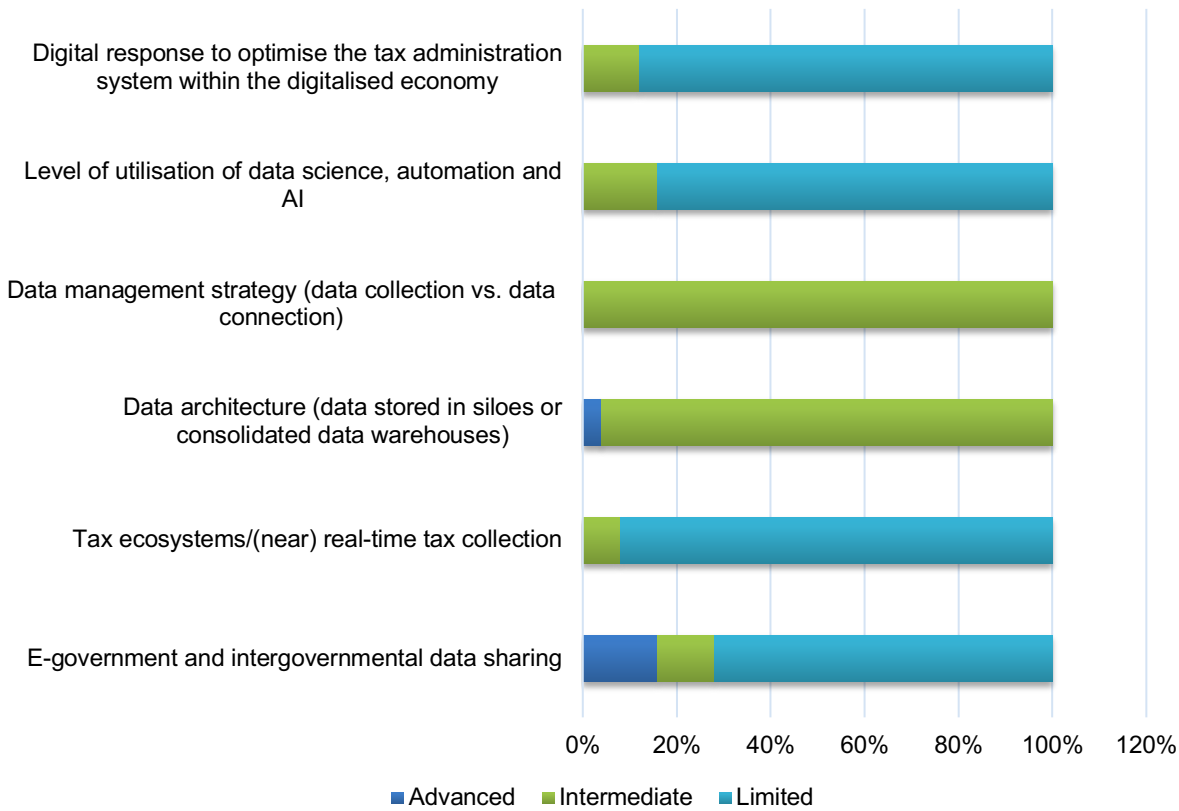
Two OECD-driven international initiatives were, furthermore, identified that enable international data-sharing of relevant tax information. These two initiatives include CbC reporting and the automatic exchange of information agreement. The research results for both developed and developing economies indicate that digital and legal challenges are, however, still being experienced, which impacts the tax authorities' ability to optimise the utilisation of this information as a tax administration tool.

The overall results, in relation to information technology and data reform for participating tax authorities of developed economies, indicate an intermediate response, which indicates that the overall utilisation of data and technology can be enhanced to optimise tax administration within the digitalised economy.

**(c) Summarised research results for participating tax authorities form developing economies**

The research results relating to the technology and data reform of participating tax authorities from developing economies are summarised in Figure 4.

**Figure 4: Summarised research results for participating tax authorities from developing economies**



Source: Author’s own (2020).

(i) Digital response to optimise tax administration systems within the digitalised economy

The research results (Chapter 4, section 4.1) indicate that 12% of participating tax authorities from developing economies reflect an intermediate digital response to optimise tax administration systems within the digitalised economy. Of the participants, 88% reflected a limited digital reform in this regard.

A “limited” reform was allocated to participants in cases where the participating tax authorities’ tax administration systems are digitalised with the ability to access third-party data, pre-populated tax returns and calculate the tax liability, but the data that is used is inaccurate and incomplete. A “limited” response was, furthermore, allocated to tax authorities in cases where the tax administration system was either partially digitalised (all tax types were not digitalised yet) or not digitalised at all requiring the taxpayers to physically visit the tax branches to register, submit or pay their taxes.

The challenges identified during the interviews include the lack of political support, political interference, limited data connectivity and speed, limited knowledge and experience within the tax authorities, lack of funding, limited access to technology by taxpayers and taxpayers' preference to traditional "brick and mortar" tax administration systems

(ii) Utilisation of data science, automation and AI

The research results (Chapter 4, section 4.2) reflect that 16% of the participating tax authorities from developing economies utilise data science and automation on an intermediate level. Of the participants, 84% reflected a limited utilisation of data science and automation as a tool for tax administration.

"Limited" responses were observed in cases where data integrity challenges were experienced and/or where data was not utilised enterprise-wide. The data was, furthermore, stored in siloes and the participants demonstrated a limited ability to collect data from the platforms associated with the digitalised economy. The utilisation of automation throughout the data lifecycle was limited and AI was absent. Limited responses were also allocated to participants whose tax administration systems were only partially digitalised or not digitalised at all.

(iii) Tax ecosystems or (near) real-time tax collection

As seen in Chapter 4, section 4.5, 8% of the participants from developing economies indicated the use of (near) real-time tax administration systems for some tax types, while 92% of the participating tax authorities from developing economies have not implemented (near) real-time tax administration systems to date.

Challenges shared by the interviewees include budgetary constraints, skills shortages, insufficient internet connectivity, a lack of political support and cultural preferences of taxpayers.

(iv) National and international data collection

The research results (Chapter 4, Figure 4.6) indicate that only 16% of participating tax authorities from developing economies' governments digitalised to such an extent that it allows for optimised data sharing.

Of the interviewees, only 12% from developing economies have e-governments in place, but the latter is not fully functional or effective. Of the participants, 72% indicated that their government has not digitised to such an extent that would allow for optimised inter-governmental data exchange. With regards to international data and information sharing, the interviewees further indicated that the data that is received is not optimally utilised to enhance tax administration.

The overall results for participating developing countries, pertaining to tax reform within the digitalised economy, with a specific emphasis on technology and data, reveals that the overall reform is limited. Based on the research results, it can be deduced that the majority of participating tax authorities from developing economies might encounter significant challenges when it comes to optimising tax administration within the digitalised economy. It can therefore be deduced that the limited digital reform will have a major impact on developing economies' ability to maximise revenue collection within the digitalised economy.

The results of this study are supported by research executed by PwC (2019:13) that attributes certain characteristics to tax authorities of top-performing, average and poor performing economies. Common characteristics identified for top-performing economies include the use of machine learning and AI. A second common characteristic is the utilisation of (near) real-time tax systems that compare information from different sources to enable rapid verification of transactions, minimise errors and identify possible tax fraud. Another common characteristic among top-performing tax authorities include a high-speed and widespread IT infrastructure, such as fibre optic broadband networks and 4G or 5G coverage. Average and poor performing tax authorities share characteristics, such as partially digitalised tax systems, insufficient technology infrastructure, a slow roll-out of digital transformation, limited inter-governmental data sharing and liaison, complicated registration and filing systems and an overall lack of digital strategy (PwC, 2019:17-18).

### 3.2.2 Recommendations pertaining to tax reform within the digitalised economy, with a specific focus on data and technology

Informed by the research results, the following recommendations are made to optimise tax administration within the digitalised economy, with a specific emphasis on data and technology. Firstly, the study results suggest that there is a major difference in technology and data reform among participating tax authorities from developed and developing economies. The research results suggest that the differences in reform were due to the differences in overall maturity levels among the participating tax authorities. In addition to the overall maturity levels, there are differences in digital maturity within the tax authorities (evaluated as an organisational unit) between inter-related elements, such as technology and data capabilities, which impact the tax authorities' overall digital maturity, negatively.

The major digital reform gap between tax authorities from developed and developing economies increases the economic imbalance between the participating countries' economic growth as insufficient tax administration leads to tax leaks and decreased revenue collection. Less money is therefore available for economic growth in countries where tax administration is not optimised.

If the difference in the digital reform gap between tax authorities of developed and developing countries is not reduced, technology might significantly increase the existing economic gap between developed and developing economies.

The first recommendation therefore relates to the evaluation of the current digital maturity levels of global tax authorities to identify the areas that require further development. A second recommendation relates to the establishment of a global, minimum standard for digital and data maturity among international tax authorities (hereafter referred to as the “minimum standard digital maturity model”) and the formal regulation of the implementation and maintenance of these standards.

A third recommendation relates to a change in data management strategy where only critical data is collected and other relevant data is connected to. The final recommendation relates to the establishment of a digital technology and data forum among experts to enable knowledge and experience transfer from developed to developing countries’ tax authorities. A detailed discussion of the recommendations follows.

**(a) An evaluation of current digital maturity levels of international tax authorities**

“Digital maturity” is based on the psychological definition of “maturity” that relates to a learned ability to respond in an appropriate manner to various circumstances or environments (Kane, *et al.*, 2017:5). Digital maturity or dexterity is an ongoing process and continuous evaluation by tax authorities should therefore become part of its regular review and management processes. Five key practices that lead to digital mature organisations include the following (Kane, *et al.*, 2017:3):

**(i) Systematic organisational change and culture**

The first practice that is cited in the literature to lead to digitally mature organisations is the continuous systematic process of organisational change to develop their work force, encourage and foster workplace innovation and the cultivation of digitally-focused cultures and experiences. Observations that were made during international visits to the participating tax authorities and interactions with the participants support the above statement.

The majority of developed countries’ tax authorities fostered and cultivated creative and innovative workforce cultures. Observations include the creation of “creative spaces” and “sand boxes”, which allows employees the freedom to express their creativity and design and innovate digital offerings, with the possibility of organisation-wide implementation. A culture was also observed where “failure” is part of the innovation process, instead of being disapproved of or seen

as real failure or a lack of success. Similar cultures were not observed among the participating developing countries.

(ii) Long-term digital strategies exceeding a period of five years.

A second practice cited in the literature to lead an organisation to a digitally mature organisation is strategic planning horizons that exceed five years. A clear link between digital maturity and the tax authorities' digital strategic goals should be included in the tax authorities' planning, which should span over a period of at least five years. The current international norm is a strategic goal setting document that spans over a maximum period of five years.

(iii) Invest time in small innovations with possible major business impact

Digitally mature organisations tend to invest more time in small innovations that typically lead to bigger innovations with an overall impact on the organisation and service delivery. Throughout the research process, this behaviour was observed among some of the leading participating tax authorities where innovation is encouraged internally, but also among external stakeholders through collaborative platforms.

(iv) Attracting and the development of digital talent

Digitally mature organisations place a high premium on the attraction and development of digital talent. Digital development goes far beyond traditional training, but extends to the creation of compelling environments to achieve career growth.

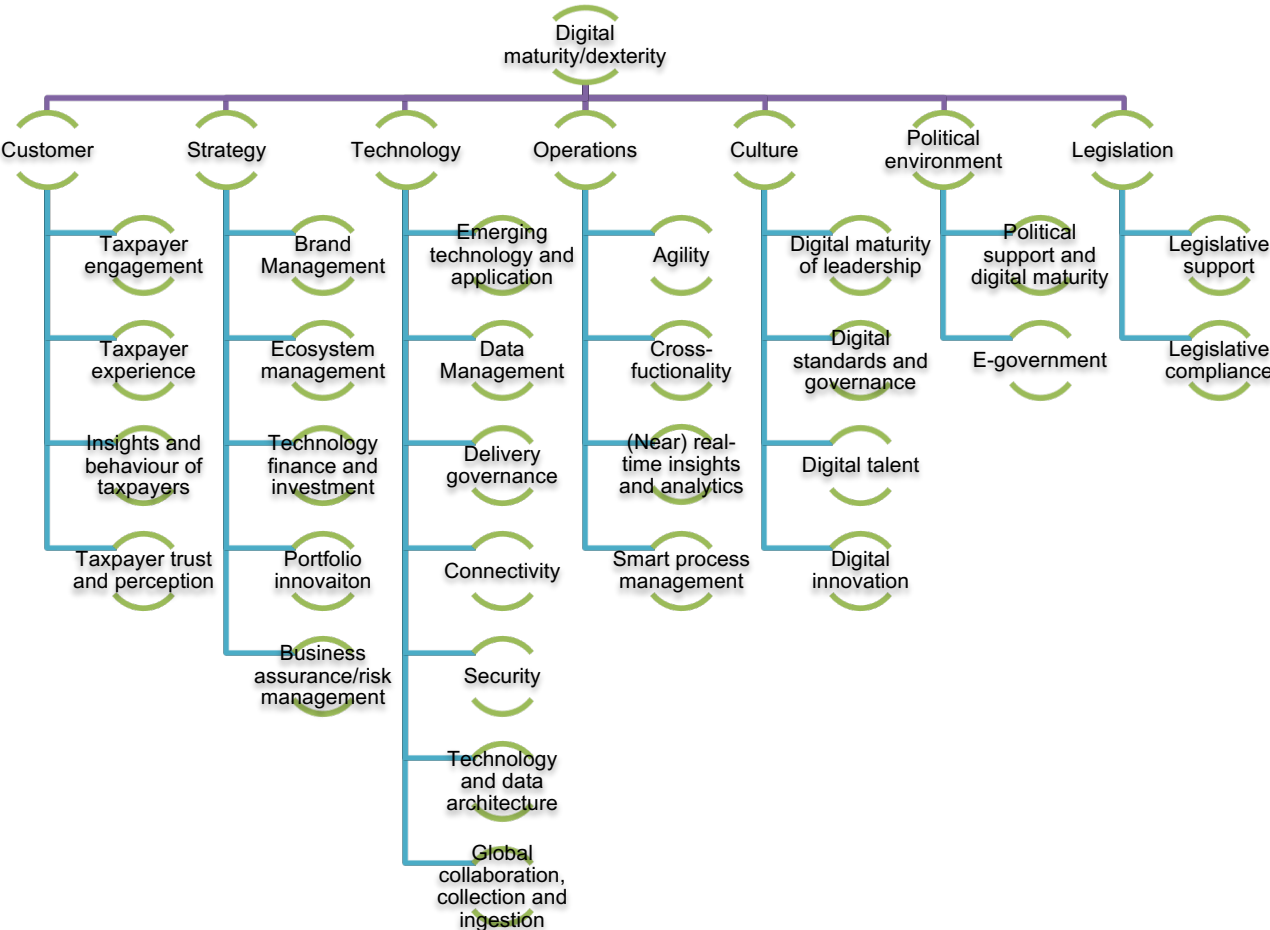
(v) Digitally mature organisations are led by leaders with the vision to lead digital strategy

The fifth common element observed among digitally mature organisations is that they are led by leaders with a strategic vision regarding digitalisation and who also commit resources towards achieving this vision. Leaders of digitally mature organisations understand what benefits a digital organisation can bring and would increase the organisation's digital investment budget accordingly.

With the objective to reduce the digital maturity gap between the tax administrations of developed and developing countries, it is recommended that the above five principles are considered and implemented to ensure a continuously growing and digitally mature organisation. It is further recommended that the organisation's digital maturity levels are evaluated by tax authorities who are in the process of increasing their digital maturity to identify where maturity imbalances are. It should, however, be taken into consideration that digital maturity cannot be measured in isolation but should be considered in relation to elements such as law, people, processes and political

influence. An overall mature organisation would be one where the various elements are more or less on the same maturity level. Elements to measure and consider when digital maturity is concerned should include the following, as shown in Figure 5:

**Figure 5: Elements to consider when measuring digital maturity or dexterity**



Source: Author’s own (2020).

Digital maturity can be measured by tax authorities themselves by using questionnaires for the various internal users or clients and taxpayers, or it can be measured independently by consultants. The measurement of digital maturity should provide tax authorities with the ability to identify imbalances in their maturity levels among the abovementioned inter-connected and related processes. These imbalances should be the focus of development or organisational reform as the study results clearly indicate that an imbalance between for example, technology and data, leads to an overall reduced data maturity level, which negatively impacts tax administrations to administer taxes within the digitalised economy.

## **(b) Minimum standard digital maturity model**

In addition to the above recommendation, the implementation of a minimum digital maturity standard to be adopted by tax authorities, globally, is recommended. The implementation of such a standard would introduce a vast array of benefits to both the tax authorities and the taxpayers alike. Benefits include the establishment of a minimum digital maturity level, globally enhanced tax administration and related increased revenue collection, the reduction of the digital maturity gap of tax administration systems between developed and developing countries and a minimum standardised digital service availed to taxpayers (including highly digitalised MNEs) that makes it easy to comply and difficult not to. Matters to be considered and included in a minimum digital maturity standard for tax authorities are discussed below.

