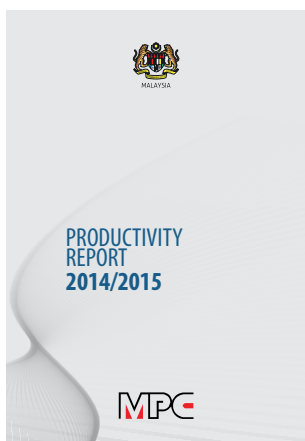


MALAYSIA

PRODUCTIVITY REPORT 2014/2015





“CHALLENGING THE FRONTIER, EMPOWERING PEOPLE”

As the country moves forward in its efforts to become a key global player, Malaysia must adopt a holistic and integrated approach in its journey towards greater productivity. This must be supported by everyone at all levels of government, private and non-profit organisations as well as the *Rakyat*.

This cover represents the wave of opportunity that is empowering the *Rakyat* to unleash its potential in paving the way towards a brighter tomorrow.



22nd Productivity Report 2014/2015

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CONTENTS

MESSAGE FROM THE MINISTER

...viii

- ▶ Infrastructure ...20
- ▶ Regulation ...22

CHAIRMAN'S STATEMENT

...ix

ABOUT MPC

...x

ACKNOWLEDGEMENTS

...xiii

MALAYSIA'S PRODUCTIVITY PERFORMANCE

...1

- ▶ Employment Trends ...3
- ▶ Productivity Performance of Major Economic Sectors ...4
- ▶ Decomposition of Labour Productivity Growth ...4
- ▶ TFP of Major Economic Sectors ...5
- ▶ Capital Deepening ...6
- ▶ Closing the Gap and Challenging the Productivity Frontier ...6
- ▶ Strengthening the Workforce ...8
- ▶ Boosting Productivity Through Information Technology ...9
- ▶ Unleashing the Potential of Industries ...9
- ▶ Outlook 2015 ...10

ENHANCING PRODUCTIVITY THROUGH BETTER GOVERNANCE

...13

- ▶ Human Capital and Education ...16
- ▶ Fiscal Policy ...18
- ▶ Access to Capital ...19

PRODUCTIVITY PERFORMANCE OF THE SERVICES SECTOR

...27

- ▶ Economic Performance...28
- ▶ Productivity Performance ...30
- ▶ Performance of Selected Services Sub-Sectors ...32
 - » Wholesale and Retail Trade Services ...32
 - » Transportation and Storage Services ...35
 - » Professional, Scientific and Technical (PST) Services ...40
 - » Healthcare Services ...45
- ▶ Towards the Global Frontier ...48

PRODUCTIVITY PERFORMANCE OF THE MANUFACTURING SECTOR...51

- ▶ Economic Performance...52
- ▶ Productivity Performance ...54
- ▶ Performance of Selected Manufacturing Sub-Sectors ...58
 - » Electrical and Electronics ...58
 - » Machinery and Equipment ...63
 - » Chemical and Chemical Products ...66
- ▶ Multiplying the Potential of the Manufacturing Sector ...69

PRODUCTIVITY PERFORMANCE OF THE AGRICULTURE SECTOR

...71

- ▶ Economic Performance...73
- ▶ Productivity Performance ...76
- ▶ Performance of Selected Agriculture Sub-Sectors ...77

- » Rubber ...77
- » Paddy ...78
- » Fruits and Vegetables ...79
- » Livestock ...79
- » Fisheries ...80
- » Oil Palm ...81
- ▶ Challenges and Recommendations ...83
 - » Ensuring Competitiveness Under a Free Trade Environment ...83
 - » Labour Issues ...84
 - » Addressing Food Security ...84

PRODUCTIVITY PERFORMANCE OF THE CONSTRUCTION SECTOR ...87

- ▶ Productivity Performance ...89
- ▶ Challenges and Recommendations ...90
 - » A Growing Industry ...90
 - » Capitalising on High-Skilled Foreign Labour ...90
 - » Ensuring the Supply of Building Materials ...91
 - » Spurring the Adoption of Advanced Building Methods ...92
 - » The Road to a More Productive Construction Sector ...93

CHALLENGING THE PRODUCTIVITY FRONTIER ...99

- ▶ Nationwide Productivity Movement ...100
- ▶ Recommendation for Government ...101
- ▶ Recommendations for Industry ...102
- ▶ Recommendations for Enterprises ...103
 - » Best Practices in Managing People ...103
 - » Best Practices on Leadership ...104
 - » Best Practices in Process Improvement ...104

- » Best Practices in Customer-Focused Delivery ...105
- » Best Practices in Sharing Information ...105

APPENDICES ...107

- ▶ What is Productivity? ...108
- ▶ Appendix A.1: Measuring Productivity...109
 - » Terminology and Definition ...109
 - » Methods to Measure Productivity ...109
 - » Appendix A.1.1: Partial Factor Productivity Measure ...109
 - » Appendix A.1.2: Decomposition of Labour Productivity Growth ...111
 - » Appendix A.1.3: Total Factor Productivity (TFP) Measure ...112
 - » Appendix A.2: Productivity Indicators ...116
- ▶ Appendix B: Productivity Data Revision ...117
- ▶ Appendix C: Productivity Statistics by Manufacturing Sub-Sector, 2014 ...118
- ▶ Appendix D.1: Contributions by Services Sub-Sector, 2014 ...119
- ▶ Appendix D.2: Productivity Statistics by Services Sub-Sector, 2014 ...119
- ▶ Appendix E: Incentives to Boost Productivity 2014/2015 ...120
- ▶ Acronyms and Abbreviations ...124

CONTACT MPC ...126

LIST OF FIGURES

Figure 1.1: Malaysia's Labour Productivity Performance, 2010–2014 ...2	Figure 3.1: Contribution of the Services Sector to GDP, 2014 ...29
Figure 1.2: Job-Seekers, Job Vacancies and Unemployment, 2013–2014 ...3	Figure 3.2: Distribution of Employment Within the Services Sector, 2014 ...29
Employment in the Informal Sector by Industry, 2012-2013 ('000) ...3	Figure 3.3: Export and Import of Services, 2006-2013 ...29
Figure 1.3: Labour Productivity of Malaysia's Major Economic Sectors, 2014 ...4	Figure 3.4: Shares of Exports and Imports of Services, 2013 ...30
Figure 1.4: Malaysia's TFP Growth, 1996-2014 ...5	Figure 3.5: Productivity of the Services Sector, 2011-2014 ^a ...31
Figure 1.5: TFP of Malaysia's Economic Sectors ...5	Figure 3.6: Productivity Level and Growth of Wholesale Trade, 2010-2014 ...32
Figure 1.6: Capital Stock, Capital Deepening and Capital Productivity ...6	Figure 3.7: Productivity Level and Growth of Retail Trade, 2010-2014 ...32
Figure 1.7: Share of Gross Fixed Capital Formation (GFCF) by Type of Assets, 2006-2014 ...6	Backward and Forward Linkages of the Services Sector ...33
Figure 1.8: Global Labour Productivity Frontier ...7	Figure 3.8: Labour Cost Competitiveness of Wholesale Trade, 2013-2014 ...34
Figure 1.9: Productivity and Employment as Drivers of GDP Growth, Selected Countries ...8	Figure 3.9: Labour Cost Competitiveness of Retail Trade, 2013-2014 ...34
Figure 1.10: 10 Shifts That Will Spur Continued Excellence in the Higher Education System ...8	Figure 3.10: Capital Productivity and Capital Intensity of Wholesale Trade, 2013-2014 ...34
Figure 1.11: Malaysia's Performance in the Global Innovation Index (GII) - ICTs Sub-Pillar ...9	Figure 3.11: Capital Productivity and Capital Intensity of Retail Trade, 2013-2014 ...34
Figure 1.12: Malaysia vs Korea Productivity Comparison, 2000-2011 ...10	Backward and Forward Linkages for Wholesale and Retail Trade Services ...36
Labour Productivity vs GDP Per Capita. ...11	Figure 3.12: Productivity Level and Growth of the Transportation and Storage Services Sub-Sector, 2010-2014 ...37
Labour Productivity vs Labour Income Share to GDP. ...11	Figure 3.13: Growth of Labour Cost Competitiveness Within the Transport and Storage Sub-Sector, 2013-2014 ...38
Figure 2.1: Malaysia's Performance in Three Major International Reports ...15	Backward and Forward Linkages for Transport and Storage Services ...39
Figure 2.2: Most Productive Economies vs. Least Productive Economies, 2013 ...15	Figure 3.14: Productivity Level and Growth of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014 ...40
Figure 2.3: Participation of Part-Time Labour and Female Labour, 2013 ...17	Figure 3.15: Labour Cost Per Employee of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014 ...41
Figure 2.4: Employed Persons by Occupation in Malaysia, Males vs. Females ...17	Figure 3.16: Unit Labour Cost of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014 ...41
Figure 2.5: Productive Countries – Attracting High-Skilled People, 2013 ...18	Figure 3.17: Capital Productivity of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014 ...42
Figure 2.6: Malaysia's Attractiveness in Terms of Investment Incentives, 2013 ...20	Figure 3.18: Capital Intensity of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014 ...42
Figure 2.7: Internet Bandwidth Speed, Most Productive Countries vs. Malaysia, 2011 (kbps Per User) ...21	Backward and Forward Linkages for Professional, Scientific and Technical Services ...43
Figure 2.8: Total Expenditure on R&D, Top 10 Most Productive Countries vs. Malaysia, 2012 (USD) ...22	Figure 3.19: Productivity Level and Growth of the Healthcare Sub-Sector, 2010-2014 ...45
Figure 2.9: Competition and Regulation, Selected Countries, 2014 ...23	Figure 3.20: Labour Cost Competitiveness of the Healthcare Sub-Sector, 2011-2014 ...45
Figure 2.10: Regulatory Quality Gaps Between Malaysia and Selected OECD Countries; 1996-2013 ...24	Figure 3.21: Capital Productivity of the Healthcare Sub-Sector, 2010-2014 ...46
Figure 2.11: Regulatory Process Improvement for Baker Hughes in Port Klang Free Trade Zone (PKFZ) ...25	Figure 3.22: Capital Intensity of the Healthcare Sub-Sector, 2010-2014 ...46
Figure 2.12: Enhancing Efficiency of Cargo Clearance Using K8's Documentation at Port Klang Free Zone (PKFZ) ...25	