### **(i) Digital governance**

Welchman (2015:26) defines digital governance as “a discipline that focuses on establishing clear accountability for digital strategy, policy, and standards”. An effectively designed and implemented digital governance framework assists tax authorities in enabling, streamlining and maintaining digital development. The lack of digital governance causes many of the same problems that a lack of organisational governance within a tax authority can potentially cause. This includes, but is not limited to a lack of accountability, a lack of clarity regarding roles and responsibilities and an inability to make good and informed decisions in times of change and uncertainty. The overall result of a lack of digital governance standards is a digital presence that does not serve the organisation or its customers well (Jelen, 2020:1).

Due to the fundamental importance of digital governance and its associated benefits, it is recommended that the minimum digital maturity standards for tax authorities include the adoption of an internationally accepted digital governance framework that includes elements, such as a digital strategy, a digital policy and a digital standard. Internationally accepted IT governance frameworks include, but are not limited to ITIL and COBIT.

### **(ii) Cyber security management**

The collection and global sharing of taxpayer and financial information automatically implies the sharing of sensitive data. Strict security is consequently required in general, with a specific emphasis on the IT and data environment. It is therefore recommended that the standard for a minimum digital maturity framework is applicable to tax authorities and includes the adherence to domestic legislation governing the use and protection of data, as well as the application of internationally accepted cyber security standards. An example of globalised and internationally

accepted security standards is a range of standards that are included under ISO/IEC 270000 as issued by the International Organisation for Standardization (ISO) (ISO, 2020:1).

(iii) Legal support for digital transformation

The minimum digital maturity standards for tax authorities should consider and guide the required legal support for digital transformation and the digitalisation of tax authorities. Examples of legal considerations include, but are not limited to the establishment of a proper legal basis for the collection of data, the use of data as evidence, the legal status of digital records in court, the necessary powers required to submit tax returns digitally, the legal requirements to supply data in a required format, the legislative basis for digital identity, the Law of the Internet and domestic and international data collection and privacy laws.

(iv) Success is driven by simplicity

An observation made during the research was regarding the complexity of some tax authorities' websites and tax return submission processes. Simplicity is key to the design of a user-friendly service offering, because it leads to speed, agility and success. The simplicity of technology and data reform should be at the heart of all tax authorities' digital strategy. Matters to consider during digital reform should firstly include the actual value added by new digital offerings or data capability. Consideration should be given to old legacy IT systems and whether the systems should be merged or transformed into updated offerings and/or whether these should be made redundant while new offerings are built.

A second consideration regarding digital simplicity is to apply the solutions holistically. The design of new customer offerings should, by default, trigger the consideration of their use on the operational side of the tax authority. The real benefits of digital solutions are only realised when the tax authority integrates its products across the organisation as a whole to utilise taxpayer's digital information and data across the organisation's operations.

The third consideration regarding digital simplicity relates to the utilisation of siloes versus consolidated data and processes. The storage of data in siloes does not only limit tax authorities' ability to maximise the data's full potential, but it also leads to new legacy systems very quickly. Tax authorities should take a holistic view and create systems that share their benefits across the entire organisation with simplicity at the heart of the design.

(v) Cross-functional digital transformation

Functionally independent siloes from a digital, as well as organisational, perspective are redundant within the digitalised economy. Tax authorities often follow a "tech-first" or "business-

first” approach during the digital transformation process. A business-first approach does not allow for optimised tax administration offerings due to the multidisciplinary nature of tax administrations.

Successful digital transformation of tax authorities requires cross-functional teams and systems that span from the design of new offerings to the daily operations. Cross-functionality has a dual reference in this context. Firstly, it refers to the teams (including digital transformation teams) that have knowledge and experience of digital applications, tax legislation, operations and customer experience. Secondly, it refers to the cross-functional use of data and technology within the tax authority as an organisation, because a cross-functional approach allows for the optimised use of taxpayers’ digital data. A cross-functional digital transformation approach is proven to yield the highest return on investment (Mead, 2019:1).

#### (vi) National and international collaboration capabilities

The research results reflect the importance of national and international collaboration among tax authorities, third parties, such as financial institutions, digital platforms, digital payment platforms and governments. National and international collaboration is critical for optimising tax administration within the digitalised economy.

The research results further indicate that there is a discrepancy among tax authorities from both developed and developing economies to collect, ingest and interpret the data from the various sources. Agreed-upon data formats and quality among the various parties is critical to ensure the optimised utilisation of the data for tax administration purposes. The standard for minimum digital maturity should therefore include the digital capabilities that enable national and international collaboration and the ingestion of the relevant data.

#### (vii) Electronic tax filing and tax payment systems

An electronic tax filing and payment system allows the taxpayer to remotely and digitally file tax returns and make related tax payments. The tax liability is calculated by the system and the taxpayer’s tax records are updated in (near) real-time.

Electronic tax payment systems allow for the immediate payment and allocation to the taxpayer’s tax liability. The system therefore reduces the cost associated with walk-in taxpayer services and ensures accurate tax records and the allocation of tax payments. Electronic tax filing and payment systems are regarded as an essential service for both highly digitalised MNEs and traditional taxpayers, because it allows for remote submission of tax returns and payments that do not require the physical presence of the taxpayer. Electronic filing and payment systems also make it easy for the taxpayer to comply to the tax regulations.

A further benefit of electronic tax submission and payments systems is that the taxpayer data that is collected is available for further use and analysis for tax administration purposes. While the research results (Chapter 3, section 3.5,) indicate that the majority of tax authorities globally have implemented electronic tax filing and payment systems, it was observed during the research process that various tax authorities do not allow for electronic filing and payment of taxes, such as estate and donations taxes. Instances were also identified where the electronic filing and payment system is only partially digitalised (Chapter 3, Figure 6).

Due to its benefits for both tax authorities and taxpayers, it is recommended that an electronic tax payment system for all tax types is included in the minimum digital maturity standard for tax authorities, globally.

(viii) Advanced data ingestion capability

Data ingestion refers to the process of collecting raw data from various sources and the integration thereof into data lakes (Mistik, *et al.*, 2015: 279-332). The ability of tax authorities to ingest data in structured, unstructured and semi-structured formats is critical to ensure the optimised use of the data that is collected from taxpayers and the various third parties identified by the research results.

Data ingestion into data lakes would enable tax authorities to optimise the use of digital taxpayer information and transforming it into knowledge to use among various organisational functionalities. Data lakes are more agile than data warehouses, because they can ingest various input data types; whereby data warehouses have schema-on-write characteristics, which implies that the data structure is defined before the data is stored (Mistik, *et al.*, 2015: 279-332).

An advanced data ingestion capability would solve the current challenges with regards to the format and quality of the data collected according to the various digital platforms, as reflected by the study results.

(ix) (Near) real-time tax collection

(Near) real-time tax collection refers to the capability of tax authorities to collect the related taxes as and when the underlying business transaction takes place. In instances where (near) real-time tax collection is implemented, tax administration has started its integration into the natural business ecosystem where taxes are collected “by default”. Tax types that allow for this method of tax collection are employee taxes and indirect taxes. Corporate taxes might also be collected on this basis, but more research will be required before a (near) real-time tax collection model for

corporate income taxes can be implemented, because it would require, among others, a high digital maturity level on both the side of the tax authority and the taxpayer.

Benefits of (near) real-time tax collection include, but are not limited to, the immediate collection of taxes when a transaction takes place. The immediate collection eliminates possible costs associated with the time value of money, it lowers the costs associated with tax collection and also reduces the risk of tax fraud and leakages. (Near) real-time tax collection also reduces the taxpayer's tax compliance burden.

It is recommended that the proposed minimum digital maturity standards for tax authorities include the implementation of (near) real-time tax collection of at least employee and indirect taxes (VAT and GST). The majority of tax authorities that were interviewed that implemented (near) real-time tax collection used a phased-in approach, starting with employee taxes and thereafter indirect taxes and is the same approach that is recommended for the implementation of the minimum standard.

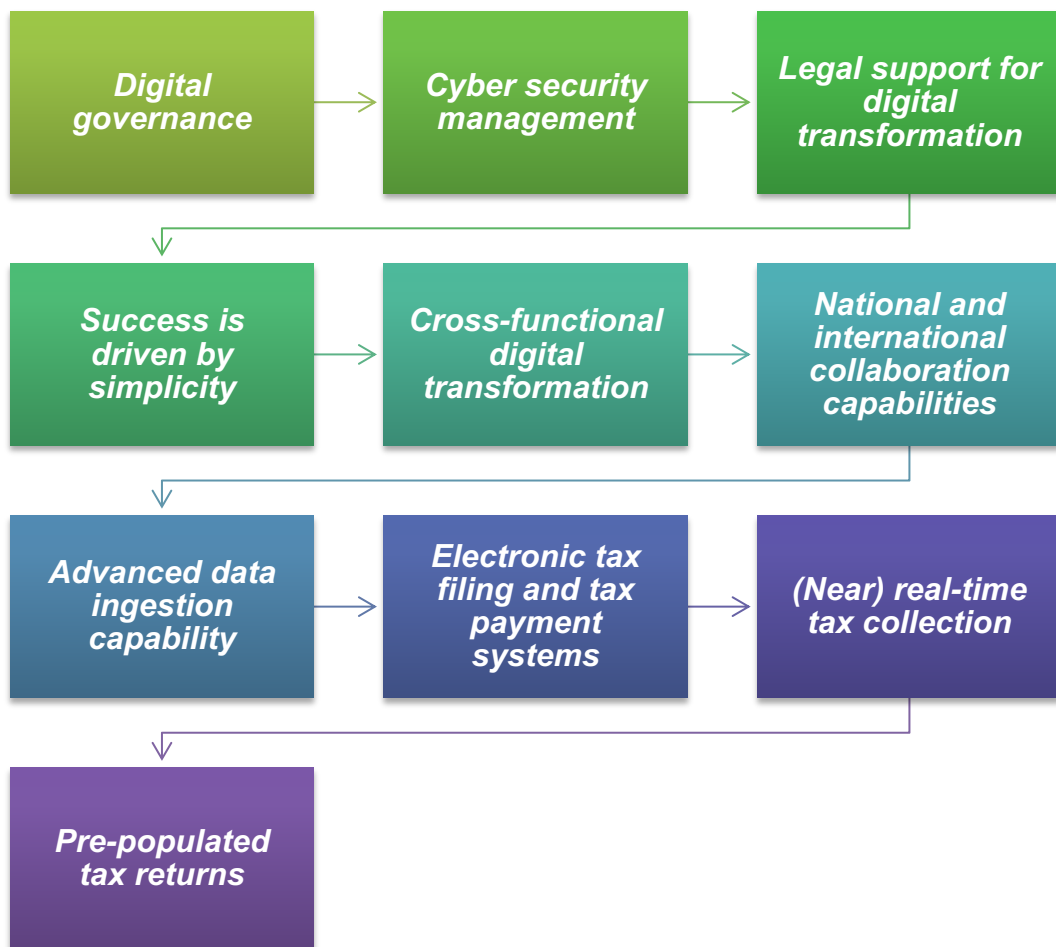
(x) Pre-populated tax returns

The term "pre-populated" with regards to tax returns refers to tax authorities' ability to match the data collected from the taxpayer and third parties to a taxpayer's tax return and to use this data to "pre-fill" the taxpayer's tax return and auto-assess their tax liability. Pre-populated tax returns reduce the taxpayer's tax compliance burden significantly, because the taxpayer is only required to confirm and submit the tax return or to correct the pre-populated data and information, where applicable. Tax authorities' ability to execute this function successfully, however, depend on its ability to collect quality data from third parties. A low digital maturity level and/or imbalance between technology and data will therefore prohibit the tax authority to successfully implement this function.

The minimum digital maturity requirement, as recommended in paragraph (b) above, is therefore a pre-requisite for tax authorities, globally, to implement pre-populated tax returns. Pre-populated tax returns are recommended, because the system benefits both tax authorities and taxpayers.

Martinez-Vazquez and Sanz-Arcega (2018:1-31) state that pre-populated tax returns are associated with fairness, increased taxpayer morale, enhanced tax compliance and it builds trust among the regulator and the regulated. Pre-populated tax returns are further associated with increased tax revenue collection (Martinez-Vazquez & Sanz-Arcega, 2018:1-31). This particular study was based on the tax system implemented in Spain whose tax authority was an early implementer of pre-populated tax returns.

**Figure 6: Elements of minimum standards for digital maturity framework for tax authorities**



Source: Author's own (2020).

All the elements of the proposed minimum standard for the digital maturity of tax authorities are summarised in Figure 6, above. The research results indicate that there is a significant difference in technology and digital reform in response to the digitalisation of the economy. The above two recommendations of continuous digital maturity evaluation, as well as the global implementation of a standard minimum digital maturity model would assist tax authorities in their digital transformation journey to optimise tax administration within the digitalised economy. In addition, it would enhance and standardise service offerings to taxpayers and build taxpayer trust.

(xi) Formal regulation

Black (2002:25) defines regulation as “the sustained and focused attempt to alter the behaviour of others according to defined standards and purposes with the intention of producing a broadly identified outcome or outcomes”. Black (2002:25) indicates that tools, such as standard-setting,

information-gathering and behaviour modification can be used to regulate a certain aspect or behaviour.

In the context of the digital response of tax administration within the digitalised economy, it is recommended that the implementation and the maintenance of the implementation of the minimum standards for digital maturity as recommended in section (d) above is formally regulated by an independent body, such as the OECD.

The formal independent regulation of the implementation of the minimum digital standards would ensure that international tax authorities implement and maintain the minimum recommended standards and that they are monitored on a regular basis by an independent body to ensure an international change in behaviour among tax authorities that would further enhance service offerings to taxpayers globally and reduce BEPS that is enabled by the digitalised economy. The formal regulation of the implementation of these standards would therefore benefit both taxpayers and tax authorities.

#### **(c) Data connection versus data collection**

The research results indicate that all of the participating tax authorities currently collect data instead of connecting to relevant data. It was observed during the research that a significant amount of taxpayer and financial data is collected and stored. It is anticipated that this amount of data will continue to increase exponentially going forward. The latter is associated with high infrastructure cost as well as an increased cyber security risk. It was further observed that a significant amount of the collected data is redundant and is not used to enhance tax administration offerings in any way.

An alternative to the current data storage strategy is the collection of critical taxpayer data and the connection to other data that is required. Such a connection can be established with the use of, for example, automated programme interfaces (APIs) and will allow the tax authority access to (near) real-time data and information, as and when required. The approach would lower digital infrastructure cost and lower the related cyber risks significantly.

#### **(d) International digital expert's forum**

The identified gap in technology and data response to the digitalised economy implies that tax authorities from developed countries have a significant amount of knowledge, experience and skills that can be transferred to tax authorities from developing economies. The establishment of an international technology and data expert digital or virtual forum is therefore recommended.

The establishment of such a forum would enable international collaboration, knowledge and skills transfer among the various experts of tax authorities and direct communication among these experts. Such a forum could take the form of a digital or virtual platform where regular virtual discussions, e-learning and specified requests for assistance or knowledge sharing can be enabled. Such a forum would also significantly benefit tax authorities in the process of digital transformation, because these tax authorities can obtain experiential knowledge first-hand from tax authorities that already underwent substantial digital transformation.

The above recommendations would decrease the digital maturity gap among tax authorities globally, ensure globally standardised services to taxpayers, optimise tax administration within the digitalised economy and establish global expert collaboration and knowledge sharing.

In essence, in section 3.2 above, the second secondary research objective, which was formulated in Chapter 1 as “the evaluation of global data and technology reform in response to the digitalisation of the economy to ensure relevant, efficient and effective tax administration” is addressed.

### **3.3 Tax risk assessment and assurance reform in response to the digitalised economy**

The third element that was evaluated is the reform that took place with regards to the tax risk and assurance process in response to the digitalisation of the economy. This research section addresses the third secondary research objective, as stated in Chapter 1. The results are documented in Chapter 5 (Research article 3) and are summarised and presented below.

#### **3.3.1 Summarised research results regarding the tax risk management and assurance reform in response to the digitalised economy**

In this study, the data collection process consisted of an integrative literature review process as well as the conducting of semi-structured, qualitative interviews. This section includes a short summary of the literature review results and is followed by a summary of the interview results. Similar to the study results, as per Chapter 4, the research results indicate that the reform that took place regarding tax risk management and assurance in response to the digitalisation of the economy differs substantially between the participants from developed and developing economies. In order to provide the reader with accurate and concise research results, the interview results were summarised separately for the participating tax authorities from developed and developing economies. A summary of the literature review follows in the next section.

**(a) Integrative literature review results**

The research results of the literature review, as set out in Chapter 5, section 3, are presented in Table 1.