Figure 4.1 Malaysia's Manufacturing Sub-Sectors ...52	Figure 4.17: Added Value, Employment and Productivity of the Chemicals & Chemical Products Sub-Sector, 2011-2014 ...66
Figure 4.2: Added Value Contribution of Selected Manufacturing Sub-Sectors, 2014 ...53	Figure 4.18: Types of Products in the Chemical Industry ...68
Figure 4.3: Added Value Growth of Selected Manufacturing Sub-Sectors, 2014 ...53	Figure 5.1: GDP Performance of the Agriculture Sector, 2010-2014 ...73
Figure 4.4: Employment Distribution Among Selected Manufacturing Sub-Sectors, 2014 ...54	Figure 5.2: Employment in the Agriculture Sector, 2010-2014 ...73
Figure 4.5: Employment Growth in Selected Manufacturing Sub-Sectors, 2014 ...54	Figure 5.3: External Trade of the Agriculture Sector, 2010-2014* ...73
Figure 4.6: Productivity of Selected Manufacturing Sub-Sectors, 2013-2014 ...55	Figure 5.4: Shares of the Agriculture Sub-Sectors, 2010 vs. 2014 ...74
Figure 4.7: Productivity Growth of Selected Manufacturing Sub-Sectors, 2013-2014 ...55	Backward and Forward Linkages of the Agriculture Sector ...75
Figure 4.8: Labour Cost Per Employee of Selected Manufacturing Sub-Sectors, 2013-2014 ...56	Figure 5.5: Productivity of the Agriculture Sector, 2010-2014 ...76
Figure 4.9: Growth of Labour Cost Per Employee of Selected Manufacturing Sub-Sectors, 2013-2014 ...56	Figure 5.6: Capital Intensity and Capital Productivity of the Agriculture Sector, 2010-2014 ...76
Manufacturing Industries Linkages Matrix, 2010 ...57	Figure 5.7: Overview of the Palm Oil Production Chain ...82
Figure 4.10: Unit Labour Cost Per Employee of Selected Manufacturing Sub-Sectors, 2013-2014 ...58	Figure 6.1: GDP Performance of the Construction Sector, 2010-2014 ...88
Figure 4.11: Growth of Unit Labour Cost Per Employee of Selected Manufacturing Sub-Sectors, 2013-2014 ...58	Figure 6.2: Productivity of the Construction Sector, 2010-2014...89
Figure 4.12: Classification of E&E Industries ...59	Figure 6.3: Productivity of the Construction Sub-Sectors, 2013-2014 ...89
Figure 4.13: Added Value Contribution of E&E Industries, 2014 ...59	Figure 6.4: Capital Productivity and Capital Intensity of the Residential Building Sub-Sector, 2013-2014 ...89
Figure 4.14: Employment Distribution Among E&E Industries, 2014 ...60	Figure 6.5: Labour Cost Competitiveness of the Residential Building Sub-Sector, 2013-2014 ...90
Figure 4.15: Added Value, Employment and Productivity of the E&E Sub-Sector, 2011-2014 ...60	Figure 6.6: Total Number of Foreign Workers in the Construction Sector, 2000-2006 ...90
Figure 4.16: Added Value, Employment and Productivity of the M&E Sub-Sector, 2011-2014 ...63	Figure 6.7: Proportion of High-Skill vs. Low-Skill Foreign Workers in the Construction Sector, 2000-2007 ...95
Backward and Forward Linkages of the M&E Sub-Sector ...65	Backward and Forward Linkages of the Construction Sector ...97
	Figure 7.1: Holistic Approach in Boosting Productivity ...100

LIST OF TABLES

Table 1.1: Decomposition of Productivity Growth ...4	Table 4.2: Labour Cost Competitiveness of the M&E Sub-Sector, 2014 ^e ...64
Table 2.1: Government Initiatives to Facilitate Trade Via ICTs ...21	Table 4.3: Labour Cost Competitiveness of the Chemicals & Chemical Products Sub-Sector, 2014 ^e ...68
Table 3.1: Productivity Growth of the Services Sector, 2012-2014 ...31	Table 5.1: International Agriculture Productivity Comparison, Malaysia vs. Selected Countries, 2012 - 2013 ...77
Table 3.2: Logistics Performance Index 2014 ...38	Table 5.2: Production of Paddy of Selected ASEAN Countries ('000 tonnes), 2012 - 2014 ...78
Average Monthly Salary Comparison by Country (USD) ...44	Table 5.3: Average Yield of Paddy 2010-2013* (Metric Tonne/Ha) ...78
Table 3.3: Productivity in the Services Sector (PPP) - Malaysia vs. Selected Countries ...48	
Table 4.1: Labour Cost Competitiveness of the E&E Sub-Sector, 2014 ^e ...61	

MESSAGE FROM THE MINISTER

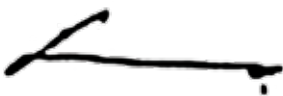
While Malaysia’s economic diversity and strong fundamentals are helping to expedite the country’s transformation towards becoming a high income nation, the catalyst of Malaysia’s economic growth amidst global uncertainties is productivity. In 2014, the country’s labour productivity grew by 3.5% to RM61,708, making it a strong contributing factor to Malaysia’s higher GDP growth of 6%. This puts the country on track to achieving its goal of having an annual productivity growth rate of 3.7% by 2020.

Malaysia will continuously challenge global frontiers by building upon its productivity. Growth in productivity not only has a positive correlation with national GDP, but also ensures greater efficiency and sustainability in the nation’s pursuit of excellence. In 2014, industry growth remained focused on the key sectors of construction (13.2%), mining (6.5%), agriculture (3.9%), manufacturing (3.8%) and services (2.2%). The country must strengthen its workforce, invest in technology and boost the productivity of our industries if it is to accelerate its journey to challenge the productivity frontier. Companies must instil a culture of productivity within their employees, suppliers and industries as a whole to sustain growth.

The Government and industry leaders must enact change and improvements through effective mind-set change. The Government will make a concerted effort to promote this change of mindset within businesses and the Rakyat in order to accelerate the country’s productivity growth, but these efforts will only succeed with the wholehearted support of the country’s workforce. Higher productivity will benefit the Rakyat by increasing wages, reducing costs and improving the country’s overall quality of life.

A holistic, nationwide productivity movement involving the Government, industry and businesses will support the country’s long-term economic well-being and give our children a brighter future. In this regard, under the 11th Malaysia Plan the Government will put in place a nation-wide productivity agenda and implementation plan with a five-year Malaysia Productivity Blueprint. This blueprint will strengthen the governance and institutional mechanism for implementation of productivity strategies. A National Productivity Council (NPC) will also be set up to outline direction and formulate a comprehensive and specific action plan to drive productivity through the proposed blueprint.

I hope this report will serve as an informative and helpful reference to decision makers in their strategic planning and policy formulation. We seek to challenge existing barriers and to strive for greater achievements that will ultimately turn Malaysia into a more competitive economy with higher productivity.



DATO’ SRI MUSTAPA MOHAMED
Minister of International Trade and Industry
Malaysia

CHAIRMAN'S STATEMENT

This is the 22nd edition of the Malaysia Productivity Report, which is published annually to review the country's economic performance in terms of productivity. It analyses and benchmarks the country's productivity at the sectoral, national and international levels and provides recommendations for improvements within each. This year, the report also highlights the Nationwide Productivity Movement to change mindsets and foster a culture of productivity in all Malaysians.

Malaysia Productivity Corporation (MPC) spearheads the country's efforts to boost productivity and competitiveness through partnerships with various ministries, Government agencies and industry associations. Internationally, MPC works closely with the International Institute for Management Development (IMD), Asian Productivity Organisation (APO), World Bank, Organisation for Economic Cooperation and Development (OECD), World Economic Forum (WEF) and The Conference Board (TCB).

MPC has initiated several projects to boost productivity and improve the country's ease of doing business. These are designed to reduce unnecessary regulations and stimulate healthy competition towards achieving Good Regulatory Practice (GRP) while encouraging new business ventures. MPC directly supports local businesses with the Enterprise Intervention Innovation Programme (EIIP), which helps steer companies towards greater productivity growth by changing the mindsets of employees through tools such as LEAN Management, Team Excellence, Material Cost Savings and Service Excellence.

MPC's industry studies and global productivity comparisons make us uniquely qualified to provide recommendations to other organisations looking to maximise their productivity. We make our research and data on productivity and competitiveness readily available to interested parties and host training programmes and conferences to empower businesses

and organisations. In doing so, MPC helps Malaysian industries to modernise and embark on a path to greater productivity.