**Table 1: Summary of integrative literature review regarding tax risk and assurance reform in response to the digitalised economy**

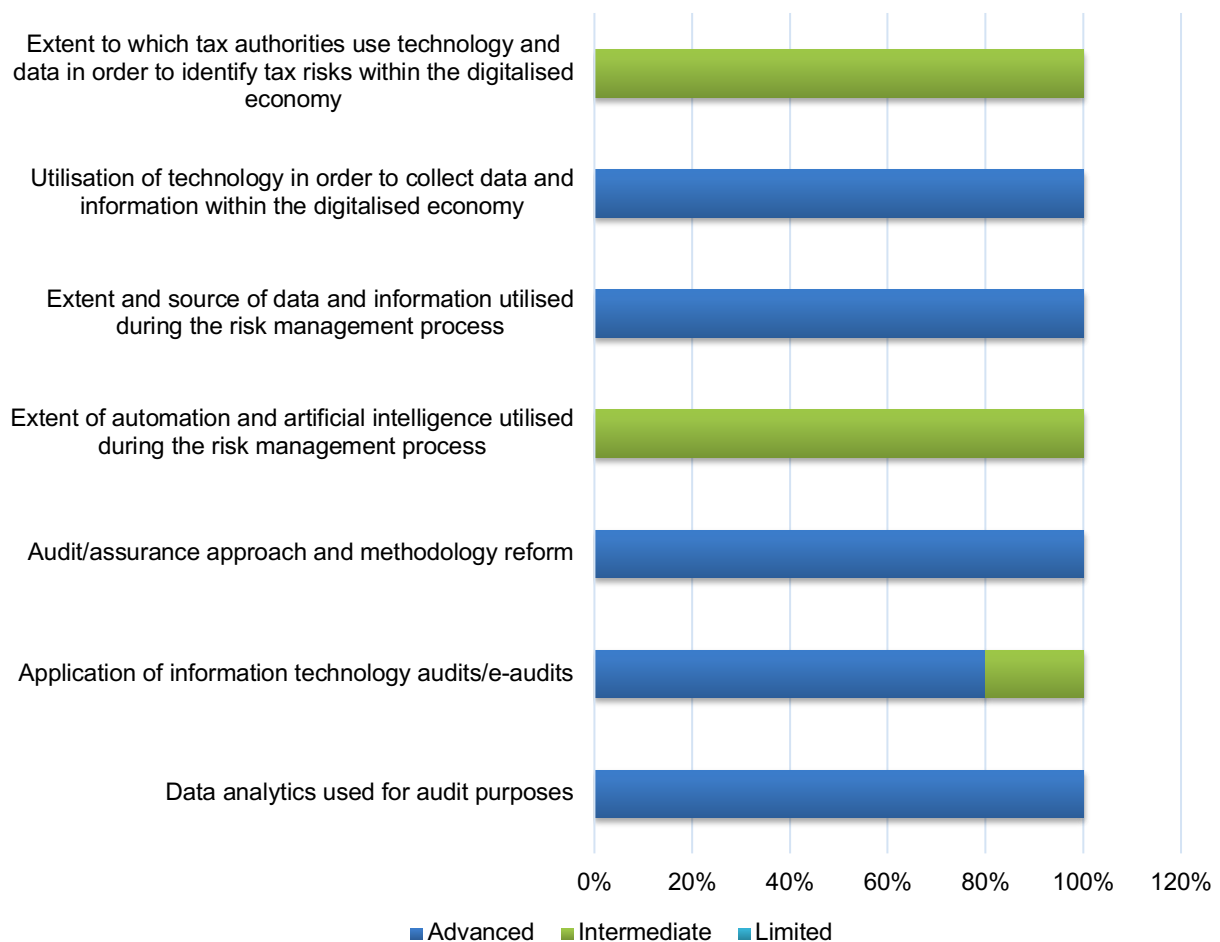
<b>Tax risk identification</b>	<p>Main platforms introduced by digitalised economy:</p> <ul style="list-style-type: none"> <li>• E-commerce</li> <li>• Gig or shared economy</li> <li>• Cryptocurrencies</li> </ul>
	<p>Tax risks:</p> <ul style="list-style-type: none"> <li>• Non-registration in relevant tax jurisdiction</li> <li>• Tax non-compliance due to tax complexity within digitalised economy or due to intentional tax evasion</li> <li>• Tax evasion due to income suppression technology</li> <li>• Global double taxation or non-taxation</li> </ul>
<b>Tax risk prevention reform</b>	<ul style="list-style-type: none"> <li>• Tax legislative reform</li> <li>• Access to data of digital platforms and subsequent ingestion and analysis of the data</li> <li>• E-invoicing</li> <li>• Taxpayer education</li> </ul>
<b>Tax risk detection reform</b>	<ul style="list-style-type: none"> <li>• Digital data collection tools (web harvesting/internet scrapers)</li> <li>• Data matching and predictive analytics</li> <li>• Data visualisation</li> </ul>
<b>Tax assurance reform</b>	<ul style="list-style-type: none"> <li>• Standard audit file for tax</li> <li>• Multidisciplinary assurance teams</li> <li>• E-audits</li> <li>• Specialised assurance software</li> <li>• Data analytics as an assurance tool</li> </ul>

Source: Author’s own (2020).

**(b) Summarised interview results for participating tax authorities from developed economies**

The research results with regards to the reform that took place from a tax risk and assurance perspective among participating tax authorities from developed economies are summarised in Figure 7.

**Figure 7: Summary of tax risk and assurance reform in response to the digitalised economy – participants from developed economies**



Source: Author’s own (2020).

**(i) Utilisation of data and technology as a risk management tool**

The research results (Chapter 5, section 4.1) reflect that none of the participants utilised data and technology on an advanced level to manage tax risk within the digitalised economy. An “advanced” response was regarded as instances where participants utilise an array of data sources to identify tax risks. These sources include, but are not limited to digital and

cryptocurrency platforms, payment intermediaries, financial institutions, data collected with the use of web crawlers, internally collected data through the tax submission and payment process, as well as international data sharing agreements. The data is accurate and complete and is consolidated into one database or data warehouse and is used enterprise wide. The use of tools, such as data matching, predictive analytics and data visualisation is optimised. Furthermore, automation and AI are used to their fullest extent to identify tax risks.

All participants from developed economies applied technology and data on an “intermediate” level, as defined for this study, to manage tax risks within the digitalised economy. These participants collected tax-related data from an array of sources associated with the digitalised economy, such as digital platforms and utilised tools, such as automation, data matching, analysis and data visualisation as tax risk management tools. AI was, however, not utilised to its fullest extent and data was not in all instances consolidated, but in some instances data stored and used in functional siloes.

(ii) Data and information collection from cyberspace

The research results (Chapter 5, section 4.2) reflect that all the participating tax authorities from developed economies (100%) use technology to collect tax-related data from cyberspace. The collected data is subsequently analysed and matched to taxpayer registers, tax returns and other taxpayer and tax-related information. The majority of tax authorities utilise internet scrapers or web crawlers that vary from internally developed to open-source tools.

(iii) Extent and source of data used during the tax risk management process

The research results (Chapter 5, section 4.3) reflect an “advanced” response from participants from developed economies. These participants collect and analyse an array of data for risk management purposes (data wrangling). The data that is utilised includes traditional third-party data gathered from financial institutions and government organisations. Additional data utilised is collected from social media platforms, gig and shared economy platforms, digital currency platforms, import and export data and payment platforms. The nature of the data collected and the way that it is used to manage tax risk varied among the participating tax authorities.

(iv) Utilisation of automation and AI during the tax risk management process

The research results (Chapter 5, section 4.4) reflect that none of the participating tax authorities utilise automation and artificial intelligence to its fullest extent for risk management purposes. All of the participating tax authorities from developed economies utilise automation and AI on an

“intermediate” level. Machine learning, which is a sub-set of AI, is utilised to some extent within the tax risk management process.

(v) Assurance or audit approach and methodology reform

The research results (Chapter 5, section 4.5) indicate an “advanced” assurance or audit approach in response to the digitalisation of the economy. All of the participating tax authorities from developed economies (100%) adopted revised assurance approaches and methods to include the digital environment and its impact on tax compliance.

Examples of such changes include the introduction of e-audits (to some extent), the utilisation of data analytics and the use of audit or assurance software. However, some challenges were indicated by some of the participants with regards to accessing cross-border, taxpayer transactional populations, which can essentially be regarded as a scope limitation on the assurance process.

(vi) IT audits or e-audits

The research results (Chapter 5, section 4.6) suggest that 80% of participating tax authorities from developed economies introduced e-audits to their traditional assurance process. These e-audits include both data analytics as an audit tool and the evaluation of the taxpayer’s information and the general data environment and security. E-audits are not executed for all taxpayers, but for selected taxpayers, as they are guided by the risk profile of the taxpayer.

Of the interviewed tax authorities from developed economies, 20% reflected an “intermediate” response with regards to the adoption and execution of e-audits. In these instances, the tax authorities only utilise data analytics as an assurance tool, but they do not execute e-audits.

The research results, furthermore, suggest that there are inconsistencies among tax authorities’ definition of an “e-audit”. Some tax authorities regard the mere fact that information is requested electronically and audited by using digital tools as an “e-audit”. Others regard the use of computer-assisted audit techniques (including data analytics) as an e-audit. A third group regarded an e-audit to be similar to what is utilised by audit professionals in private practice, which includes but is not limited to the evaluation of the IT environment of the taxpayer with the purpose of evaluating the tax risk and the possible further investigation of, for example, sales suppression software.

(vii) Data analytics as a tax audit or assurance tool

The research results (Chapter 5, section 4.7) indicate that all of the participating tax authorities from developed economies utilise data analytics as part of their assurance process. One of the

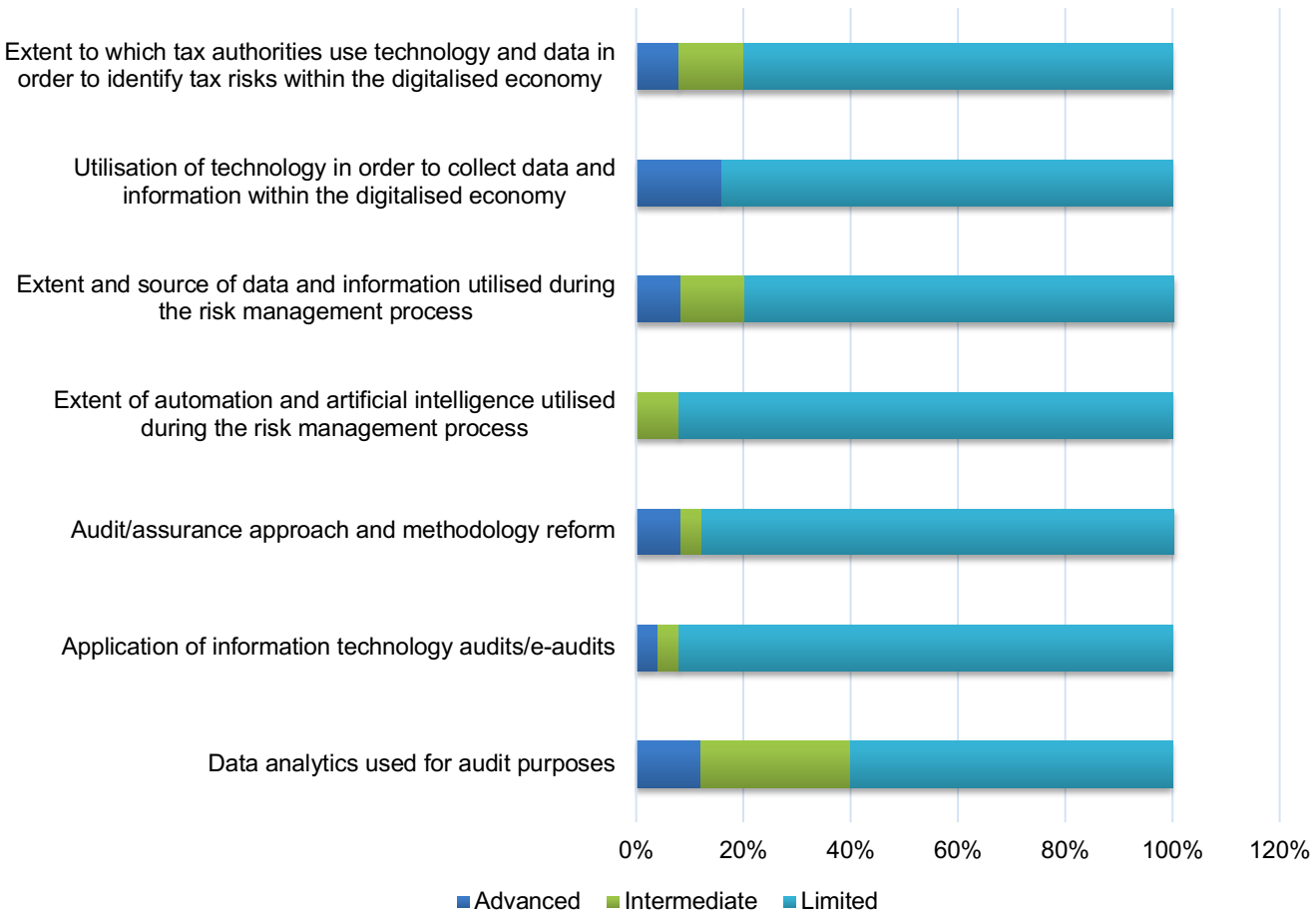
participants indicated that their assurance teams use, among others, pre-built analytical tools to optimise the assurance process.

Overall, the research results indicate that the reform that took place among participants from developed economies with regards to the tax risk and assurance reform in response to the digitalisation of the economy is on an intermediate to advanced level.

**(c) Summarised interview results for participating tax authorities from developing economies**

The research results regarding the reform that took place from a tax risk and assurance perspective among participating tax authorities from developing economies are summarised in Figure 8.

**Figure 8: Summary of tax risk and assurance reform in response to the digitalised economy – participants from developing economies**



Source: Author’s own (2020).

(i) The utilisation of data and technology as a risk management tool

The research results (Chapter 5, section 4.1) reflect that 16% of participants from developing economies reflected an “intermediate” level of reform with regards to technology and data as a risk management tool, while 84% reflected a “limited” response. A “limited” response was allocated to tax authorities that utilise older versions of technology and data science as a tax risk management tool. These tax authorities also store and have access to various sources of data and information, but do not utilise them optimally for tax risk management purposes. A “limited” rating was allocated to tax administrations who have not yet digitalised their tax risk management process or are in the process of digitalisation. In addition, a “limited” rating was allocated to tax authorities that initiated the implementation of digital tax risk management, but the data that is utilised for this purpose is limited.

The study results suggest that an overall low digital maturity level impacts on a tax authority’s ability to utilise data and technology as a risk management tool. It is therefore anticipated that an overall increase in digital maturity would result in an increase in a tax authority’s ability to utilise data and technology as a risk management tool.

(ii) Data and information collection from cyberspace

The research results (Chapter 5, section 4.2) indicate that only 16% of participating tax authorities from developing economies use technology to collect tax-related data from cyberspace. Of participants from developing economies, 84% do not collect data from cyberspace as part of their tax risk management process.

Challenges identified in this regard include legislative constraints relating to possible consumer privacy and skills shortages. The collection of data from cyberspace is, however, considered a critical element and reform that is required to enable tax authorities to identify transactions within the digitalised economy that could trigger possible tax registration and related tax liabilities. The absence of this data increases the risk of tax leaks and evasion.

(iii) Extent and source of data used during the tax risk management process

The research results (Chapter 5, section 4.3) reflect that 8% of the participating tax authorities from developing economies collect and analyse an array of data for tax risk management purposes (data wrangling) and were labelled as having an “advanced” response. Of the participants from developing economies, 12% indicated an “intermediate” response regarding the utilisation of data, while 80% indicated a “limited” response.

The major challenge that was observed relates to the participants' ability to collect data, in addition to the "traditional" third-party data from cyberspace. A further challenge occurs where the overall digital maturity, as per the discussion in section 3.2, is low. The third challenge identified was the lack of accuracy and completeness of data collected from government departments. In these instances, the government entities and departments have either only partially digitalised, have not prioritised the integrity of their digitalised data and/or have not digitalised at all.

(iv) Utilisation of automation and AI during the tax risk management process

The research results (Chapter 5, section 4.4) reflect that 8% of the participating tax authorities from developing economies utilise automation and AI on an "intermediate" level. These tax authorities use automation and AI to a certain extent, but do not fully benefit from its full potential offerings, yet. Of the participating tax authorities from developing economies, 92% utilise automation and AI on a limited level.

The benefits of automation and AI are in most instances not realised by tax authorities from developed economies. The lack is directly linked to the tax authority's digital maturity level and the integrity of its data. If the overall digital maturity levels and data integrity are increased, the organisation would be in a better position to benefit from automation and AI (Greenstein, 2019:1-14).

(v) Change of tax audit approach in response to the digitalisation of the economy

The research results (Chapter 5, section 4.5) indicate an "advanced" assurance or audit approach in response to the digitalisation of the economy for 8% of the participating tax authorities from developing economies. Of the participants, only 4% reflected an "intermediate" response and 88% of participating developing economies reflected a "limited" response with regards to assurance approach and methodology within the digitalised economy.

An "intermediate" response was allocated where tax authorities did not change the audit approach, but only the methodology. A "limited" response was allocated in cases where the participants did not make any changes to their assurance approach or methodology in response to the digitalisation of the economy.

Included in this evaluation was the use of audit or assurance software. It was observed during the research process that some tax authorities from developing economies are still utilising a paper-based audit approach. The overall assurance approach forms part of the corrective phase of the tax risk management process and an assurance approach, which is not relevant to the economic

environment, such as the digitalised economy, would lead to less than optimised recovery of potential tax losses.

(vi) IT audits or e-audits

The research results (Chapter 5, section 4.6) suggest that 4% of the interviewed tax authorities from developing economies introduced e-audits to their traditional assurance process. Of the interviewed tax authorities from developing economies, only 4% indicated that information audits are utilised to some extent, while 92% indicated that e-audits are not executed at all.

The lack of e-audits suggest that the IT environment of the taxpayer is not evaluated during the tax assurance process. Since the majority of taxpayers' financial and tax information are generated by digital tools, the accuracy, completeness and overall integrity of financial and tax information provided for audit cannot, to a large extent, be confirmed in the absence of an e-audit.

(vii) Data analytics as a tax audit or assurance tool

The research results (Chapter 5, section 4.7) indicate that 12% of the participating tax authorities from developing economies utilise data analytics as part of their assurance process. In addition, 28% indicated that they utilise data analytics to some extent while 60% have not introduced the use of data analytics to their assurance process at all.

The utilisation of data analytics as an assurance tool is associated with benefits, such as the audit of total populations instead of samples, planning and substantive testing capabilities and the extraction of specific information, such as manual changes to taxable transactions and/or incorrectly classified tax transactions (Baisalbayeva, *et al.*2018:1-34). The lack of the use of data analytics as a tax audit or assurance tool, therefore, has the potential to lead to a reduced ability to recover tax revenue as a result of tax non-compliance.

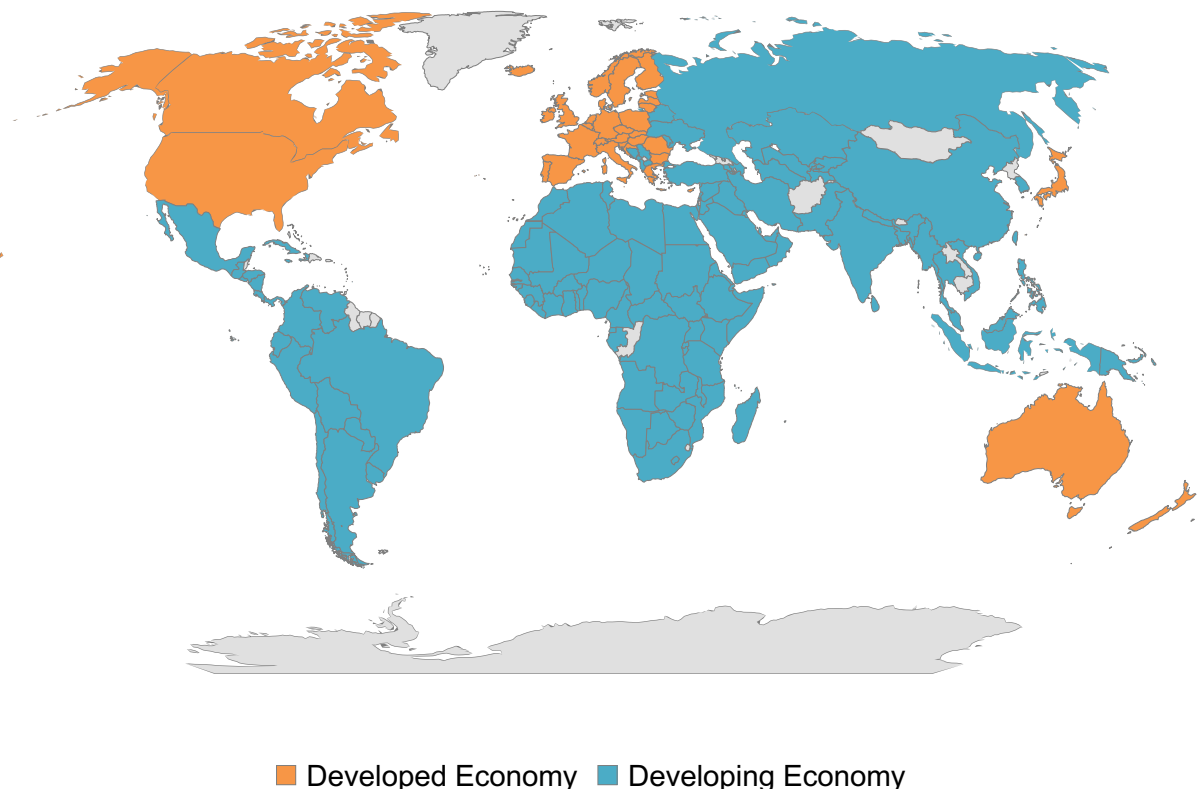
The overall research results indicate that the tax risk and assurance reform that took place in response to the digitalisation of the economy among participating tax authorities from developing economies is limited. A further observation was made based on the research results for sections 3.2.1 and 3.3.1, that the tax administration function is, in essence, designed to administer taxes within confined boundaries with limited abilities to extend this function into a new environment, such as the digitalised economy. A limited risk management and assurance response increases the tax authorities' risk for tax leaks, tax avoidance and tax evasion within the digitalised economy. A limited risk management and assurance ability further negatively impacts on its ability to optimally execute its mandate of revenue collection (European Commission, 2006:21-45).

### 3.3.2 Recommendations regarding reform of the tax risk management and assurance process within the digitalised economy.

The research results for sections 3.2 and 3.3 indicate a significant difference in response among tax authorities from developed and developing economies. The question therefore arises about what the extent of developed economies' presence are from a global perspective. A global view and impact were consequently further considered to formulate an appropriate recommendation with regards to the research findings as documented in section 3.3.1.

For the purposes of this study, the global distribution of developed and developing economies, as classified by the United Nations (2020:165-166), was populated into a world map and are presented in Figure 9 below.

**Figure 9: Global distribution of developed and developing economies**



Source: Author's own (2020).

As seen in Figure 9, it can be observed that developing economies form a major part of the global economy from a geographical perspective. A global or continent-based solution can therefore be regarded as an appropriate recommendation to reduce the tax reform gap between developed and developing economies, as indicated in the research results.

The recommendation follows the same argument, as per the recommendations stated in section 3.1.2 where a hybrid approach is followed that recognises the fact that cyberspace is a unique environment and tax jurisdiction, but that its existence and ability to create economic value is dependent on users who can be attributed to a specific tax jurisdiction. The recommendations follow and are informed by the research results, as documented in section 3.3.1.

The first recommendation is the establishment of global or continent-specific tax administrations. The function of the recommended tax administration(s) would be to:

- a) Ensure global collaboration among the tax administrations and relevant international parties, such as financial institutions, digital platforms and payment platforms
- b) The collection, ingestion and allocation of tax-related data to the relevant and respective tax authorities within the specific continent.

The second recommendation is to establish a minimum standard for tax assurance or audit engagements that would ensure relevant and optimised responses to tax risks detected during the risk management process.

The third recommendation is to establish an international tax risk management and assurance or audit forum, which would enable international collaboration, knowledge and skills transfer. A detailed discussion regarding the above recommendations follows.

#### **(a) Global tax administration support function**

The identified challenges that are shared by participating tax authorities from developing economies include but are not limited to the lack of political support, political interference, budgetary constraints and the lack of knowledge and experience. Another observation made during the research is the fact that international tax legislation and the tax administration system as a whole were established to administer taxes within a “brick-and-mortar” environment and do not necessarily make provision for the administration of taxes in a dual environment that includes traditional, as well as the digitalised economy.

A highly digitalised global tax administration support function would, however, overcome these challenges to ensure relevant and optimised tax risk management within a digitalised economy. The proposed model would ensure political neutrality (to a large extent) and overcome other challenges, such as the lack of knowledge and experience, as well as budgetary constraints.

The recommended model is based on the assumption that the recommendations regarding standards for minimum digital maturity levels, as presented in section 3.2.2, are accepted and implemented by tax authorities globally.

The research results for risk management reform in response to the digitalisation of the economy suggest that the tax authorities from the majority of developed economies followed the following process to manage risk within the digitalised economy:

- The collection of data from cyberspace or a digitalised economy and collaborating with relevant stakeholders, such as digital platforms and payment intermediaries,
- The processing of the data to ensure integrity and relevance,
- The consolidation of the data with existing data sets,
- The application of data analytics, matching and visualisation to identify and detect tax risks,
- Generating an appropriate response to the results, as per the data analytics, matching and visualisation.

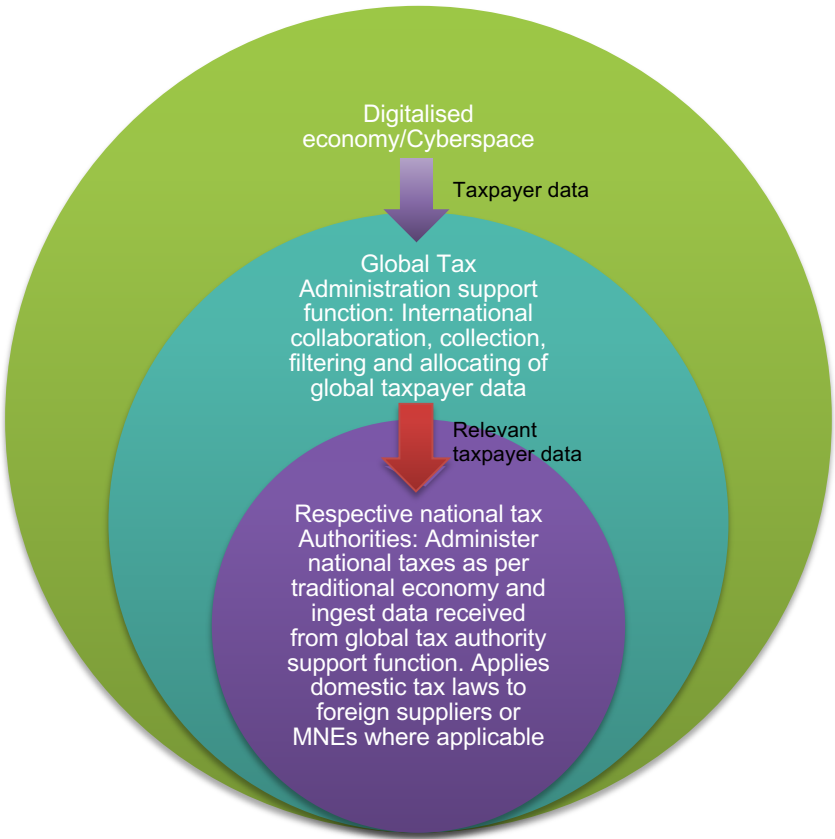
The research results, with regards to the above process from tax authorities from developing economies', indicate that challenges are experienced in all of the above areas. Consequently, it is recommended that the proposed global tax administration support function executes the first two processes whereby data is collected from cyberspace and processed to ensure the integrity and the relevance of the collected data. AI and machine learning should be implemented to collect data from cyberspace. Data, in terms of the OECD initiatives for automatic exchange of information, should also be collected and processed on a global tax administration level. The global tax authority support function should ensure the following:

- Whether the data may be or was collected in terms of the applicable legislative framework(s),
- The integrity, accuracy and completeness of the data,
- The relevance of the data for tax administration purposes,
- Whether the collected data would trigger a taxable event if evaluated in isolation or in collaboration with other taxpayer related information, and
- The relevant tax jurisdiction for taxes due.

After the above processes were followed, the relevant data should be distributed to the relevant tax authorities or jurisdictions.

Based on the assumption that national tax authorities will adopt and implement the standards for minimum digital maturity, as proposed in section 3.2.2, tax authorities would be able to ingest the data received from the global tax administration support function and consolidate it into data lakes or warehouses. Data can then be analysed, matched and visualised (used as business intelligence) to identify and detect tax risks to ensure the appropriate response. The global tax authority support function model is illustrated below.

**Figure 10: Global tax administration support function as a tax risk management tool within the digitalised economy**



Source: Author's own (2020).

The establishment of a global tax administration to support tax risk management within the digitalised economy are associated with various benefits. These benefits include, but are not limited to, the following:

- a) The application of state-of-the-art technology to identify and collect taxpayer related information and data from cyberspace.

- b) An increased ability to reduce tax leaks, tax avoidance and tax fraud enabled by the digitalisation of the economy.
- c) Provide tax authorities with a 720-degree view of their taxpayers, as discussed in section 3.2.1.
- d) A reduction of the identified gap between developed and developing economies' ability to administer taxes within the digitalised economy.

The broad concept of a globalised tax administration system, for the administration of taxes on e-commerce, although fundamentally different from this proposal, was also recommended by Azam (2012:664).

The research results further indicate that the response to identified and detected risks associated with the digitalisation of the economy have not, in all instances, undergone the required reform to limit potential tax losses. It is therefore recommended that a minimum standard for tax risk assurance or audits are prescribed to be adopted and applied by tax authorities, globally. A detailed discussion follows.

**(b) Minimum standards for tax assurance or audits:**

The measures adopted and implemented to respond to detected tax risks will predict the tax authority's ability to recover the potential losses associated with the tax risks that were identified. The research results indicate that the response from participating tax authorities from developing economies in this regard are limited, which might be indicative of a reduced ability to recover tax losses due to the realisation of the identified tax risks. In order to address this risk and even the "playing field" between tax authorities from developed and developing economies, it is recommended that a minimum standard for tax risk assurance or audits are adopted and implemented globally. The recommendations for the minimum tax assurance or audits follow in detail below.

**(i) Assurance software**

It was observed during the research process that some tax authorities from developing economies still utilise a "paper-based" system in terms of which audit or assurance evidence and working papers are printed, filed and stored manually. Taking into consideration that every assurance/ or audit has the potential of being tested in a civil or criminal court, the risks associated with a "paper-based" assurance process cannot be ignored. A paper-based assurance process is associated with an increased risk of audit evidence being edited, destroyed or manipulated. Other risks include unauthorised access to assurance or audit files and an increased complexity of proving

the evidence's integrity in court. "Paper-based" investigations, furthermore, do not make provision for the extent of financial data that is used within the digitalised economy.

Therefore, it is recommended that the minimum standards for tax assurance or audits include the procurement and utilisation of assurance or audit software that allows for the electronic documentation of audit evidence and working papers, access control and activity logging.

(ii) Multidisciplinary teams

The research results indicate that interdisciplinary auditors and multidisciplinary teams are critical when it comes to ensuring a relevant and appropriate response to tax risks associated with the digitalised economy. Skills, with regards to IT, forensics and data analytics, have become critical prerequisites to effective role playing. The cloud computing or blockchain environment, for example, makes the task of verifying transactions and testing controls even more challenging.

The emergence of voluminous qualitative and quantitative data, furthermore, requires auditors to creatively analyse information to corroborate what they observe from the traditional financial transactions and related tax implications. Furthermore, the auditor would be ineffective in his/her duties to recover potential tax losses without a good understanding of the business drivers and models associated with the digitalised economy. The auditor must therefore maintain proficiency in not only financial accounting and reporting, auditing standards and tax regulations, but also in the relevant peripheral disciplines.

Based on the above, it is recommended that the standard for minimum tax assurance or audits include the training of and establishment of interdisciplinary auditors and multidisciplinary assurance teams.

(iii) Data analytics as an assurance tool

The research results reflect that the majority of tax authorities' assurance teams do not utilise data analytics. The utilisation of data analytics as an assurance or audit tool is associated with benefits, such as optimised audit risk identification and mitigation, planning and substantive analytical testing, the investigation of total populations instead of audit samples, the extraction of specific focus areas or transactions and matching transactions between connected entities (i.e. transfer pricing transactions). Specific risks can also be identified with the use of data analytics. The utilisation of data analytics is especially critical during the assurance process of highly digitalised MNEs.

Due to the benefits associated with data analytics as an assurance tool, it is recommended that data analytics is included as a minimum standard for tax assurance within the digitalised economy.

(iv) IT audits or e-audits

The research results suggest that a limited amount of tax authorities globally are currently conducting e-audits in response to the digitalisation of the economy. Financial data and information are generated by digital software in most instances. The general IT environment and security therefore have a significant impact on the integrity of financial and tax records. In addition, the research results confirm the availability and utilisation of software designed to manipulate taxable income. The execution of e-audits has therefore become a critical assurance tool in response to the digitalisation of the economy.

Consequently, it is recommended that e-audits are required as a minimum standard for tax assurance or audit processes. It is recommended that e-audits are made compulsory for large taxpayers and highly digitalised MNEs and that the scope includes, as a minimum, the general IT environment and security.

**(c) International forum of tax risk management and assurance experts**

The research results imply that participating tax authorities from developed economies have undergone a significant amount of reform with regards to tax risk management and assurance in response to the digitalised economy and are well underway to further development. The results, furthermore, indicate that tax authorities from developed economies reflect skills shortages and experience in this regard.

Therefore, it is recommended that a digital international forum for tax risk management and assurance experts is established. The forum should consist of experts in tax risk management and assurance within the digitalised economy. These experts should meet regularly on a digital platform or virtual forum. The forum can become a platform for skills and knowledge transfer, e-learning and the discussion of specific challenges, as and when identified.

The above recommendations would decrease the digital maturity gap among tax authorities globally, ensure standardised services to taxpayers, optimise tax risk management and assurance within the digitalised economy and establish global expert collaboration and knowledge sharing.

Section 3.3 addresses the third secondary research objective, which was formulated in Chapter 1 as “an evaluation of global tax risk assessment and assurance reform as a tool to assess tax

risk and ensure efficient and effective tax assurance within the digitalised economy.” The following section synthesizes the research results as a whole to address the primary research objective and make recommendations that are informed by the research results.

## **4 SYNTHESIS**

The primary objective of the research, as presented in Chapter 1 was to investigate, evaluate and analyse the extent of tax reform within the digitalised economy. Specific focus was placed on the international response to tax legislative and policy reform, the utilisation of technology and data to ensure efficient and effective tax administration as well as tax risk and assurance reform in response to the digitalised economy.