By helping people understand why productivity is so vital to the welfare of Malaysia and its various institutions, we hope that innovation will flourish to spur greater productivity growth. MPC encourages companies to benchmark themselves against global standards and competitors, and we recommend that businesses act as agents of change within their industry whenever possible. But while true productivity gains can only be realised by empowering local businesses and their workforces, the rakyat must share the responsibility of driving change.

In challenging the status quo, we can introduce lasting change and make the country's economy more dynamic and resilient to global forces and influences. All Malaysians can benefit from a change in mindset, particularly industry players. The country must challenge the frontiers of productivity by innovating novel ideas to push the nation forward, which is the theme for this year's productivity report.

I would like to extend my thanks to the Ministry of International Trade and Industry (MITI) and the various other Government agencies that provided support and guidance to MPC's Board of Directors during the year. My thanks also go to the Members of the Board, the Consultative Panels and Taskforces for their contribution, inputs and commitment in pursuing the objectives of MPC.



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Chairman

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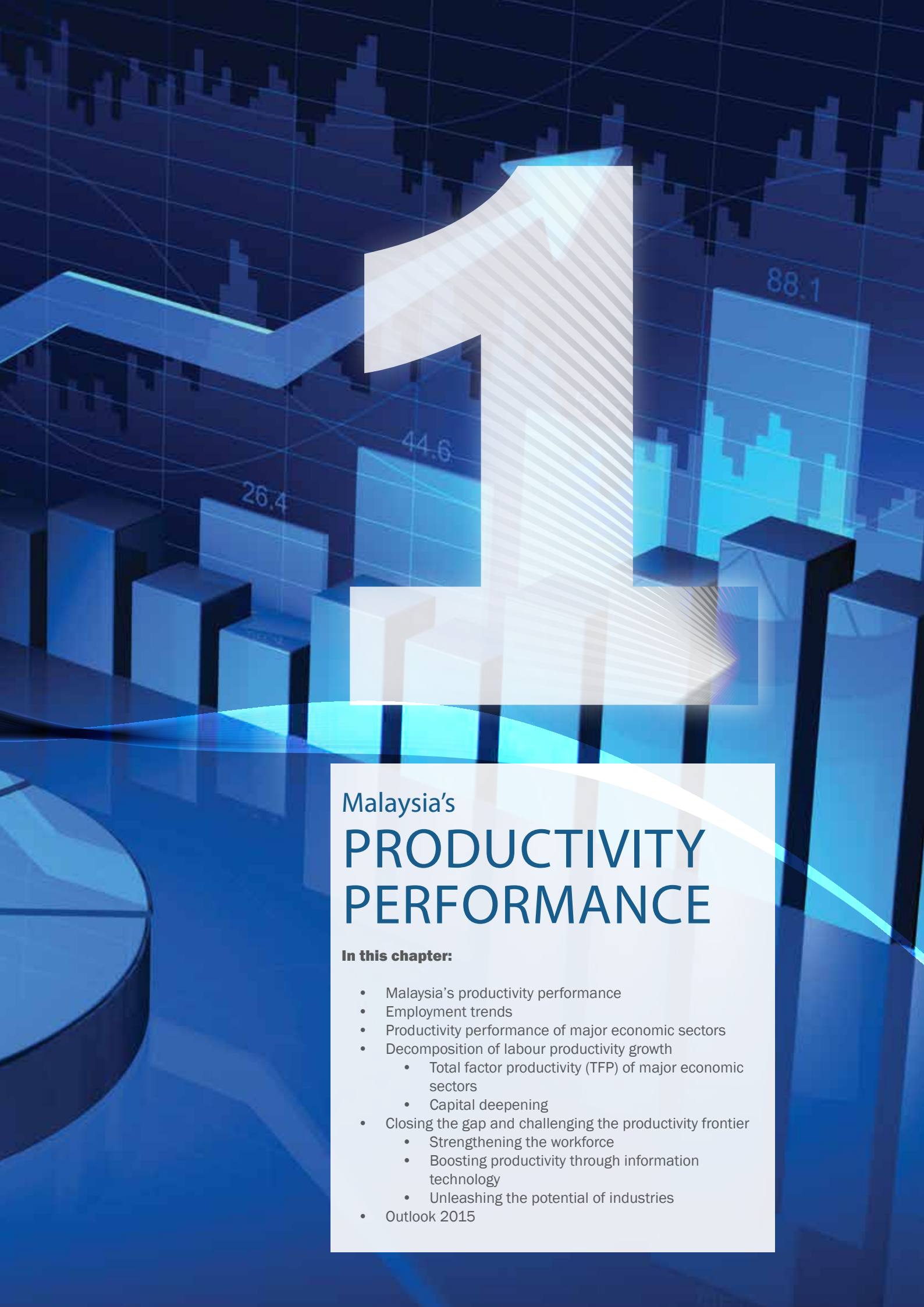
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Malaysia's

PRODUCTIVITY PERFORMANCE

In this chapter:

- Malaysia's productivity performance
- Employment trends
- Productivity performance of major economic sectors
- Decomposition of labour productivity growth
 - Total factor productivity (TFP) of major economic sectors
 - Capital deepening
- Closing the gap and challenging the productivity frontier
 - Strengthening the workforce
 - Boosting productivity through information technology
 - Unleashing the potential of industries
- Outlook 2015

Malaysia has the potential to post productivity growth of 3.7% in the next five years. To do so, the country needs to unlock new catalysts for growth to close the gap and challenge the global productivity frontier set by the world's top-performing advanced economies.

A modern economy achieves growth from two sources: first, by increasing the quantity of its inputs in terms of capital, labour and materials; and second, by improving the efficiency by which that capital, labour and material is used. By enhancing its productivity, a country can achieve economic growth by transforming the same amount of input into higher levels of total output. Productivity growth can also stem from a higher quality of goods and services without corresponding increases in their prices.

Higher standards of living will require the country's businesses to leave behind traditional growth factors and embrace a new, modern path to challenge the frontier.

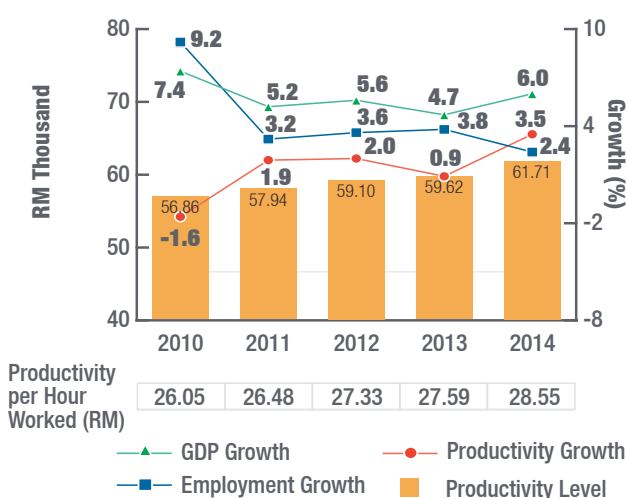
Providing Malaysians with genuine prosperity and higher standards of living will require the country's businesses to leave behind traditional growth factors and embrace a new, modern path to challenge the frontier. Growing Malaysia's productivity will elevate the country's per capita income and living standards over the long term, but empowering the nation's workforce to accelerate productivity growth will require technological innovation as well as more efficient utilisation of the country's resources. A more productive economy will also utilise natural resources more efficiently and enable industries to remain productive in the long run without putting undue pressure on the environment. These factors

will raise the economy's capacity to supply goods and services and push the country towards greater productivity frontiers.

MALAYSIA'S PRODUCTIVITY PERFORMANCE

In 2014, Malaysia's labour productivity as measured by real added value per employee improved by 3.5% at RM61,708 from RM59,622 in 2013. Meanwhile, labour productivity as measured by real added value per hour worked improved to RM28.55 in 2014 from RM27.59 in 2013. The growth in productivity was a contributing factor

Figure 1.1: Malaysia's Labour Productivity Performance, 2010-2014



Computed from: Department of Statistics, Malaysia; Economic Report, Ministry of Finance

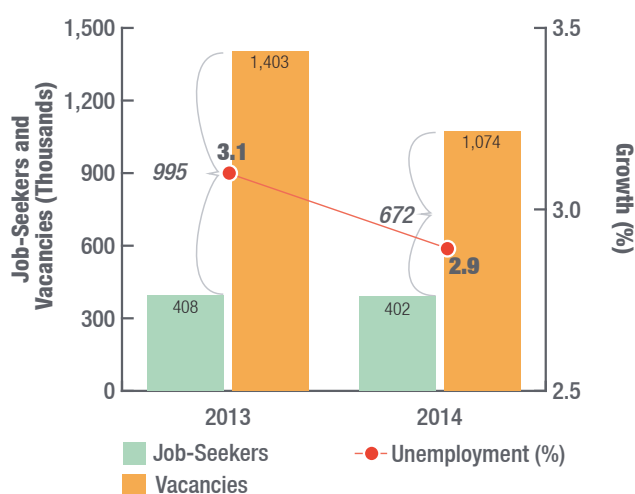
to the higher growth in Gross Domestic Product (GDP) at 6.0%. The higher GDP was also due to improvements in labour efficiency during the year. Employment grew by 2.4%, which was slower than the 3.8% recorded in 2013 (Figure 1.1). For the period of 2011-2014, Malaysia's labour productivity registered growth of 2.1%. Malaysia's labour productivity is targeted to grow at an average annual rate of 3.7% towards becoming a high-income economy by 2020.