In sections 3.1 to 3.3, the research results are summarised according to the secondary research objectives and recommendations were made based on these findings to support the primary objective. The objective of this section is to synthesise and evaluate the research results of the secondary research objectives and evaluate the results as a whole to address the primary objective of the research and make relevant recommendations. The synthesis, evaluation and recommendations follow.

### **4.1 Synthesis: Tax reform within the digitalised economy - Tax legislation, technology, tax risk and assurance**

The research results, as summarised in sections 3.2 and 3.3, were categorised into developed and developing economies to provide the reader with a clear view of the differences and reform gaps between participating tax authorities from developed and developing economies. This section aims to shortly summarise the legislative and policy reform and to consolidate the research results of sections 3.2 and 3.3 to evaluate the results in their entirety and from a global perspective. The research results are summarised below.

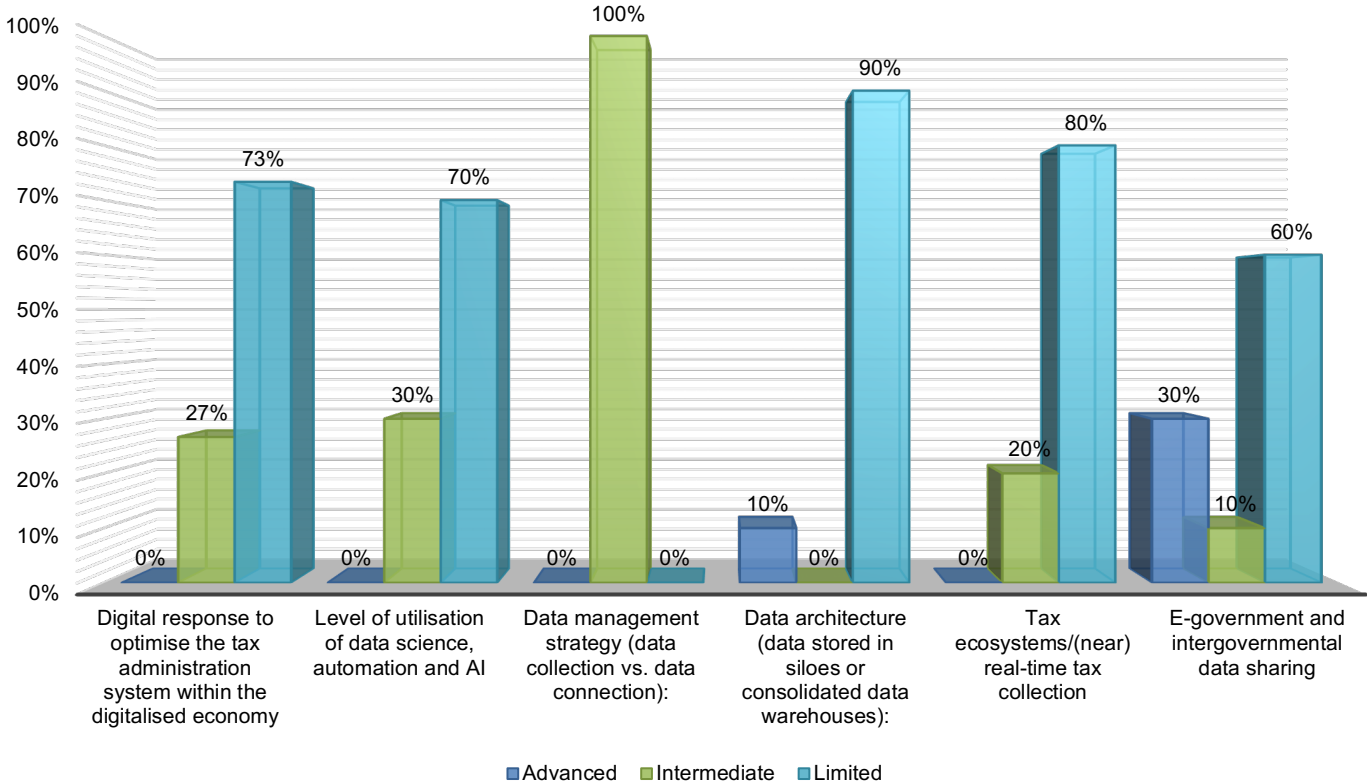
#### **4.1.1 Global tax reform within the digitalised economy: Legislation and policy**

With reference to Chapter 3, as well as section 3.1 above, the research results pertaining to tax legislative and policy reform globally proved to be limited. Challenges highlighted by the research include global inconsistencies in overall tax legislative and policy reform, inconsistencies in definitions, scope, applicable tax rates and registration thresholds. Global inconsistencies with regards to tax submission and general administration requirements applicable to foreign suppliers and MNEs were also highlighted by the study. These challenges translate into high compliance cost for highly digitalised taxpayers and MNEs within the gig, shared or digitalised economy.

The research results regarding tax reform globally prove to remain limited to countries’ borders and traditional tax jurisdictions regardless of the fact that the digitalised economy is borderless. Therefore, it can be deduced that an alternative approach is required to administer taxes within the digitalised economy with regards to global tax legislation and policy reform within the digitalised economy.

4.1.2 Global digital reform to optimise tax administration within the digitalised economy

**Figure 11: Global digital reform to optimise tax administration within the digitalised economy**



Source: Author’s own (2020).

With reference to the combined and holistic research results (as presented in Figure 11 above, Chapter 4 as well as section 3.2 above), the research results prove that the digital response to optimise tax administration within the digitalised economy from a global perspective is limited. The research results indicate that there is a stark contrast in digital reform between tax authorities from developed and developing economies with participants from developed economies reflecting an “intermediate” response, in general, while participating tax authorities from developing economies reflect a “limited” response, in general.

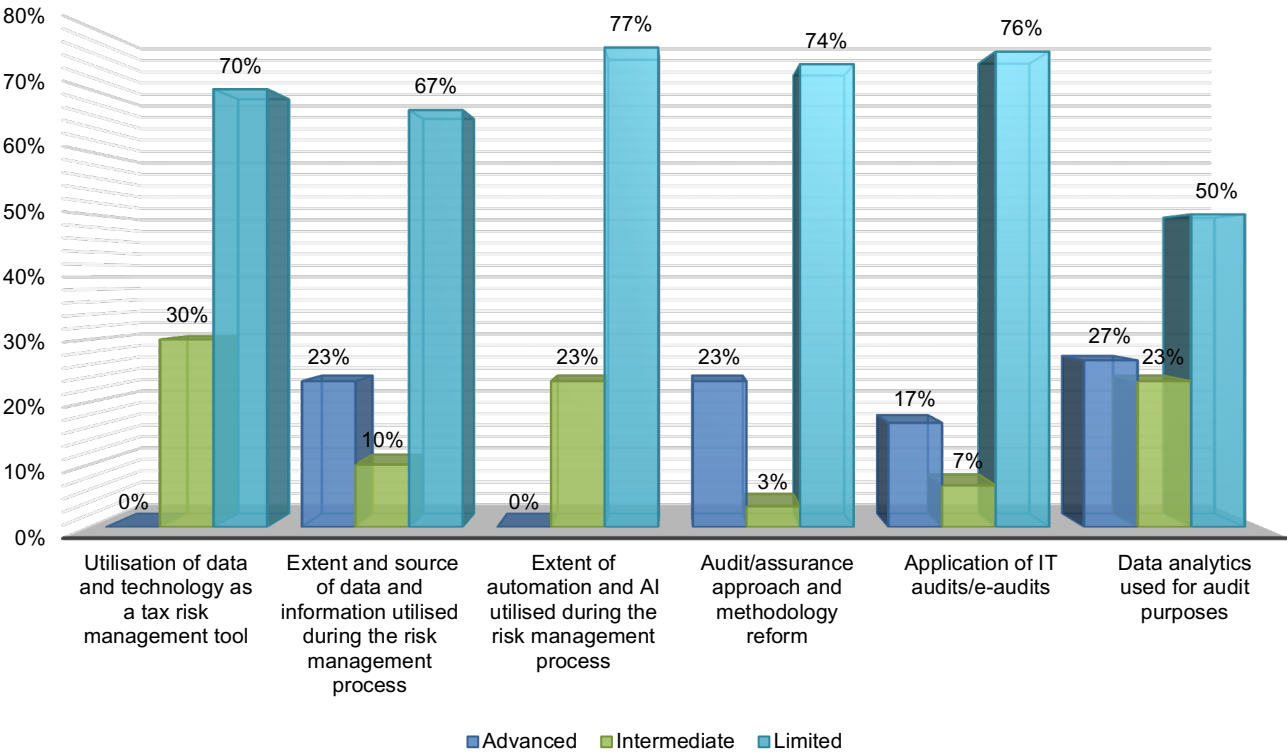
Elements observed during the research that might influence the digital response and related maturity levels include, but are not limited to, the implementation of long-term digital strategies,

the establishment of digital and innovative workforce culture, capital investment in digital reform, political support or the lack thereof, political interference, taxpayer preference, reliability and speed of digital connectivity, multifunctional teams and investment in a digital workforce.

The research results, furthermore, suggest that imbalances within the tax administration (viewed as an “organism” with regards to data, technology, law, processes and people) impact the overall digital maturity of the tax authority. None of the participating tax authorities reflect an advanced digital response to administer taxes within the digitalised economy.

4.1.3 Global tax risk and assurance reform in response to the digitalisation of the economy

**Figure 12: Global tax risk management and assurance in response to the digitalisation of the economy**



Source: Author’s own (2020).

With reference to the combined and holistic research results, as per Figure 12 above, Chapter 5 as well as section 3.3 above, the research results reflect limited global reform with regards to tax risk management and assurance reform in response to the digitalised economy.

Similar to the research results with regards to digital reform to optimise tax administration systems from a technology and data perspective, a significant gap was identified between participating tax authorities from developed and developing economies in relation to tax risk management and

assurance reform. The research indicates that the level of digital maturity has a major impact on the tax authority's ability to optimise tax risk management within the digitalised economy.

The reform that is identified in response to the digitalisation of the economy include the use of specialised tools to collect tax-related and transactional data from cyberspace, the use of legislation to obtain data from digital and payment platforms, the procurement of data from data collection companies and the utilisation of consolidated data-sets to identify and detect tax risks. Data science, analytics, matching and visualisation were furthermore identified as business intelligence tools to identify and detect tax risks.

Tax risk prevention measures included the change of tax and tax administration legislation, the implementation of e-invoicing and taxpayer education. The observations made with regards to reform that took place regarding the assurance process, include the utilisation of tax assurance software, multidisciplinary audit teams, the use of data analytics and the introduction of e-audits. The above reforms, however, were mainly limited to tax authorities from developing economies.

The reasons that were identified for the limited tax risk management and assurance reform among participating tax authorities from developing economies include budgetary constraints, limited to intermediate digital maturity levels and a lack of skills and experience with regards to tax risk management and assurance. None of the participating tax authorities reflect an overall advanced tax risk management reform in response to the digitalised economy.

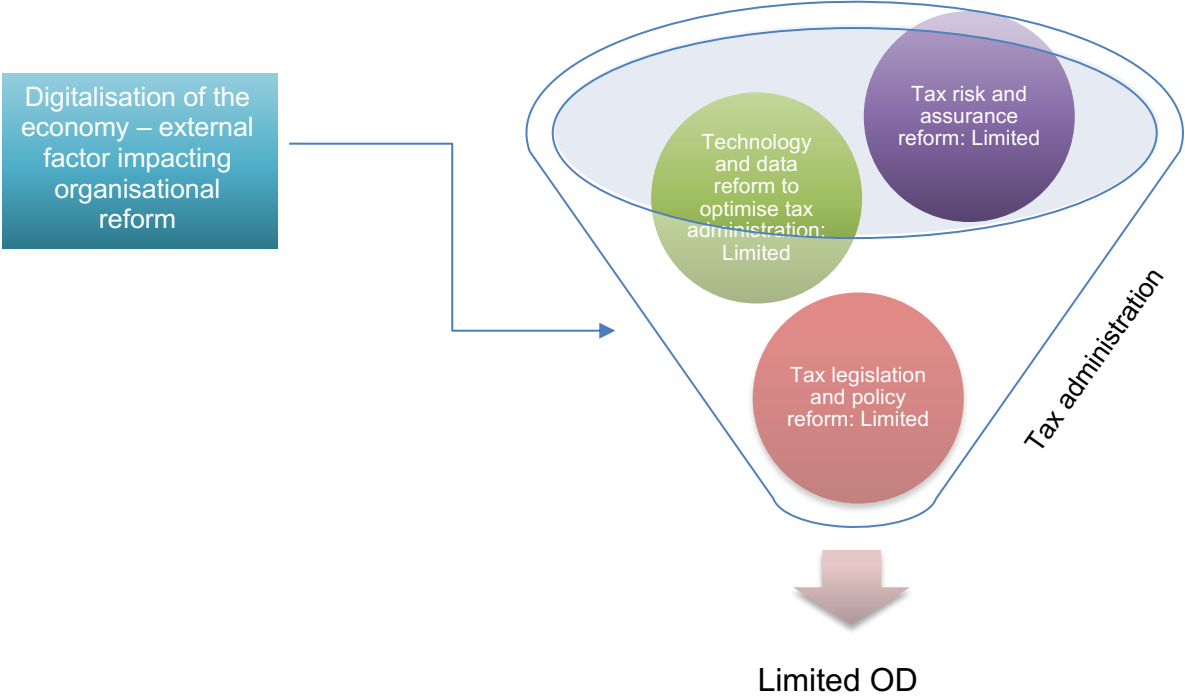
#### 4.1.4 Organisational development (OD)

The research results suggest, from an OD point of view, that the overall response of tax authorities to the external environment remains limited. The external environment, in terms of the specific study refers to the digitalisation of the economy. The elements of OD that were evaluated include tax legislation, data and technology response and the tax risk management process.

The research results indicate that the lack of political will and support, digital maturity, funding, taxpayer culture, workforce culture, national digital infrastructure and connectivity, skills and experience impact tax authorities from developing economies' OD negatively. Elements observed during the study that supported OD among tax authorities from developed economies, include long-term digital strategies, digital maturity, the agility of tax administration systems, capital investment in digital reform, the cultivation of a creative and innovative workforce, political will and support, limited political interference, legislative enablement and multifunctional teams and systems.

The research results documented in Chapters 3 to 5 suggest that the OD and reform of tax authorities from developed economies translate into additional tax revenue and might therefore be regarded to be on a more advanced level than that of the majority of the participating tax authorities from developing economies. The elements that were evaluated and their impact from an OD point of view are illustrated in Figure 13 below.

**Figure 13: The tax administration processes evaluated from an organisational development perspective**



Source: Author’s own (2020).

Overall, the research results suggest that global tax reform in response to the digitalisation of the economy remains limited. The research results further indicate that the traditional tax administration model and the related international tax legislation require an alternative model to adapt to an additional realm that is the borderless, digitalised economy or cyberspace.

The research results further indicate that the tax reform among developed and developing economies might increase the tax revenue collection gap globally due to the differences identified in tax reform among developed and developing economies. Some studies suggest that an increased ability to collect tax revenue translates into an increased ability to stimulate economic growth (Hakim & Bujan, 2010: 100-115). Therefore, it can be deduced that the current international tax reform landscape, as reflected by the research results, has the potential to increase the economic gap between developed and developing economies even further.

The risk for tax leaks, tax avoidance and tax fraud are also increased in instances where tax reform is limited, and the digitalisation of the economy might increase tax non-compliance should the global tax reform remain limited.

## **4.2 Recommendations: Tax reform within the digitalised economy - Tax legislation, technology, tax risk and assurance**

With reference to the five digital strategic goals identified in Chapter 4, the overall research results (section 4.1.1) suggest that these objectives have not been reached to date. While these strategic goals might be applicable to tax administrations within the traditional and the digitalised economy, the model to achieve these goals might differ slightly for the two environments. This is due to various factors, such as the fact that the digitalised economy is borderless and could therefore be regarded as its own jurisdiction, the legislative span of control that tax authorities have over MNEs and current legislative considerations regarding access and use of tax related data. The recommendations regarding tax reform and OD to administer taxes within the digitalised economy follows.

### 4.2.1 Strategic goal setting that is appropriate for the digitalised economy

#### **(a) Effortless tax compliance within the digitalised economy**

One of the main digital strategic goals of the tax authorities, globally, as indicated by the research results, is to make it effortless for taxpayers to comply and a burden not to comply. This dynamic might be achievable at this stage in relation to domestic taxpayers. However, in order to achieve this strategic goal within a digitalised economy, the reform that is required might need a different model and approach than the current response.

The results, in relation to reform with regards to tax legislation and policy, suggest that global reform together with the systems implemented to enforce the tax legislation and policies are inconsistent. The inconsistency makes it difficult, costly and complex for highly digitalised MNEs and individuals or participants to comply within the gig or shared economy. This is in stark contrast with the digital strategic goal to make tax compliance effortless.

In addition, the research results suggest that digital maturity levels and the tax risk management and assurance processes of tax authorities from mainly developing economies lack rigour and agility to accommodate the digitalised economy. Furthermore, none of the participating tax authorities reflected an “advanced” response to optimise tax administration within the digitalised economy. These findings, together with inconsistent global tax legislative and policy reform, is

again in contrast to the strategic goal of making it effortless to apply and a burden not to comply tax regulations.