EMPLOYMENT TRENDS

In 2014, Malaysia's Labour Force Participation Rate (LFPR) increased slightly to 67.5% from 67% in 2013. Malaysia's employment remained stable, with total employment reaching 13.5 million persons with a net job gain of 322,100 persons from the previous year. The unemployment rate declined marginally at 2.9% in 2014 from 3.1% in previous year.

Malaysia's employment mismatch between vacancies and job-seekers remained high but showed a decreasing trend. Total active job-seekers were recorded at 401,827 people compared with 407,626 people in 2013, while the number of vacancies during 2014 was 1,074,018 positions compared with 1,402,690 positions in 2013 (Figure 1.2). The ratio of vacancies per job-seekers

Figure 1.2: Job-Seekers, Job Vacancies and Unemployment, 2013–2014



Computed from: Department of Statistics, Malaysia; Economic Report, Ministry of Finance; Bank Negara Malaysia.

EMPLOYMENT IN THE INFORMAL SECTOR

In 2013, employment in Malaysia was recorded at 13.2 million persons. Out of this figure, 1.3 million persons or 9.7% were employed in the informal sector, an increase of 1.5% compared with 2012. About 60% of those employed in the informal sector had attained secondary education, followed by 23% with primary education, 9% with tertiary education, and 5% with no formal education.

Informal employment basically occurs in small and less efficient firms operating in the grey market. They gain cost advantages over more productive and law-abiding firms by ignoring quality and safety regulations or avoiding taxes. They also lack incentives to invest and achieve economies of scale. The increasing size of the informal sector in Malaysia may impact productivity.

Employment in the Informal Sector by Industry, 2012–2013 ('000)

Industry	2012	2013
Manufacturing	161.7	207.5
Construction	261.3	252.0
Wholesale and retail trade, repair of motor vehicles and motorcycles	195.5	226.2
Accommodation and food and beverage service activities	134.6	177.6
Administrative and support service activities	53.4	69.4
Human health and social work activities	106.0	198.3
Other service activities	30.5	29.7
Others*	100.0	123.5
Total	1,044.0	1,284.2

Note: *Others refers to Mining and Quarrying; Water Supply; Sewerage, Waste Management and Remediation Activities; Transportation and Storage; Information and Communication; Financial and Insurance/Takaful Activities; Real Estate Activities; Professional, Scientific and Technical Activities; Education; Arts, Entertainment and Recreation.

Source: Department of Statistics, Malaysia.

was reduced from 1:3.4 to 1:2.7, indicating that there are fewer job opportunities in the market. The drop in the number of job-seekers in 2014 also indicates that people might be finding work in the informal sector.

PRODUCTIVITY PERFORMANCE OF MAJOR ECONOMIC SECTORS

The construction sector recorded the strongest productivity performance with growth in productivity at 13.2%, followed by mining at 6.5%, agriculture at 3.9%, manufacturing at 3.8% and services at 2.2% (Figure 1.3). The construction sector performed well mainly due to strong growth in the residential and non-residential sub-sectors. The sector recorded a labour productivity level of RM26,895 in 2014 from RM23,755 in 2013.

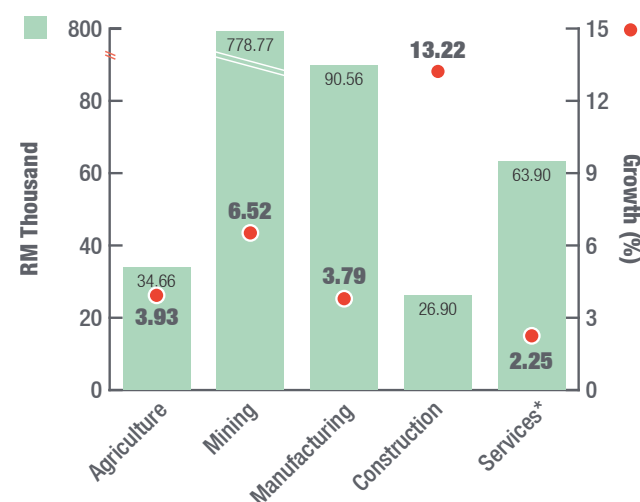
Labour productivity in the manufacturing sector increased to a level of RM90,556 from RM87,248 during the previous year, supported by double digit productivity growth in the basic pharmaceuticals products, wood and wood products and electrical and electronics (E&E) sub-sectors. Other sub-sectors registered productivity above the industry average, namely palm oil products, refined petroleum products and chemicals and chemical products.

Meanwhile, productivity in the services sector grew 2.2% in 2014 to RM63,897 compared with RM62,492 in 2013. This growth was supported by the other services sub-sector, which grew by 10.8%, mainly on the back of the healthcare industry's contribution. The industry's productivity growth was supported by better facilities, higher quality and affordable costs, as well as the contribution of private insurance. Transportation and storage also achieved strong productivity growth at 10.1%, while the productivity of the wholesale and retail trade grew by 6.2%.

DECOMPOSITION OF LABOUR PRODUCTIVITY GROWTH

By decomposing Malaysia's labour productivity into capital intensity and total factor productivity (TFP) growth,

Figure 1.3: Labour Productivity of Malaysia's Major Economic Sectors, 2014



Computed from: Department of Statistics, Malaysia
Note: *Excludes Government Services

Table 1.1: Decomposition of Productivity Growth

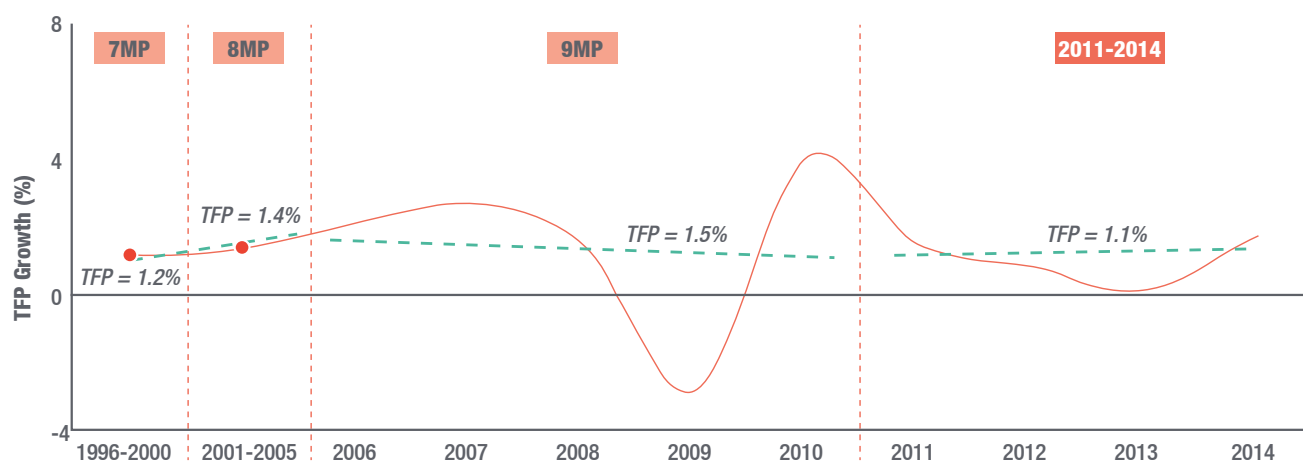
	9MP (2006-2010)	2011-2014
Productivity	2.7%	2.1%
Capital Intensity	1.2%	1.0%
TFP	1.5%	1.1%

Computed from: Department of Statistics, Malaysia and Economic Report, Ministry of Finance

analysis shows that growth in labour productivity is a result of higher contribution in TFP relative to capital intensity during the 2011-2014 period. Slower growth in both TFP and capital intensity contributed to the lower productivity growth in the 2011-2014 period compared with Ninth Malaysia Plan (9MP) period (Table 1.1).

Malaysia registered an average of 1.1% TFP growth during the 2011-2014 period, with the highest growth being recorded in 2014 at 1.9%. However, TFP growth was slower than what was achieved in the Ninth Malaysia Plan (9MP), Eighth Malaysia Plan (8MP) and Seventh Malaysia Plan (7MP) (Figure 1.4).

Figure 1.4: Malaysia's TFP Growth, 1996-2014



Computed from: Department of Statistics, Malaysia and Economic Planning Unit, Malaysia

TFP of Major Economic Sectors

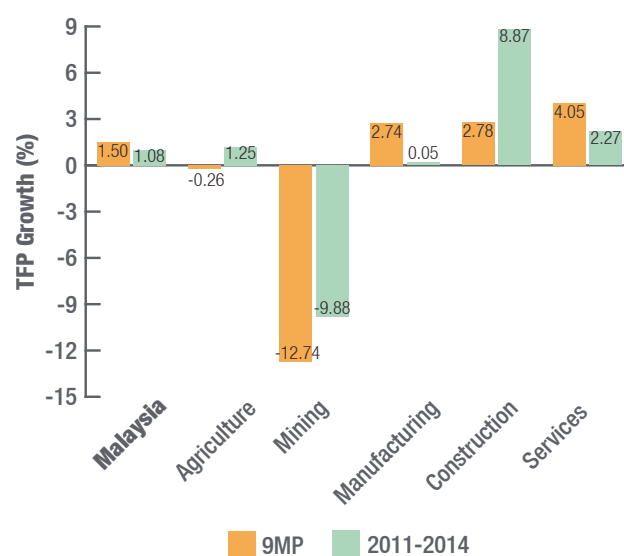
All of economic sectors displayed slower growth in TFP during the 2011-2014 period compared with the 9MP period except for the construction and agriculture sectors (Figure 1.5). Malaysia's productivity during this period would have been much higher if all the sectors recorded a higher TFP growth.