Consequently, it is recommended that international tax authorities prioritise a long-term, digital strategic goal to make it easy for taxpayers to comply and difficult not to within the digitalised economy. A system, as defined in Chapter 4, section 4.1 that is “advanced” would be regarded as an optimised taxpayer service offering. The tax administration system would integrate and consolidate with the natural eco-system of business and regulatory frameworks (such as accounting systems, financial institutions, digital platforms, cryptocurrency platforms and payment systems). The system, furthermore, would allow taxes to interact seamlessly as a business transaction occurs whereby taxes are collected and verified in (near) real-time. Tax returns for all tax types would be pre-populated and assessed based on the data collected within this digitally-connected eco-system. Tax assessments would be issued by the tax authority and the taxpayer would verify and confirm the accuracy of the assessment within a specified timeframe without waiving his/her right to adjust the tax returns within a legislated period. The tax administration system therefore reduces the time and money spent by the tax-compliant taxpayer, but significantly increases the time and money spent by non-compliant taxpayers.

**(b) Modernisation and integration of technology and systems to optimise tax administration within the digitalised economy**

The research results (Chapter 4 and Chapter 5) suggest that, if evaluated from a global perspective, this goal was not achieved yet and the current model might not be suitable to ensure the realisation of this strategic goal with specific reference to optimised tax administration within the digitalised economy. Various challenges were identified that can be attributed to country-specific (boundary-related) inabilities to reach this strategic goal.

It is, however, recommended that tax authorities include in their long-term digital strategic goals, the modernisation and integration of technology and data to optimise tax administration. This includes the modernisation and integration of technology and systems to optimise tax administration from an internal and external organisational perspective. The internal implementation would require the consolidation of data and technology and the utilisation of this across the enterprise. The external implementation would require the consolidation of tax systems with external business systems as indicated in (a) above to create natural ecosystems.

**(c) Optimised utilisation of data engineering, data science, analytics, automation and AI to improve tax administration within the digitalised economy**

The research results (Chapter 4 and Chapter 5) confirm that this goal was not achieved on a global scale. Similar to the preceding strategic goal, the achievement of this strategic goal is also associated with country-specific (boundary-related) challenges.

It is therefore recommended that international tax authorities include, in their long-term strategic goal, the optimised utilisation of data engineering, data science, analytics, automation and AI to improve tax administration within the digitalised economy. An “advanced” level of utilisation of big data, automation and AI might be regarded as such where only critical data is collected by the tax authority, while they securely connect to other data required (instead of collecting all data).

Data is consolidated to maximise the benefits of data science and analysis. The data is utilised enterprise-wide for tax administration purposes, instead of it being used in functional siloes. The system has the ability to collect and ingest structured and unstructured data from traditional and digital platforms with the capability to share data nationally and internationally. In other words, all the stages of the data lifecycle, where possible, are automated. The tax authority’s data integrity is high and utilises AI across the organisation to its fullest extent with limited human intervention.

**(d) International cooperation within the digitalised economy**

The research results suggest that the OECD has initiated international cooperation channels and models, but that the information obtained from these initiatives are not yet fully utilised to realise its full potential. This is mainly due to digital, as well as, legal challenges. The information is, furthermore, limited to specific enterprises or taxpayers, which limits a tax authority’s ability to extend its tax administrative efforts beyond the specified enterprises or taxpayers.

Refer to section 4.2.2 for recommendations in this regard.

**(e) A “720-degree” view of taxpayers within the digitalised economy**

The research results suggest that a significant amount of effort and measures were implemented to collect and ingest domestic and international taxpayer data and information. The reform is, however, largely limited to tax authorities within developed economies. Inconsistencies with regards to the information collected and ingested for tax administration and tax risk management purposes were also observed. Reasons for tax administrators’ inability to achieve this goal is related to matters, such as digital immaturity, budgetary constraints and the lack of the relevant skills and experience.

Refer to section 4.2.2 for recommendations in this regard.

#### 4.2.2 A global tax administration support function

In addition to the abovementioned recommendations, the following recommendations are made to achieve the digital strategic goals, as set out in 4.2.1 within the digitalised economy.

This tax administration model takes into consideration the fact that the internet, cyberspace or the digitalised economy is a unique environment, which is and should be regulated by its own laws, as discussed in section 3.1.2. Furthermore, the model takes the interaction with other legislative frameworks, such as the Law of the Internet, into consideration and, consequently, acknowledges the fact that tax legislation cannot be reformed in isolation.

The alternative tax administration model, furthermore, accommodates for the fact that developed and developing economies face different challenges and seek to overcome these challenges. The recommended model aims to achieve global fairness and the allocation of tax revenues to the relevant country, as dictated by international law. The model also distributes and allocates skills, experience and resources evenly to achieve a minimum organisational maturity level.

The design of the model and recommendations are informed by the study results and the challenges that were identified that hamper optimised tax administration within the digitalised economy. It should be noted that this model relates to tax administration within the digitalised economy and therefore take into consideration the characteristic of a borderless environment. The recommendations as per section 3.1.2 would apply to this model, while the recommendations as per section 3.2.2 and 3.3.2 apply to the individual tax authorities to enable them to optimise tax administration in both a traditional and digitalised economy (within country borders).

The implementation of the recommendations made in sections 3.2.2 and 3.2.3 will, however, be critical to enable tax authorities to optimise their interactions and benefits derived from the proposed model. The proposed model is the addition of a global tax administration support function, as illustrated in Figure 10, section 3.3.2. The proposed nature and function of this borderless tax administration support follows in detail below.

It is recommended that global tax administration support function are established with the main focus to support the administration of taxes within the digitalised economy. The aim of this tax authority would be to assist international tax authorities to reach the five strategic goals (as stated in Chapter 4) and to ensure tax principles are followed (as per section 3.1.1). The aim of the recommended tax authority is not to diminish or relinquish countries from their sovereignty, but to

enable them to optimise tax administration within the digitalised economy, which would result in subsequent revenue collection.

The following discussion of such a model is split into the critical organisational elements, including legislation, people, processes, technology and data. Focus is placed on the elements highlighted by the research results, while the other critical elements are noted and summarised in short.

#### **(a) Legislative framework**

It is recommended that the establishment and implementation of a global tax authority support function are guided by, at least, international law, international tax law and the principles of the Law of the Internet or cyber law. The recommended enabling legislative framework will provide the respective countries with a measure of control over its strategic and operational objectives, while acknowledging the fact that cyberspace is a unique environment.

The recommendation (as per section 3.1.2) with regards to the adoption and implementation of a hybrid legislative tax model that is applicable to the digitalised economy is recommended to administer taxes within the digitalised economy. This model takes into account the fact that the Internet is a unique environment, as well as its dependence and tangible nature of users or participants who can be traced back to a tax jurisdiction. The adoption and implementation of the tax legislative framework would ensure neutrality, efficiency, certainty and simplicity, effectiveness, fairness and flexibility, as set out by the OECD (2011:4). The administration and enforcement of this recommended legislative model would form a major part of the global tax administrations' mandate and operations.

#### **(b) People**

It is recommended that the global tax authority support function's work force is representative of the global population. A globalised tax authority support function provides the opportunity to appoint world-class experts with regards to organisational development, tax legislation, data and technology, tax risk assessment and assurance.

It is expected that this recommendation would resolve the challenges identified by the research results relating to skills and experience shortages.

#### **(c) Processes**

It is recommended that the global tax authority support function take responsibility for the following processes:

- The collection of data within the digitalised economy,
- The identification of taxable transactions,
- The identification and detection of tax risks associated with the digitalised economy,
- The ingestion, processing and evaluation of collected data,
- The distribution of processed data to the relevant tax authorities,
- Communicating with non-compliant tax authorities and related transactions to the relevant tax authorities,
- Educating participants within the digitalised economy with regards to the potential tax implications of transactions within the digitalised economy,
- Recommending tax legislative and policy reform within the digitalised economy,
- Collecting and distributing indirect tax within the digitalised economy on a (near) real-time basis.

Collecting and distributing indirect tax within the digitalised economy on a (near) real-time basis would reduce the reform gaps identified among tax authorities from developed and developing economies in relation to digital maturity and the risk management process. It would, furthermore, overcome tax authorities from developing economies' challenges with regards to budgetary constraints, skills and expertise, as well as a lack of political will, support and interference, to some extent.

It is recommended that the establishment of a global tax authority would function as a support to the existing international tax authorities. The support would relate to the digitalised economy and address the associated challenges from a tax administrative perspective. The choice to ingest and utilise the information provided by the global tax authority support function therefore remains with the local tax authority. Furthermore, it is recommended that a (near) real-time tax collection system is operated by the global tax authority support function. The taxes collected in this regard would relate to the business transactions that take place in cyberspace. The collected funds can subsequently be distributed in (near) real-time to the relevant tax authorities.

#### **(d) Technology**

It is recommended that the global or tax authority designs and implements a technology solution that is transparent, agile and focussed on the successful achievement of its mandate to administer

taxes within the digitalised economy. Technologies, such as blockchain, cloud computing, AI and machine learning can be utilised to their full extent in the absence of legacy systems that must be taken into consideration, as is the case for international tax authorities. The recommendations with regards to minimum digital maturity standards, as recommended per section 3.2.2, is also recommended to be applicable to the global tax administration.

The recommendation will reduce the reform gap between developed and developing economies, as indicated in the research results. It would, furthermore, enhance tax collection within the digitalised economy and enable the correct allocation of taxes to the relevant tax authorities. The implementation of the correct technology and tax collection systems would, furthermore, make it easy for taxpayers within the digitalised economy to comply and a burden not to comply.

#### **(e) Data**

It is recommended that the global tax authority support function takes full responsibility for an optimised data architecture and management system to successfully collect, analyse, match, visualise and share data within the digitalised economy and with international tax authorities. Its main objective should be to collect, ingest, analyse, match and visualise data from cyberspace with the use of an array of tools, as indicated by the research results.

Information and data should also be collected from digital platforms within the gig or shared economy, digital payment platforms, digital currency or asset traders and miners. Information should, furthermore, be collected from the surface, the deep and dark web to ensure the completeness of information and data collected. The data should, subsequently, be transformed into intelligence and knowledge, which can be used by international tax authorities to administer taxes optimally. The above recommendation would reduce the tax reform gap, as identified by the research results documented (Chapters 4 and 5).

It is recommended that the global tax authority support function be funded by the various tax authorities it serves. The funding model could be based on a percentage of taxes collected on the country's behalf or based on the value created through data collection, processing and distribution for the specific tax authority. The overall cost should, however, be less than the cost of digital transformation that would enable similar outputs to the above capabilities within the respective tax authorities.

Other benefits that can be derived from the establishment of a global tax administration, include international tax arbitration, specialist knowledge and skills transfer, reduced tax collection cost and cross-functional collaboration with other global institutions, such as the World Bank, the International Monetary Fund and the United Nations.

In section 3.4 the primary research objective, which was formulated in Chapter 1 as “investigate, evaluate and analyse the extent of tax reform within the digitalised economy, with specific focus on the international response to tax legislative and policy changes and the utilisation of technology and data to ensure efficient and effective tax administration within the digitalised economy” was addressed. The following section discuss the scientific contribution of this study.

## **5 SCIENTIFIC CONTRIBUTION**

The objective of this section is to focus on the contribution of this study to the “scientific body of knowledge”. The scientific benefits identified as a result of the study, firstly, include the establishment of a globalised view of the current status quo of tax reform in response to the digitalised economy by providing a holistic view of tax administration as an organism that is influenced by various elements. This view is supported by Alt, Preston and Luke (2018:1201-1315) who state that the tax system must be seen and evaluated as a “system”, instead of separate elements that function in isolation.

Secondly, the study proposes possible alternatives to the current tax legislation and policy model, which is suitable for a hybrid environment, which includes elements of both cyberspace and a traditional economy. To date, limited documented formal scientific research could be identified that considers the current tax reform in response to the digitalised economy as a “system” and holistically as an inter-related functioning unit.

A third benefit of the study and contribution it makes to the current scientific body of knowledge, includes the proposal of an overall tax administration model that is suitable for a digitalised economy as well as a tax risk and assurance model that is relevant within a digitalised economy. The recommendations made are multi-layered and aim to solve the identified challenges at both national tax authority level, as well as on a global scale, to ensure optimised tax administration within the digitalised economy that would make it easy for taxpayers to comply and difficult not to comply.

The current international debate and the related uncertainty with regards to tax reform and administration within the digitalised economy reflect that alternative solutions to the current status quo and the related reform is relevant to the academic, international business, tax policy and administration bodies, as well as international governments.

The results of this study and the recommendations that were made based on the study results, however, contribute significantly to the current international debate that relates to the legislative and policy reform with regards to corporate income tax within the digitalised economy. The study, furthermore, provides new insights in relation to other tax types, such as indirect tax, taxes on

cryptocurrencies and the taxing of gig and shared economy workers within the digitalised economy.

Furthermore, the research results and recommendations are in an advanced stage regarding the digital response and related recommendations if compared to the current international public discussion. The scientific contribution of this study in this field is therefore significant.

Given the insights mentioned above, the research results and related recommendations (as per sections 3 and 4 of this chapter) are regarded as a critical and valuable contribution to the current scientific body of knowledge, as well as international bodies such as the OECD, the United Nations, the World Bank, the International Centre for Tax and Development, African Tax Administration Forum and other global tax authorities.

## **6 REFLECTION**

### **6.1 Research approach and methodological reflection**

The objective of this section is to reflect on the study approach and the methodology that was applied and its appropriateness for the study. The detailed justification for the research approach and methodology are discussed in Chapter 2. The research results' reliability and credibility, together with the ethical considerations, are discussed in Chapter 2, sections 3.2 and 4 respectively.

The exploratory nature of this study, firstly, enabled a deeper understanding of the study subject and the interconnectedness of the various tax administration elements and functions. Secondly, it provided sufficient knowledge and data to synthesise the research results of the various elements related to tax administration and tax reform. The synthesis filled the gap in the literature regarding a holistic view on the status quo of tax reform within the digitalised economy, taking into consideration the interconnected elements that enable optimised tax administration. Thirdly, it provided sufficient in-depth multi-layered knowledge to design and recommend a possible alternative solution to a current and actual problem with regards to the research subject. Considering the gaps in the literature in terms of documented research on the multidisciplinary and holistic nature of tax reform and administration, this study produced new insights in terms of the digitalised economy.

The objective of the study was to investigate, evaluate and analyse the extent of tax reform within the digitalised economy, with a specific focus on tax legislative and policy reform, data and technology reform to optimise tax administration within the digitalised economy and tax risk management and assurance in response to the digitalised economy. Due to the limited amount

of literature available on the subject, a systematic inductive study approach was deemed to be highly suitable to obtain rich and multi-layered data and information to fill the gaps in the current literature. An inductive process involves the collection of data and the analysis and evaluation thereof by grouping data segments into categories, followed by themes and finally larger perspectives (Marshall & Rossman, 2014:222).

The application of various literature review methods, which included systematic, semi-structured and integrative reviews, enabled the collection of quality data and knowledge with regards to tax reform within the digitalised economy. Furthermore, it enabled the effective and efficient consolidation, evaluation, analysis and testing of data and knowledge collected in relation to the subject matter, which enabled the building of a theory with regards to the current status of tax reform within the digitalised economy. Due to the fact that the aim of the study was to collect qualitative data, which would provide in-depth insight into the subject matter with the objective to build a theory, semi-structured one-on-one and group interviews were held with tax authorities from thirty different countries. Based on the richness and in-depth knowledge of the research results (as documented in Chapters 3, 4 and 5) the research approach and methods proved to be relevant and appropriate regarding the research objectives.

The data and knowledge that was collected during the research were tested for accuracy and reliability by testing the results against the available literature, reflecting and discussing it with international experts in the respective fields and by inviting independent observers to the interviews. The trustworthiness of the research results was therefore ensured on a continuous basis. Ethical guidelines were, furthermore, followed throughout the research process.

In order to ensure confirmability of qualitative research, the researcher confirmed as far as possible that the findings are the result of the opinions and feedback of participants and not the preferences and characteristics of the researcher. Objectivity was maintained by inviting independent observers to the interviews and subsequently reflecting and discussing the documented results with the independent observers to ensure further objectivity, accuracy and confirmability of the research results.

It can therefore be concluded that the research approach and methodology that was followed proved to be appropriate to reach the research objectives.

## **6.2 Substantive reflection**

The objective of substantive reflection is to compare the research results to other research on the same topic. No reference of documented research could be identified during the research process, which included a holistic approach and considering tax reform regarding tax legislation,

data and technology to optimise tax administration and tax risk management and assurance within the digitalised economy. However, limited literature could be identified for some of the individual elements included in the research, as set out in the secondary objectives in Chapter 1. The literature review does, however, include formal documented research, but in many instances journal articles and opinion pieces as well. The main research results and substantive literature in cases where it was available are discussed below.

- Current global tax legislative and policy reform in response to the digitalisation of the economy is inconsistent, complex and difficult to comply with.
- Current global tax reform in response to the digitalised economy is associated with high tax compliance cost.
- Current tax reform within the digitalised economy does not take the digital element of the digitalised economy into account and that it might be a separate jurisdiction into consideration.