The construction sector is a high-investment sector, making it a significant economic driver. Many stakeholders at various stages of the value chain rely on the construction sector for business. The sector recorded a significantly higher TFP growth in the 2011-2014 period (8.9%) compared with the 9MP period (2.8%).

The agriculture sector recorded a TFP growth of 1.3% in 2011-2014, an upward bounce from its negative growth of -0.3% during the 9MP. The positive TFP growth is in line with the Government's move to modernise and transform the sector, and even higher TFP could be within reach if the sector takes advantage of the commencement of the ASEAN Economic Community (AEC) in the near future.

The TFP growth of the services sector moderated to 2.3% in 2011-2014 from 4.1% during the 9MP period. However, government initiatives to modernise the sector through liberalisation activities will spearhead economic and TFP growth in the long-term.

Figure 1.5: TFP of Malaysia's Economic Sectors



Computed from: Department of Statistics, Malaysia

For the manufacturing sector, TFP grew at a minimal rate of 0.1%. The realisation of the AEC has the potential to further enhance manufacturing TFP. Sub-sectors such as automotive, electronics and food could further enhance their productivity by leveraging on the AEC's impact to achieve economies of scale and optimise costs for labour and input sourcing, inventory, logistics and transactions.

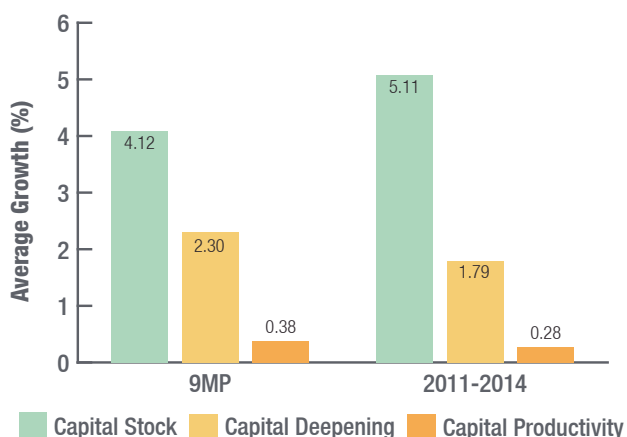
Capital Deepening

One important driver of long-term productivity growth is technological advancement. To gain a technological edge over competitors, firms need to invest into physical capital by either acquiring it or developing it in-house. Such investments will drive productivity provided that they are properly utilised to improve worker efficiency and create higher value-added products and services. Investments in productive capital such as information and communication technology (ICT) and machinery and equipment (M&E) assets are able to increase labour productivity.

Over the period 2011-2014, growth in capital productivity declined marginally at 0.3%, while growth in capital stock stood at 5.1% (Figure 1.6). The lower growth in capital productivity compared to capital stock indicates that investments are focused on quantity rather than the quality of assets.

On average over the past nine years, Malaysia's investment into structure was higher compared with investment in other productive assets such as M&E and other assets. Focused investment in structure surpassed that in M&E during the 2011-2014 period. In 2014, the share of investment in M&E and other assets was 41.2% and 8.1% respectively compared with 50.6% investment in structure (Figure 1.7).

Figure 1.6: Capital Stock, Capital Deepening and Capital Productivity

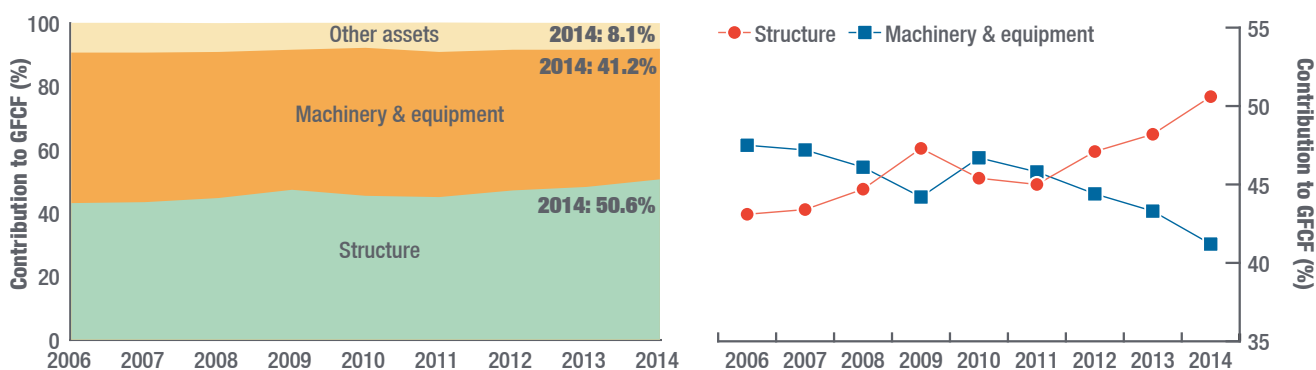


Computed from: Department of Statistics, Malaysia

CLOSING THE GAP AND CHALLENGING THE PRODUCTIVITY FRONTIER

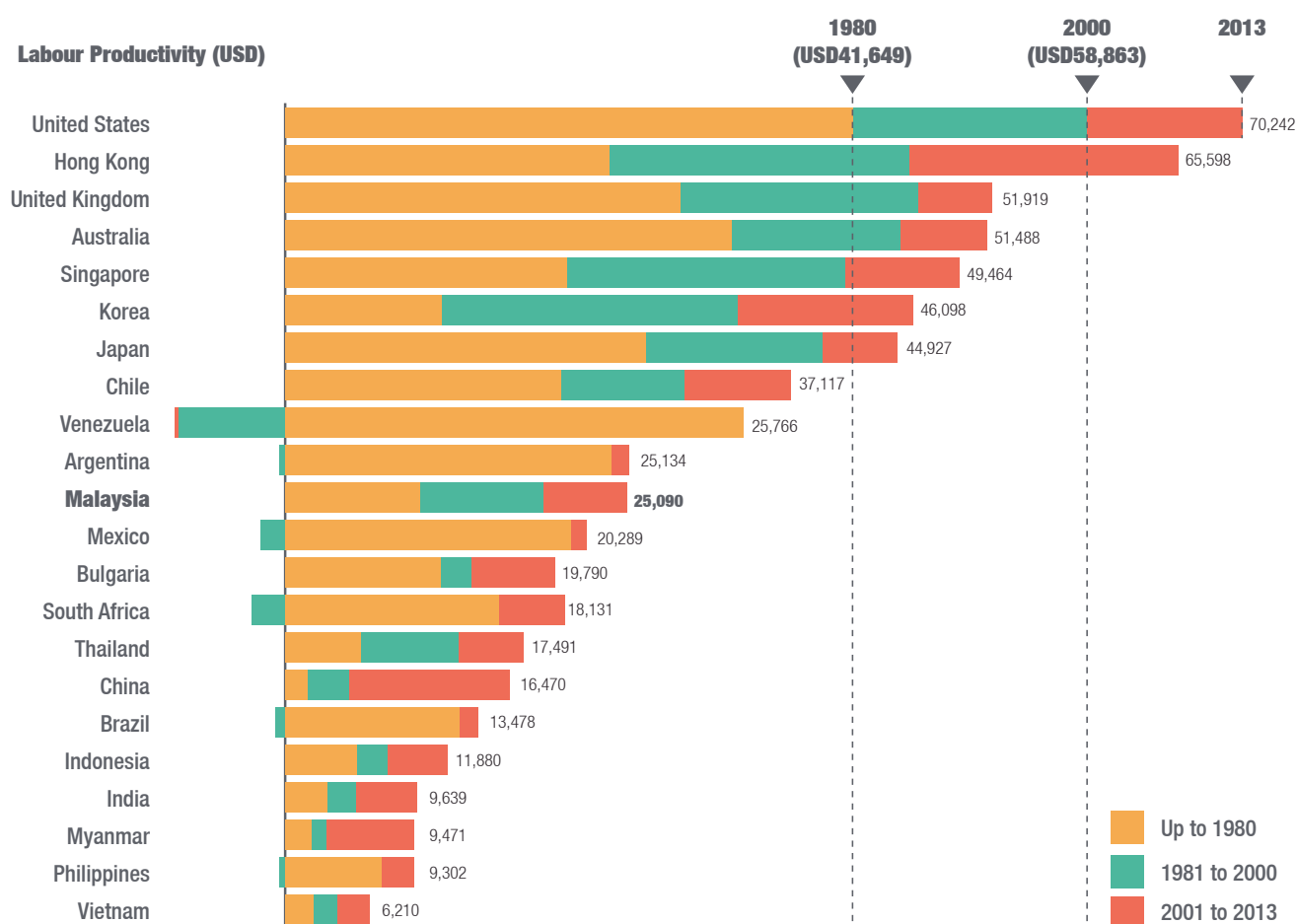
The world's top productivity performer has set the global productivity frontier by making efficient use of its resources – the best technology and a skilled workforce. The frontier set by the USA in 1980 is used as a benchmark for productivity growth worldwide, and it is a mark that Malaysia has yet to reach. Malaysia's labour productivity performance of USD 25,090 in 2013 still falls far behind the USA's performance of USD 41,649 in 1980 (Figure 1.8).

Figure 1.7: Share of Gross Fixed Capital Formation (GFCF) by Type of Assets, 2006-2014



Computed from: Department of Statistics, Malaysia

Figure 1.8: Global Labour Productivity Frontier



Source: Total Economy Database, The Conference Board

Note: Labour Productivity in 1990 US\$ (Converted at Geary Khamis PPPs)

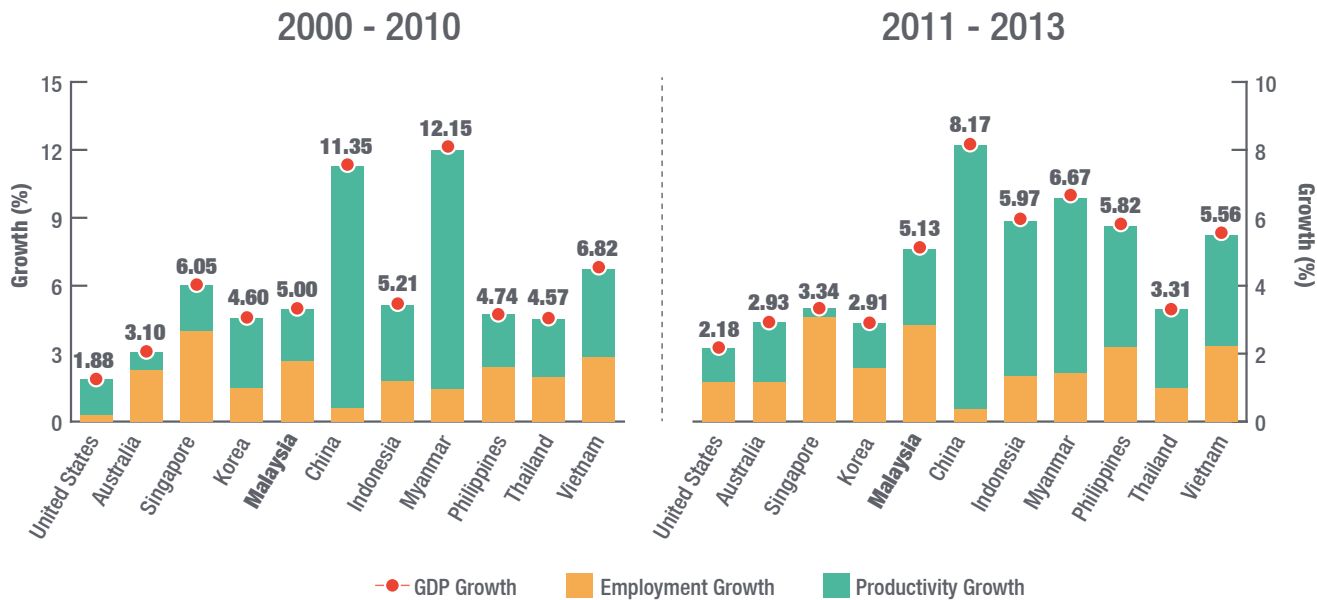
At the high end of performance, Hong Kong and Korea have demonstrated good performance with productivity growth of 3.1% and 2.6% respectively over the period 2001-2013. With growth faster than that of USA's (1.4%) it is likely that Hong Kong could soon set the new productivity frontier.

Meanwhile, China, Myanmar, Indonesia, Thailand, Bulgaria and India have been observed closing the gap at an increasing rate since 2000. There is a possibility that these countries will surpass Malaysia's performance in the near future. To avoid being left behind, Malaysia needs a better approach in terms of management, tools, technology and organisation.

To catch up, Malaysia needs to identify leading indicators of real growth opportunity, particularly where there are gaps between our current performance and the global benchmark. The country must strengthen its workforce, invest in technology and boost the productivity of our industries if it is to accelerate its journey to challenge the productivity frontier.

Malaysia must strengthen its workforce, invest in technology and boost the productivity of our industries if it is to accelerate its journey to challenge the productivity frontier.

Figure 1.9: Productivity and Employment as Drivers of GDP Growth, Selected Countries



Source: Total Economy Database, The Conference Board

Strengthening the Workforce

A nation with high productivity requires an educated workforce that possesses the skills, knowledge and talent to help the economy diversify and grow. A high quality labour force helps boost a country's labour productivity, employment and long-term economic success.

From the period of 2011-2013, the new Asian economies were observed to have maintained the ratio of productivity contribution to GDP from the previous period (2000-2010), while the developed economies underwent significant shifts in the balance between productivity and employment. Malaysia for its part continued to rely upon growth in employment to achieve higher economic growth (Figure 1.9).

Malaysia has the opportunity to achieve a significant shift in its workforce by developing a talent base driven by learned values and knowledge to meet the needs of the 21st-century global economy. The implementation of the Malaysia Education Blueprint 2015-2025 will empower the workforce in its transformation (Figure 1.10). These learned, values-driven workers will have the potential to become job creators rather than

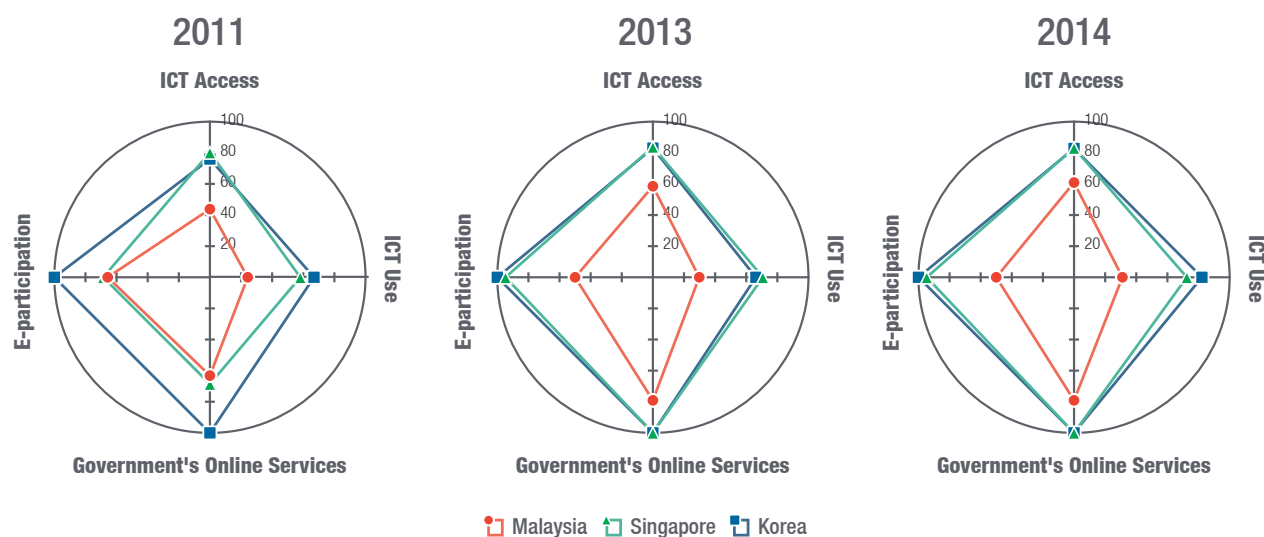
Figure 1.10: 10 Shifts that will Spur Continued Excellence in the Higher Education System



Source: Malaysia Education Blueprint 2015-2025, Ministry of Education

just job-seekers, and they will be essential for Malaysia to challenge the global frontier.

Figure 1.11: Malaysia's Performance in the Global Innovation Index (GII) - ICTs Sub-Pillar



Source: The Global Innovation Index 2014, INSEAD

Boosting Productivity Through Information Technology

ICT is widely recognised to be a crucial driver of productivity and growth worldwide, but there are vast differences among countries in usage intensity as well as the ability of companies to reap productivity gains through ICT. Higher levels of ICT use can boost the value of human capital, enable product innovation, improve product quality and consistency, ensure efficient information management, and make businesses more responsive to customer needs. By closing gaps in ICT use, Malaysia can gain competitive advantages and improve its labour productivity.