The OECD (2017:1-180) issued a request for public inputs in 2017 regarding the tax challenges associated with digitalisation. Concerns relating to inconsistencies in tax reform and the complexity of the current international tax system applicable to the digitalised economy were raised by global participants, which mainly consisted of the global business community, policy makers and accounting firms. It was indicated in the report that the variety in speed and scale at which changes are introduced globally produced various challenges for highly digitalised MNEs. It was further indicated that the changes in tax legislation not only caused inconsistencies in global tax legislative and policy reform, but it also resulted in complexity in tax compliance. It was further noted that the complexity results in an increased tax compliance cost. Similar sentiments were shared by the European Union (2016:5-72).

Azam (2007: 1-34) states that the international debate regarding tax reform relating to e-commerce is done in isolation without taking cyberspace law into consideration, indicating that an integrative approach should be taken when tax reform of this nature is considered. Other research results from this study are listed below.

- Current global data and technology reform to optimise tax reform within the digitalised economy is limited.
- There is currently a significant difference in data and technology reform with regards to developed and developing economies.
- Current global tax risk and assurance reform in response to the digitalised economy is limited.

- There is currently a significant difference in tax risk and assurance reform in response to the digitalised economy between developed and developing economies.

The reform gap between tax authorities from developed and developing economies was recently discussed in a summary brief and working paper issued by the International Centre for Tax and Development (ICTD) (2020:1-12; 2020:1-24). However, the literature review established that specific mentioning of the tax reform within the digitalised economy with specific reference to data, technology, tax risk management and assurance, is absent in the report.

Despite the absence of evidence on the specific research area, the lack of uniform and global tax reform with regards to tax administration within the digitalised economy is an implicit assumption of the various conclusions and opinions, as per the literature review that indicates that the current tax system is not suitable for the digitalised economy.

- Current global tax reform to date, with regards to tax legislation, technology and assurance requires an alternative approach.

Azam (2012:639-693) published various articles on the need for an alternative tax administration regime and possible alternatives to taxation of e-commerce. One of the models proposed by Azam (2012:639-693) is the implementation of a global e-commerce tax and the establishment of a global tax forum. While Azam's 2012 proposal is fundamentally different from the proposals made in this study, some commonalities include the globalisation of taxes within the digitalised economy, an alternative tax model and the establishment of a global tax authority or similar body.

Azam and Mazur (2019: 2-55) recently published and revised a paper, which also confirms the research results in relation to tax and the tax administration reform required within a digitalised economy. The article addresses tax legislative and enforcement concerns with regards to cloud computing and alternative taxing models are proposed in this regard.

In summary, the lack of formal documented research and literature reviews that consider the holistic mechanism that enables tax administration within the digitalised economy supports the relevance of the research and its subsequent results and recommendations. As indicated above, the literature review that is available, with regards to the individual elements that form part of the tax administration ecosystem, does confirm the research results.

## **7 CONCLUSION**

Technology, the digitalisation and the related globalisation of the economy associated with the introduction of the Third and Fourth Industrial Revolution have proved their potential to stimulate

global economic growth. It is therefore a welcome and necessary addition to the traditional economy. Due to the unique characteristics of the digitalised economy, a fundamental reform from a tax administrative point of view is, however, required.

In this study, the reform that took place globally among international tax authorities was investigated. Specific focus was placed on three critical cornerstones of tax administration within the digitalised economy, including tax legislation and policy reform, data and technology reform to ensure optimised tax administration, as well as tax risk and assurance reform in response to the digitalisation of the economy.

The rationale behind the research is motivated in Chapter 1 and illustrates the need for research in the field. The study was built around one primary objective that was supported by three secondary objectives, as set out in Chapter 1. The main objective was to investigate, evaluate and analyse the extent of tax reform within the digitalised economy with a specific focus on tax legislative and policy changes, data and technology to ensure optimised tax administration and tax risk management and assurance within the digitalised economy. Both the secondary and primary objective were achieved, as discussed in sections 3 and 4 above.

The research findings indicate that tax reform with a specific focus on the three elements of tax legislation, digital reform to optimise tax administration and the tax risk and assurance processes are currently limited if they are evaluated from a global perspective. The research findings further indicate that there is a stark contrast in tax reform among developed and developing economies. Participants from developed economies reflected an intermediate level of reform while participating tax authorities from developing economies reflected an overall limited level of reform in response to the digitalisation of the economy.

Based on the study results, possible alternatives to tax administration within the digitalised economy are recommended. The recommendations are designed to respond and address the challenges identified by the research results. The recommendations and alternative tax model is relevant to a digitalised economy that will optimise tax administration, while taking into consideration the best interests of both taxpayers and tax administrations within the digitalised economy.

## **8 RECOMMENDATION FOR FUTURE STUDIES**

In addition to the recommendations made for future studies in Chapter 4, it is recommended that further studies are undertaken to determine the current tax gap within the digitalised economy for corporate income tax, indirect taxes, taxes associated with cryptocurrencies and taxes associated

with the gig or shared economy. Limited literature could be identified that quantify the current amount of tax that is globally lost (if any) due to the digitalised economy.

The OECD (2008:15) contributes a gross tax gap to filing non-compliance, reporting non-compliance and payment non-compliance. The question, however, arises whether the tax gap can be calculated if there is such a significant amount of uncertainties regarding the tax legislation associated with the digitalised economy.

Another matter for future consideration and study includes the behaviour of taxpayers within the digitalised economy. While still limited, a reasonable amount of research has been done in the field of behavioural psychology related to human behaviour and the Internet and cyberspace, but limited information could be identified regarding taxpayer behaviour within cyberspace. This would be of particular interest to tax authorities, globally, as behavioural economics are increasingly used to drive and improve tax policy (Walsh, 2012:451-475). According to Walsh (2012:451-475), voluntary compliance and the efficiency of tax administration can be optimised if a better understanding of taxpayer behaviour, attitude and motives can be obtained.

Goodman (2016, 2-19), however, clearly states that the digital environment changes human behaviour, which might be indicative of the risk for intentional tax evasion and the chances of tax fraud occurring is increased by the digital environment. Further research with regards to the development and utilisation of software and tools such as AI and machine learning to identify possible “high-risk” non-compliant taxpayers within the digitalised economy might further enrich the scientific as well as business community.

The above suggested future studies would add a significant amount of insight to the academia, as well as add value to global tax policymakers.

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**ANNEXURE A: ETHICAL CONSIDERATIONS – INTERVIEW CONSENT  
FORM**



**CONSENT FORM FOR PARTICIPATING IN A RESEARCH INTERVIEW**

**Tax reform within a digitalised economy:  
Tax, technology and assurance**

H Strauss

*B.Compt Hons CTA; (CA)SA; CISA; M.Tax*

 [orcid.org/0000-0003-3713-6270](https://orcid.org/0000-0003-3713-6270)

Supervisor: Prof. D.P. Schutte

Assistant supervisor: Mr. T. Fawcett

**Dear Sir/Madam,**

You are invited to participate in an interview on the evaluation of global tax reform within the digitalised economy with specific emphasis on tax legislation and policy, technology and data as well as the tax risk assessment and assurance process.

This is an academic research project being conducted by H Strauss (CA) SA; CISA, a student at North West University.

Research project title: *Tax reform within the digitalised economy: Tax, Technology and Assurance*

Research investigator: Helena Strauss

Research participant's name:

---

The duration of the interview will be approximately 45 – 60 minutes but the questionnaire can also be completed in writing should the participant prefer. There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life. Your participation in this interview is voluntary. You may refuse to take part in the interview or stop the interview at any time without penalty. You are free to decline to answer any particular question you do not wish to answer for any reason.

Your responses may no longer be anonymous to the researcher. However, no names or identifying information would be included in any publications or presentations based on the data, and your responses to this interview will remain confidential. If you have questions at any time about the study or procedures, you may contact the researcher Helena Strauss via phone at (anonymised for publication purposes) or via email at (anonymised for publication purposes) .

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from NWU require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Kindly read and sign this form to certify that you approve the following:

- Interview notes will be kept and/or the written feedback on the interview questions;
- The feedback on interview questions will be kept confidential and safeguarded accordingly;
- The feedback obtained during the interview will be analysed by Helena Strauss as research investigator, her study supervisors as well as independent experts as and when required;
- Access to the interview feedback will be limited to the above parties;
- Any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymised to ensure that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed.

**ELECTRONIC CONSENT:**

- You have read the above information
- You voluntarily agree to participate

Agree

Disagree

---

Signature: H Strauss

---

Signature: Participant

## ANNEXURE B: RESEARCH QUESTIONNAIRE

# Tax administration within the digitalised economy

### INTERVIEW QUESTIONNAIRE

H. Strauss (CA)SA; CISA - PhD Student NWU: Tax reform within a digitalised economy: Tax, Technology and assurance

#### **General:**

How did your country/tax authority respond from a tax administration perspective to the digitalisation of the economy which includes but is not limited to e-commerce, the gig economy and the introduction of cryptocurrencies/assets?

#### **INFORMATION TECHNOLOGY RESPONSE:**

What changes/response did your tax authority embrace internally and externally in order to ensure efficient and effective tax administration within the digitalised economy.

#### **Data and Automation including Artificial Intelligence (AI) :**

1. To what extent does your tax authority use big data, automation and artificial intelligence?
2. Does your tax authority consolidate data in data warehouses or data lakes or is it stored in “silo’s”? What are the successes and challenges experienced in this regard?
3. Does your tax authority collect all data or collect only critical taxpayer related data and connect to the rest of the data as and when needed (Collection vs. Connection)?

### **Near Real-time tax collection:**

1. Does your tax authority currently collect tax in (near) real-time?

If so, what process did you follow to successfully roll out the process and what successes and challenges are you able to share in this regard?

2. If not, does your tax authority foresee moving to a (near) real-time tax collection where tax collection becomes a natural part of any business transaction/business eco-system?

### **E-government:**

1. Does your country have an “e-government” where all relevant departments are digitalised and where common information regarding a taxpayer can be legally shared inter-governmentally?
2. If not, does your country foresee itself moving towards an e-government in terms of which tax related data may be legally shared?

### **TAX RISK ASSESSMENT WITHIN THE DIGITALISED ECONOMY:**

1. Are data analytics and automation currently used for risk identification purposes?
2. Does your tax authority survey transactions within the digitalised economy for purposes of tax risk identification and detection?
3. What data is used by your tax authority to identify possible tax risks which should be referred for tax compliance (review, audit, investigations)? Is the data limited to tax return data or is the tax return data matched with other data sources like third-party sources, data obtained from cyberspace etc.?
4. To what extent do you use automation and advanced application like AI?

### **Assurance Tax Audit:**

1. To what extent did you change your audit/assurance approach in response to the digitalised economy? If no changes were made to date, do you intend to adopt a different audit approach in order to ensure efficient and effective assurance tax audits within the digitalised economy? If so, what changes do you foresee?
2. Does your tax authority currently conduct information technology audits/e-audits?
3. To what extent do your tax authority use data analytics during the tax audit/assurance process?

**ANNEXURE C: SUPPORTING DOCUMENTATION FROM THE SOUTH AFRICAN JOURNAL OF ACCOUNTING RESEARCH (SAJAR) (RESEARCH ARTICLE 1)**

**Date:** May 12, 2020  
**To:** "Helena Strauss" hstrauss@sars.gov.za  
**From:** "South African Journal of Accounting Research" RSAR-peerreview@journals.tandf.co.uk  
**Subject:** Submission Confirmation for An evaluation of the legislative and policy response of tax authorities to the digitalisation of the economy  
 May 12, 2020

Dear Ms. Strauss,

Your submission entitled "An evaluation of the legislative and policy response of tax authorities to the digitalisation of the economy" has been received by journal South African Journal of Accounting Research

You will be able to check on the progress of your paper by logging on to Editorial Manager as an author. The URL is <https://www.editorialmanager.com/rsar/>.

Please verify the following information is accurate:

**Additional Information**

1. Helena Strauss, B.Compt Hons CTA; (CA)SA; CISA; M.Tax

Question	Response
Has this manuscript been submitted previously to this journal?	Yes
If yes, what is the manuscript ID of the previous submission? as follow-up to "Has this manuscript been submitted previously to this journal? "	RSAR-S-19-00052
Are you willing to pay the journal's fee for colour print reproduction? (Please check the Instructions for Authors, which can be reached via the 'Instructions and Forms' link at the top right of this page, for details.)	Yes
Confirm that the manuscript has been submitted solely to this journal and is not published, in press, or submitted elsewhere.	Yes
Confirm that all the research meets the ethical guidelines, including adherence to the legal requirements of the study country.	Yes
Confirm that you have prepared a complete text with a separate title page and acknowledgements, and have removed any running headers of author names, to allow anonymous review.	Yes
Do you have any conflict of interest? Please <a href='http://journalauthors.tandf.co.uk/permissions/reusingOwnWork.asp#link3'target =new'>click here for more information about disclosing a conflict of interest.	No
Is the manuscript a candidate for a special issue?	No

Confirm that you have seen, read and understood the publisher guidelines on <a href='http://journalauthors.tandf.co.uk/permissions/reusingOwnWork.asp'target='new'>copyright and author rights. Yes

Number of figures	4
Number of colour figures (For online publication only)	4
Number of tables	0
Number of words	6388
Number of manuscript pages (Note: do not include tables and figures)	24

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Please provide the DOI, pre-reserved DOI or other persistent identifier, if available as follow-up to "Is there a data set associated with this submission?"  <i>Authors are encouraged to share the data underlying their study. For more information see this journals <a href="#">Instructions for Authors</a>"</i>	Not available

Thank you for submitting your work to this journal.

Kind regards,

South African Journal of Accounting Research

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**Date:** Aug 06, 2020  
**To:** "Helena Strauss" helena.strauss123@gmail.com;helena.lubbe@icloud.com  
**From:** "South African Journal of Accounting Research" RSAR-  
peerreview@journals.tandf.co.uk  
**Subject:** (South African Journal of Accounting Research) Your submission has been  
accepted

Aug 06, 2020

Ref.: Ms. No. RSAR-2020-0028R2

An evaluation of the legislative and policy response of tax authorities to the digitalisation of the economy

South African Journal of Accounting Research

Dear Ms. Strauss,

We are pleased to inform you that your manuscript entitled "An evaluation of the legislative and policy response of tax authorities to the digitalisation of the economy" has been accepted for publication in the South African Journal of Accounting Research (SAJAR) on Aug 06, 2020.

Thank you for submitting your manuscript to SAJAR. We look forward to your continued contributions to SAJAR.

With kind regards,

Soon Nel, PhD  
Editor-in-Chief  
South African Journal of Accounting Research

---

In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: <https://www.editorialmanager.com/rsar/login.asp?a=r>). Please contact the publication office if you have any questions.

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Authors must also incorporate a Disclosure Statement which will acknowledge any financial interest or benefit they have arising from the direct applications of their research.

For all manuscripts non-discriminatory language is mandatory. Sexist or racist terms must not be used.

Authors must adhere to SI units. Units are not italicised.

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## **Style Guidelines**

Description of the Journal's article style.

Description of the Journal's reference style.

Guide to using mathematical scripts and equations.

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Please provide the highest quality figure format possible. To improve the print and online display, please ensure that all figures and graphics are supplied at the appropriate resolutions listed below:

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Files should be saved as one of the following formats: TIFF (tagged image file format), PostScript or EPS (encapsulated PostScript), and should contain all the necessary font information and the source file of the application (e.g. CorelDraw/Mac, CorelDraw/PC).

All figures must be numbered in the order in which they appear in the manuscript (e.g. Figure 1, Figure 2). In multi-part figures, each part should be labelled (e.g. Figure 1(a), Figure 1(b)).

Figure captions must be saved separately, as part of the file containing the complete text of the manuscript, and numbered correspondingly.

The filename for a graphic should be descriptive of the graphic, e.g. Figure1, Figure2a.

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**ANNEXURE D: SUPPORTING DOCUMENTATION FROM E-JOURNAL  
OF TAX RESEARCH: UNIVERSITY OF NEW SOUTH WALES  
BUSINESS SCHOOL (AUSTRALIA) (ATAX) (RESEARCH ARTICLE 2)**

**Date:** 05 March 2020 at 07:46

**To:** Helena H. Strauss HStrauss@npa.gov.za, LAW EJTR ejtr@unsw.edu.au

**Cc:** helena.strauss123@gmail.com, Tyson Fawcett Tyson.Fawcett@ato.gov.au, Danie Schutte Danie.Schutte@nwu.ac.za

Dear Helena

Thank you for sending through your paper for the 2020 Tax Admin Conference.

Your paper has been achieved and listed for consideration to be published in the eJTR.

All the best Lydia

**Lydia McDonnell** | Assistant Administrator | Taxation and Business Law UNSW Business School | UNSW Sydney  
2058 Quadrangle Building | UNSW Sydney 2052  
T: 02 9385 6978

E: [l.mcdonnell@unsw.edu.au](mailto:l.mcdonnell@unsw.edu.au) | W: [business.unsw.edu.au](http://business.unsw.edu.au)

**From:** Helena H. Strauss <HStrauss@npa.gov.za>

**Sent:** Thursday, 5 March 2020 12:17 AM

**To:** LAW EJTR <ejtr@unsw.edu.au>

**Cc:** BUS TBL Conferences <tblconferences@unsw.edu.au>; helena.strauss123@gmail.com; Tyson Fawcett <Tyson.Fawcett@ato.gov.au>; Danie Schutte <Danie.Schutte@nwu.ac.za>

**Subject:** Paper submission: New Frontiers in Tax administration Dear Sir/Madam,

Kindly find attached the final paper submission for consideration for possible publication: E-journal of Tax Research UNSW Business School.