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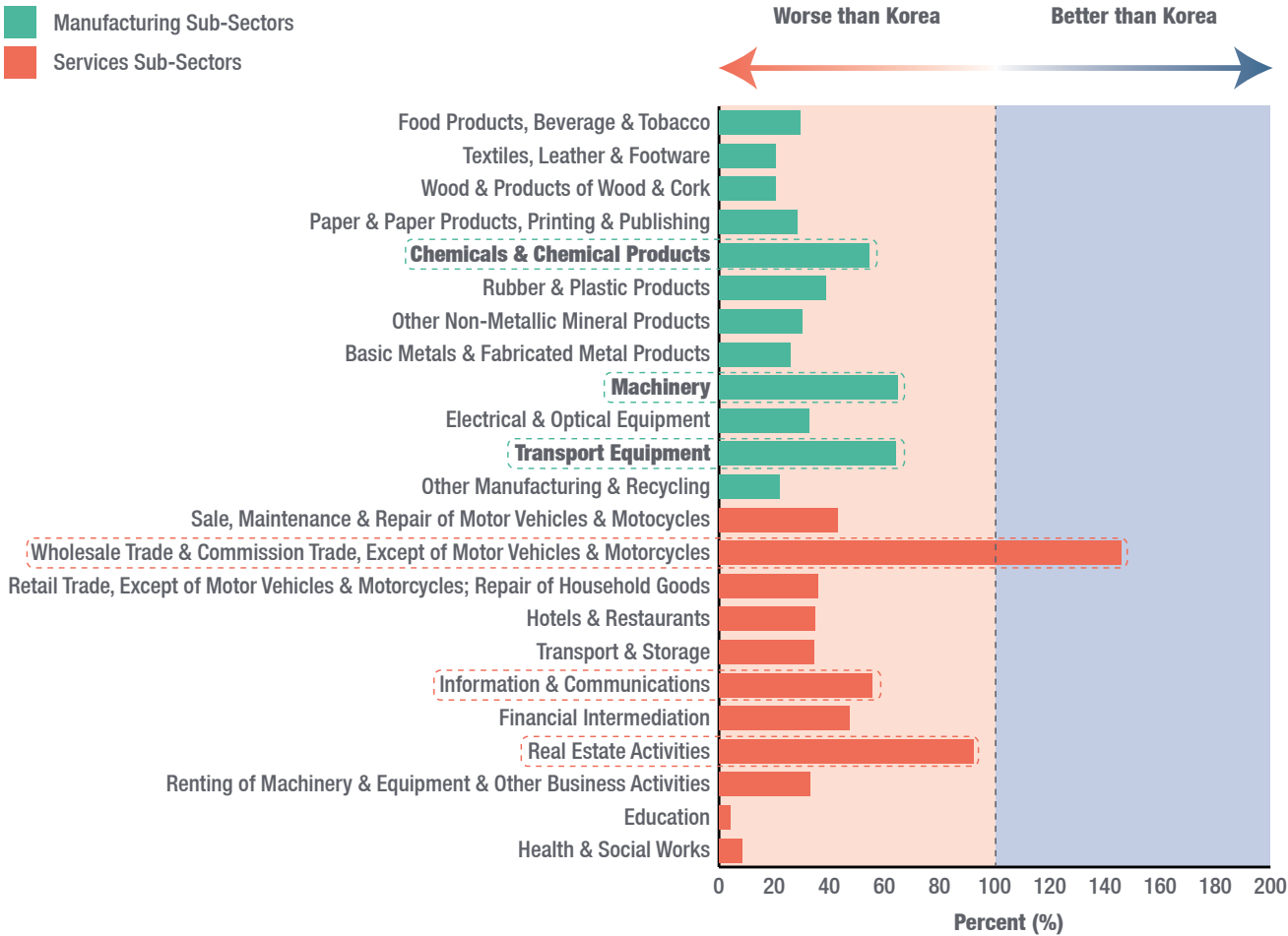
According to the Global Innovation Index (GII), Malaysia achieved improvements in ICT access and usage, government's online services and e-participation from 2011 to 2014. However, Singapore and Korea remain far ahead of Malaysia in these aspects (Figure 1.11).

Unleashing the Potential of Industries

Industries in Malaysia have a great deal of untapped productivity potential, as can be seen through a comparison with Korea's industries. Over the period 2000-2011, the average productivity of Malaysia's 13 manufacturing industries ranged from 20.6% to 64.9% of the productivity in Korea. Malaysia achieved higher realised potential in the chemical and chemical products, M&E and transport equipment industries, where the country's average level of productivity was above 50% of that in Korea (Figure 1.12).

Among several selected services industries, Malaysia's average level of productivity between 2000 and 2011 ranged from 4.2% to 92.3% of the productivity in Korea. The wholesale trade and commission trade (except of motor vehicles and motorcycles), information and communication and real estate industries recorded more than 50% productivity of that in Korea. Malaysia needs to implement and leverage on several initiatives under the NKEAs as well as internalisation strategies in the services sector blueprint to empower its industries to achieve higher productivity.

Figure 1.12: Malaysia vs Korea Productivity Comparison, 2000-2011



Source: Asian KLEMS Database and Malaysia KLEMS database
Note: The comparisons are for average productivity levels in 2000-2011, based on real GDP at constant 2005 prices; converted to common currency based on average exchange rates from 2000 to 2011.

OUTLOOK 2015

Because of continued weakness in global economic conditions, business growth is expected to moderate in 2015 compared with the previous year. Sustained growth is possible provided that Malaysia’s public and private sectors can work together to close gaps and embrace the necessary reforms to labour, capital stock, financial markets and product offerings.

Although Malaysia’s overall productivity is affected by global economic conditions, the country’s ability to increase its labour productivity growth rate will depend mainly on whether or not it can derive greater efficiency from internal resources such as human

capital, innovation and operational excellence. Based on the current forecasts and estimates available, labour productivity in Malaysia is expected to grow by 3% in 2015. This estimate is in line with the average employment growth at 2.1%, which should push GDP to post 5.2% growth.

In 2015, the manufacturing and services sectors are expected to achieve stronger productivity growth at 5% and 2.4% respectively. Other economic sectors posted slower productivity growth with construction at 9.4% followed by agriculture at 1.7% and mining at 1.3%.

Global economic growth in 2015 will be a modest 3.4%, representing a fourth year of disappointing growth.

However, the creation of the AEC will support free trade in goods and services. With 620 million citizens, ASEAN represents a larger market than the European Union and provides the next step towards a stronger and more open regional market for Malaysian businesses.

A stronger consumer base, supported by the integration of product markets across ASEAN economies, can release substantially more purchasing power than in the past. As such, Malaysia has the potential to post productivity growth of 3.7% in the next five years,

provided that industry can optimise its higher growth potential. This can be achieved by promoting high value-added economic activities and attracting quality investments, particularly in the knowledge-intensive industries. These activities will create more opportunities for better-paying jobs. In addition, Malaysia will need the comprehensive development of high-quality human capital to become a productive and high-income economy. The country will also require technological improvements or process innovations that can lead to growth in TFP.

PRODUCTIVITY AND LABOUR INCOME SHARE

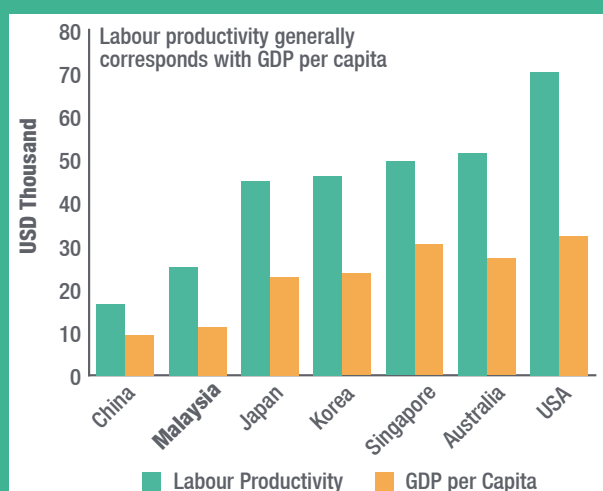
Most advanced economies recorded high labour productivity levels, which led to high GDP per capita (left chart). High GDP per capita enables an economy to achieve a high share of labour compensation in total GDP (labour income share), thus leading to higher wage per worker. In short, productivity growth is a key driver of higher wage growth.

However, there are some outliers. A number of emerging and developing economies such as China and Malaysia recorded higher labour income shares but no corresponding higher productivity levels. Such economies are most likely involved in low-productivity, labour-intensive industries due to the large pool of low-skilled workers (right chart).

Economies with both high productivity levels and high labour income share such as Japan, Korea and Australia are associated with high value-added activities which create more employment in high-skilled jobs. The advancement in labour productivity fuels wage and income growth in these economies.

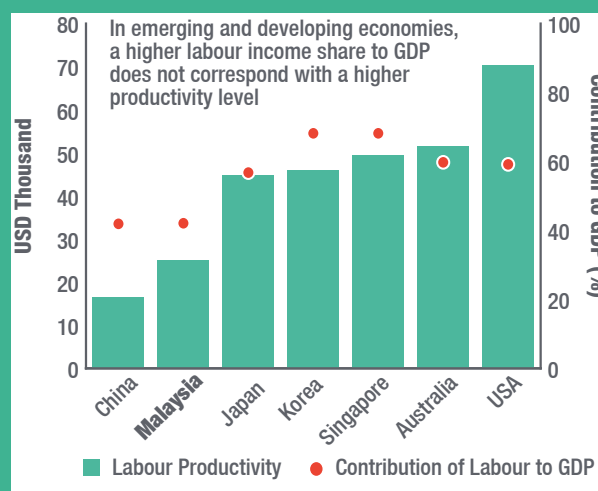
Higher productivity levels are necessary to raise wages and labour income shares in an economy. Malaysia's labour income share stood at 42.1% in 2013, which was relatively low compared to selected developed economies. For Malaysia to increase its labour income share, wages can only grow if there is a corresponding increase in labour productivity.

Labour Productivity vs GDP per Capita.