Regards

**Helena Strauss (CA) SA; CISA**

**NPA: Investigating Directorate**

Tel: +27 12 845 6693

Cell: +27 79 858 3120

Ext: 12 6693

E-mail: [hstrauss@npa.gov.za](mailto:hstrauss@npa.gov.za) Web: [www.npa.gov.za](http://www.npa.gov.za)

Victoria & Griffiths Mxege Building 123 Westlake Avenue, Weavind Park Silverton, Pretoria, 0184

Private Bag X752, Pretoria, 001

**From:** Chris Evans [cc.evans@unsw.edu.au](mailto:cc.evans@unsw.edu.au)

**Subject:** RE: Special Issue - revised paper

**Date:** 18 September 2020 at 01:49

**To:** Helena Strauss [helena.strauss123@gmail.com](mailto:helena.strauss123@gmail.com); Tyson Fawcett [tyson.fawcett@ato.gov.au](mailto:tyson.fawcett@ato.gov.au);  
Danie DP Schutte [Danie.Schutte@nwu.ac.za](mailto:Danie.Schutte@nwu.ac.za); robin.woellner [robin.woellner@jcu.edu.au](mailto:robin.woellner@jcu.edu.au),  
[peter.mellor@monash.edu](mailto:peter.mellor@monash.edu)

Hi Helena

We have now heard back from both referees who have re-considered the revised article you sent on 26 August together with your responses. I am pleased to inform you that both referees were happy to recommend that the article could now be published. On behalf of Professor Woellner and myself. I am therefore pleased to let you know that the article has been accepted for publication in the Special Issue of the journal, which will be published prior to the end of the year.

Congratulations again,

Regards

Chris

(on behalf of Professor Robin Woellner and myself: Guest Editors)

**Chris Evans** | Professor | School of Taxation and Business Law

UNSW Business School | UNSW Sydney

Room 2054E, Level 2, Quad, UNSW Business School - Ref E15 | UNSW Sydney 2052 T: +61 2 93859546 | M: +61 430 206063

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## **AUTHOR GUIDELINES**

ISSN 1448-2398

The *eJournal of Tax Research* is a peer reviewed journal that publishes original, scholarly works on all aspects of taxation. The journal uses a double blind review process.

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4. The editors will give preference to succinctly written manuscripts. The abstract, introduction and conclusion should be written for the non-specialist. Lengthy mathematical derivations, if any, should be located in appendices.
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- **Books**

- Sandford, Cedric, Michael Godwin and Peter Hartwick (1989), *Administrative and Compliance Costs of Taxation*, Fiscal Publications, Bath

- Sandford, C (ed.) (1995), *Taxation Compliance Costs: Measurement and Policy*, Fiscal Publications, Bath

- **Journal articles**

- Carney, T. and G. Ramia (2002), "Mutuality, Mead & McClure: More 'Big M's for the Unemployed?", *Australian Journal of Social Issues*, 37(3): 277-300.

- Hite, Peggy and Michael Roberts (1991), "An Experimental Investigation of Taxpayer Judgments on Rate Structure in the Individual Income Tax System", *Journal of the American Taxation Association*, 13(2): 47-63

- **Chapter from a book**

- Baxter, J. (1998), "Moving Towards Equality? Questions of Change and Equality in Household Work Patterns" in M. Gatens and A. Mackinnon (eds), *Gender and Institutions: Welfare, Work and Citizenship*, Cambridge University Press, Cambridge, pp. 19-37

- **Working papers, Conference papers, etc.**

- Beer, G. (1996), "An Examination of the Impact of the Family Tax Initiative", *National Centre for Social and Economic Modelling (NATSEM) Policy Paper No. 3*, University of Canberra, Canberra.

- Gerbing, Monica (1988), "An Empirical Study of Taxpayer Perceptions of Fairness", Paper presented at the *American Accounting Association Annual Meeting*, Orlando, Florida

- **Government reports, Public addresses, etc.**

- Cass, B. (1986), "Income Support for Families with Children", *Social Security Review Issues Paper No. 1*, AGPS, Canberra.

Howard, J. (2003), Address to the Australian American Association Luncheon, Melbourne, 2 September, available at <http://www.pm.gov.au/>

**ANNEXURE E: SUPPORTING DOCUMENTATION FROM JOURNAL OF TELECOMMUNICATIONS AND DIGITAL ECONOMY (JTDE) (AUSTRALIA) (RESEARCH ARTICLE 3)**

**From:** Mark Gregory editor@jtde.telsoc.org **Subject:** [JTDE] Submission Acknowledgement

**Date:** 07 August 2020 at 12:23

**To:** Helena Strauss helena.strauss123@gmail.com

Helena Strauss:

Thank you for submitting the manuscript, "The Tax risk assessment and assurance reform in response to the digitalised economy: N/a" to Journal of Telecommunications and the Digital Economy. With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

Manuscript URL: <https://jtde.telsoc.org/index.php/jtde/authorDashboard/submission/306>

Username: hstrauss

If you have any questions, please contact me. Thank you for considering this journal as a venue for your work. Mark Gregory

Journal of Telecommunications and the Digital Economy

<http://jtde.telsoc.org/>

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From: Subject: Date: To:

Payam Hanafizadeh ajtdetelsoc@server.openjournalsystems.com

[JTDE] Editor Decision

21 October 2020 at 15:51

Helena Strauss helena.strauss123@gmail.com, Tyson Fawcett Tyson.Fawcett@ato.gov.au,  
Prof. Danie Schutte Danie.Schutte@nwu.ac.za

---

Helena Strauss, Tyson Fawcett, Prof. Danie Schutte:

We have reached a decision regarding your submission to Journal of Telecommunications and the Digital Economy, "The Tax risk assessment and assurance reform in response to the digitalised economy".

Our decision is to:

As the reviewers' comments were satisfactorily addressed and applied in the revision, I am pleased to inform you that your manuscript has been accepted for publication.

We appreciate you submitting your manuscript to "The Journal of Telecommunications and the Digital Economy" and hope you will consider us again for future submissions.

Kind regards,

Payam Hanafizadeh

Section editor- Digital economy

Journal of Telecommunications and the Digital Economy

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## AJTDE Guidelines for authors

### Focus and Scope

The Journal of Telecommunications and the Digital Economy (JTDE) is an international, open-access, high quality, peer reviewed journal, indexed by Scopus and Google Scholar, covering innovative research and practice in Telecommunications, Digital Economy and Applications.

The mission of JTDE is to further through publication the objective of advancing learning, knowledge and research worldwide.

The JTDE publishes peer reviewed papers that may take the following form:

- Research Paper - a paper making an original contribution to engineering knowledge.
- Special Interest Paper – a report on significant aspects of a major or notable project.
- Review Paper for specialists – an overview of a relevant area intended for specialists in the field covered.
- Review Paper for non-specialists – an overview of a relevant area suitable for a reader with an electrical/electronics background.
- Public Policy Discussion - a paper that identifies or discusses public policy and includes investigation of legislation, regulation and what is happening around the world including best practice
- Tutorial Paper – a paper that explains an important subject or clarifies the approach to an area of design or investigation.
- Technical Note – a technical note or letter to the Editors that is not sufficiently developed or extensive in scope to constitute a full paper.
- Industry Case Study - a paper that provides details of industry practices utilising a case study to provide an understanding of what is occurring and how the outcomes have been achieved.
- Discussion – a contribution to discuss a published paper to which the original author's response will be sought.
- Historical - a paper covering a historical topic related to telecommunications or the digital economy.

## Peer Review Process

Papers submitted to the journal will be peer reviewed by two reviewers initially using a double blind peer review. Papers will be reviewed in accordance with the journal review criteria and reviews should be carried out within four weeks. The papers submitted to the Journal are Scopus indexed.

## Ethical Standards

The ethical standards statement can be [found here](#)

### Source:

Managing and Board of Editors, Australian Journal of Telecommunications and the Digital Economy (AJTDE)

- 1. Write to the audience.** AJTDE is a multi-disciplinary journal whose readership comprises professionals across a range of disciplines in both academia, government and industry, including telecommunications and Internet engineering, law, economics, social sciences and humanities. Your challenge is to avoid most jargon, to explain the essential acronyms and specialist terminology when first introduced (with citations of fuller explanations if appropriate), and most importantly, to write in clear English for an interested, well-educated reader who may not share your disciplinary background.
- 2. Use the Authors' template**
- 3. Download the template.** All submissions should use the template in MS Word, with illustrations submitted as separate files (see 12 below). Articles should normally be less than 5,000 words long (excluding references and endnotes: see below). The footer in the template will be adjusted to reflect the date of issue and the identifying number of the article by the editor.
- 4. Spelling and Grammar**

House standard spelling is according to the Macquarie Dictionary – eg

Use verb form "-ise" rather than "-ize" eg "maximise"

Use noun form "-our" rather than "-or" eg "colour"

But of course retain spelling of items which are quoted from elsewhere.

Changes to this style will be made in the copy-editing process if necessary

5. **Structure your article.** Articles, especially longer articles, are made much more readable by being structured with headings and subheadings, usually beginning with an 'Introduction'. A 'Conclusions' section is essential, and the points made in the Conclusions should echo or draw upon those made in the main body of your article. An Abstract (no more than 150 words) is also essential as part of your article.
6. **Single column format.** Text MUST be submitted in a single column format.
7. **Headings and sub-headings.** Style level headings are provided in the template.
8. **Italics** should be used for the titles of books and for the names of journals, and similar material. Italics can be used for emphasis but they should be used very sparingly. Italics are also used to signify foreign words or phrases that are not in common usage in English. If the word or phrase appears in The Macquarie Dictionary 5th edition, then its usage is considered common enough not to warrant italics. Italics or capitals that appear in the original source of a quotation should be retained.
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**15. References, In-line citations and Notes.** It is important to use in-line citations to give due credit to others' work in the field, including official reports and original online commentary where relevant. All articles cited should appear in the References, listed at the end of the paper.

References and citations should use the APA Style, as found at <http://www.apastyle.org>. Inline citations should follow the 'author-date' system. They should not be numbered, nor should there be any intervening material between the author and the date, except a parenthesis if required. Notes should be kept to a minimum, and any notes must be included as endnotes only, not footnotes. Only explanatory text may be used in endnotes; references, including references cited within explanatory endnotes, must be handled by in-line citations.

In particular, with this system there is no need to use phrases such as "op cit" or "ibid" or equivalent, and authors must not use these.

**Special case:** The editors understand that legal authors are often more comfortable using notes than inline references. In such cases, authors should consult with the Executive Editor ([mark.gregory@rmit.edu.au](mailto:mark.gregory@rmit.edu.au)) before submitting their text.

**16. In-line citation examples:**

**Single author:** "His first task was to evoke the Australian suburb (Boyd 1977, 13–14). More recently, Patrick Troy, editor of *A History of European Housing in Australia*, also placed housing history within an urban context (Troy 2000)."

**Two authors:** "The changes at Lakes Entrance over several decades (Wheeler& Peterson 2005)"

**Multiple authors:** "They described the rationale behind the serval network layer for resilient communications (Gardner-Stephen et al 2013c)"

**17. Reference List examples**

**Books**

**Correct:**

Milne, E. 2010. *Letters, Postcards, Email: Technologies of Presence*, New York, Routledge.

Austin, Greg. 2014. *Cyber Policy in China*. Cambridge: Polity Press

Van Seters, John. 1992. *Prologue to history: The Yahwist as historian in Genesis*. Louisville, Kentucky: Westminster John Knox.

Van Seters, John. 1999. *The Pentateuch: A social-science commentary*. Sheffield: Sheffield Academic Press.

**Incorrect:**

Van Seters, John. 1992. *Prologue to history: The Yahwist as historian in Genesis*. Louisville, KY: Westminster John Knox. 1999. *The Pentateuch: A social-science commentary*. Sheffield: Sheffield Academic Press.

**Note:**

Book titles should have maximum capitals.

All authors, editors and translators should be listed by last name, then first name.

Where there are multiple authors, do not separate authors by 'and'. Separate them with a semicolon: Trinca, Matthew; Wehner, Kirsten.

Where a publication has multiple authors and initials only are being used for the first names, do not put full stops between the initials, and separate the authors with a semi-colon. Only the final author's final initial should have a full stop.

If an author name is repeated in subsequent references, always include the author's name for each reference.

**Journal articles (examples and guidelines):**

Gardner-

England'. *Church History* 68 (4): 910–929.

Cronon, W. 1992. 'A place for stories: Nature, history and narrative'. *Journal of American History* (March): 1347–1376. Westbrook, R. 1990. 'Adultery in ancient law'. *Revue Biblique* 97 (3) (October): 542–580.

Babidge, S; Cokley, J; Gordon, F; Stephen, P; Bettison, A; Challans, R; Lakeman, J. 2013c. "The Rational Behind The Serval Network Layer For Resilient Communications." *Journal of Computer Science* 9, no. 12 (2013): 1680

Lu, KM. 2006. 'A new stepwise project management method', *International Journal of Information Technology and Management*, Volume 5, Issue 2/3, June 2006, pp 212-225

Runions, E. 2004. 'Biblical promise and threat in U.S. imperialist rhetoric, before and after September 11, 2001'. *The Scholar and Feminist Online* 2 (2). Accessed 18 August 2003. Available from: <http://www.barnard.edu/sfonline/reverb/runions1.htm>.

Hindmarsh, D. 1999. "My chains fell off, my heart was free": Early Methodist conversion narratives in Louw, E. 2005. 'Making media work in space'. *International Journal of Astrobiology*, 4(3-4), 259-268. <http://doi.org/10.1017/S1473550405002788>

## **Note**

Do not abbreviate journal titles.

Do not abbreviate city or state names (the abbreviation 'MN' may be as uninformative to a reader from Australia as the Australian abbreviation 'NT' to a reader from North America).

Where there are multiple authors, separate them with a semicolon.

Book chapters, journal articles, conference papers and theses titles should be placed within single quotation marks.

The whole page span of journal articles should be written, rather than the second number abbreviated, and the numbers separated by an en-dash rather than a hyphen (ie 1376–1388 rather than 1376-88).

For dissertations and theses, include the city before the name of the University.

## **Newspaper articles**

Washington Post. 2015. "Netflix tries to explain its apparent sudden flip-flop on net neutrality" Washington Post, 04 March, 2015. Available at: <http://www.washingtonpost.com/blogs/the-switch/wp/2015/03/04/netflix-tries-to-explain-its-apparent-sudden-flip-flop-on-net-neutrality/>

## **Conference proceedings (examples):**

Wheeler, P J; Peterson, J A. 2005. 'Time-series delta changes at Lakes Entrance, Victoria, Australia (1889–2005): Correlation with catchment management events'. A poster paper presented at the National Oceanic and Atmospheric Administration (NOAA) GeoTools '05 Spatial Technology Conference. 7–10 March; Myrtle Beach, South Carolina. Accessed 23 November 2005. Available from: <http://www.arts.monash.edu.au/ges/research/Gis/public/conf.html>.

Kunapo, J; Chandra, S; Peterson, J; Brady, C. 2005. 'Optimisation of process flow for high resolution DEM generation via digital photogrammetry: Test of options with and without ancillary data'. Proceedings of SSC 2005 Spatial Intelligence, Innovation and Praxis: The National

Biennial Conference of the Spatial Sciences Institute. September; Melbourne, Victoria: 1388–1392.

### **Reports and discussion papers (examples):**

Eardley, T. 1998. 'Working but poor? Low pay and poverty in Australia'. SPRC Discussion Paper No. 91. Social Policy Research Centre, University of New South Wales. JunakawJanaka, P; Kapuscinski, C. 1992. 'The costs of unemployment in Australia'. Economic Planning Advisory Council Background Paper no. 24. Canberra: AGPS.

Senate Community Affairs Reference Committee. 2004. 'A hand up not a hand out: Renewing the fight against poverty'. Report on Poverty and Financial Hardship. Canberra: Senate Community Affairs Reference Committee.

Henney, Sue. 2002. Personal communication.

### **Web pages**

*Note: if the publication date is not known, the year and the date that the web page was accessed is cited in lieu of the date of publication.*

Telecommunications Act 1997, at [http://www.austlii.edu.au/au/legis/cth/consol\\_act/ta1997214/](http://www.austlii.edu.au/au/legis/cth/consol_act/ta1997214/)

Bureau of Meteorology. 2005. 'Significant weather – June 1998'. [Internet]. Australian Government. Accessed 27 July 2005. Available from: [http://www.bom.gov.au/inside/services\\_policy/public/sigwxsum/sigw0698.shtml](http://www.bom.gov.au/inside/services_policy/public/sigwxsum/sigw0698.shtml).

Bush, George W. 2002. 'President promotes compassionate conservatism'. [Internet]. San Jose, California: The White House. Released online 30 April 2002. Accessed 14 March 2004. Available from: <http://www.whitehouse.gov/news/releases/2002/04/20020430-5.html>.

Burchell, D. 2002. 'The western Sydney factor'. *Australian Policy Online*. Accessed 11 March 2004. Available from: <http://www.apo.org.au>.

Australian Government. 2013. *Budget 2013-2014: Expense Measures*, Commonwealth of Australia, [http://www.budget.gov.au/2013-14/content/bp2/html/bp2\\_expense-16.htm](http://www.budget.gov.au/2013-14/content/bp2/html/bp2_expense-16.htm), retrieved May 23, 2013