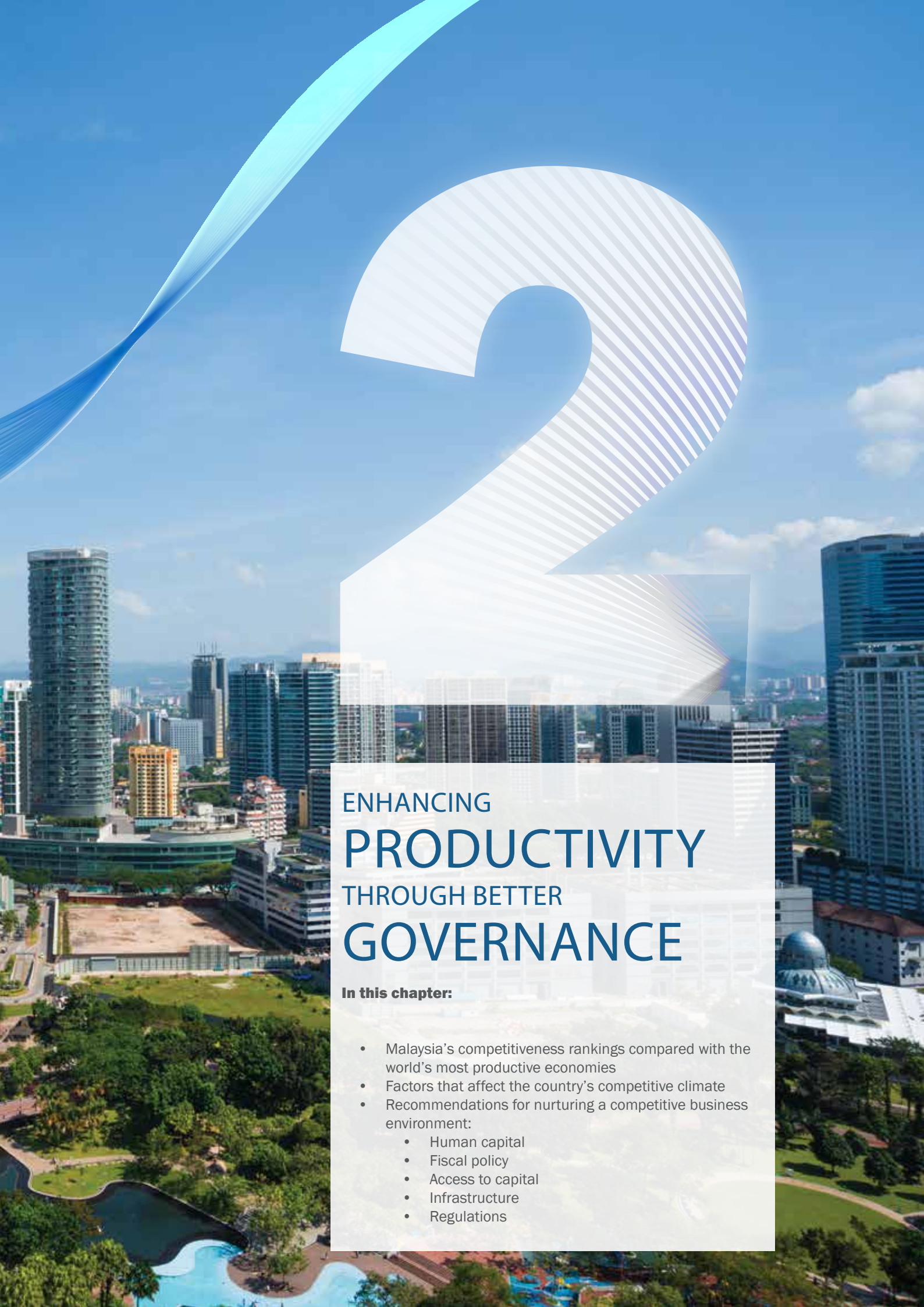
Source: Total Economy Database, The Conference Board

Labour Productivity vs Labour Income Share to GDP.



Source: Total Economy Database, The Conference Board



An aerial photograph of a modern city skyline, featuring several tall skyscrapers and a mix of urban development. A large, stylized number '2' is overlaid on the right side of the image, filled with a white-to-blue gradient and a diagonal line pattern. A blue, wavy graphic element extends from the top left corner across the sky.

2

ENHANCING PRODUCTIVITY THROUGH BETTER GOVERNANCE

In this chapter:

- Malaysia's competitiveness rankings compared with the world's most productive economies
- Factors that affect the country's competitive climate
- Recommendations for nurturing a competitive business environment:
 - Human capital
 - Fiscal policy
 - Access to capital
 - Infrastructure
 - Regulations

The evolution of Malaysia's competitive business environment will lay the groundwork for higher productivity and the creation of wealth and sustainable economic growth. Factors such as human capital, fiscal policy, capital investment, infrastructure and regulation will ultimately push Malaysia across the tipping point that translates competitiveness into productivity.

Productivity is very closely intertwined with competitiveness. Factors that enhance productivity growth make countries more competitive in international markets, and competitiveness reflects the overall circumstances, institutions and policies that impact productivity. Turning Malaysia into a more competitive economy with higher productivity levels will allow its citizens to achieve higher income levels. For this reason, the Government has made boosting productivity a top priority and has enacted several policies aimed at encouraging technology growth and eliminating factors that hinder competitiveness.

Over the past five years, Malaysia has implemented many initiatives to strengthen the country's position in what is becoming an increasingly competitive global marketplace. The country has moved up the competitiveness rankings in many international reports and has performed commendably in various competitiveness indicators. Malaysia is now ranked 12th out of 60 economies in the World Competitiveness Yearbook (WCY) 2014, 20th out of 144 countries in the Global Competitiveness Report (GCR) 2014-2015 and 18th out of 189 countries in the World Bank's Doing Business 2015 (Figure 2.1).

In theory, competitiveness should improve in tandem with productivity. However, Malaysia has yet to make this productivity breakthrough. Despite Malaysia's favourable achievement in World Competitiveness Yearbook (WCY) 2014 rankings (12th), in terms of productivity it only ranked 48 out of 60 economies. This puts it far behind

the high-productivity frontiers set by the top 20 most productive economies (Figure 2.2).

Competitiveness can be a key driver of the economy. Through the ceaseless endeavour for greater gains, companies are forced to maintain a constant flow of innovation to out-do their competitors. As companies experiment with different problem-solving methods and management systems, they begin to branch out further, looking into different means of maximising their return on investment (ROI). It is this creative flow that pushes an economy forward, helping it to adapt to ever-changing social, technological and economic trends. With firms all pushing harder to remain on top of the competition, the market not only experiences greater productivity, but greater sustainability and wealth creation too.

An established and well-maintained competitive business environment is crucial in the pursuit of productivity, as it lays a strong foundation for the need to innovate, to work hard and to seek new frontiers.

An established and well-maintained competitive business environment is crucial in the pursuit of productivity, as it lays a strong foundation for the need to innovate, to work hard and to seek new frontiers. This invariably leads to higher productivity, more opportunities to create wealth, greater profitability and sustainable economic growth.

Figure 2.1: Malaysia's Performance in Three Major International Reports

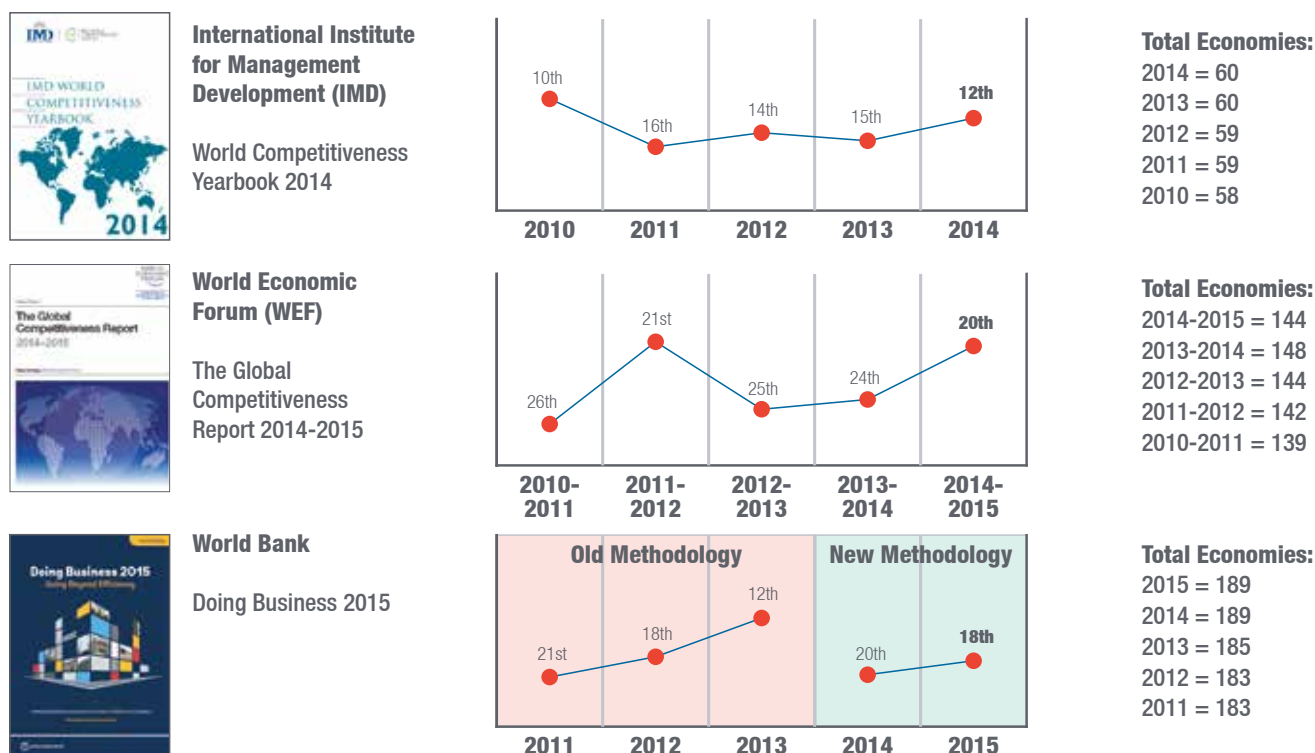
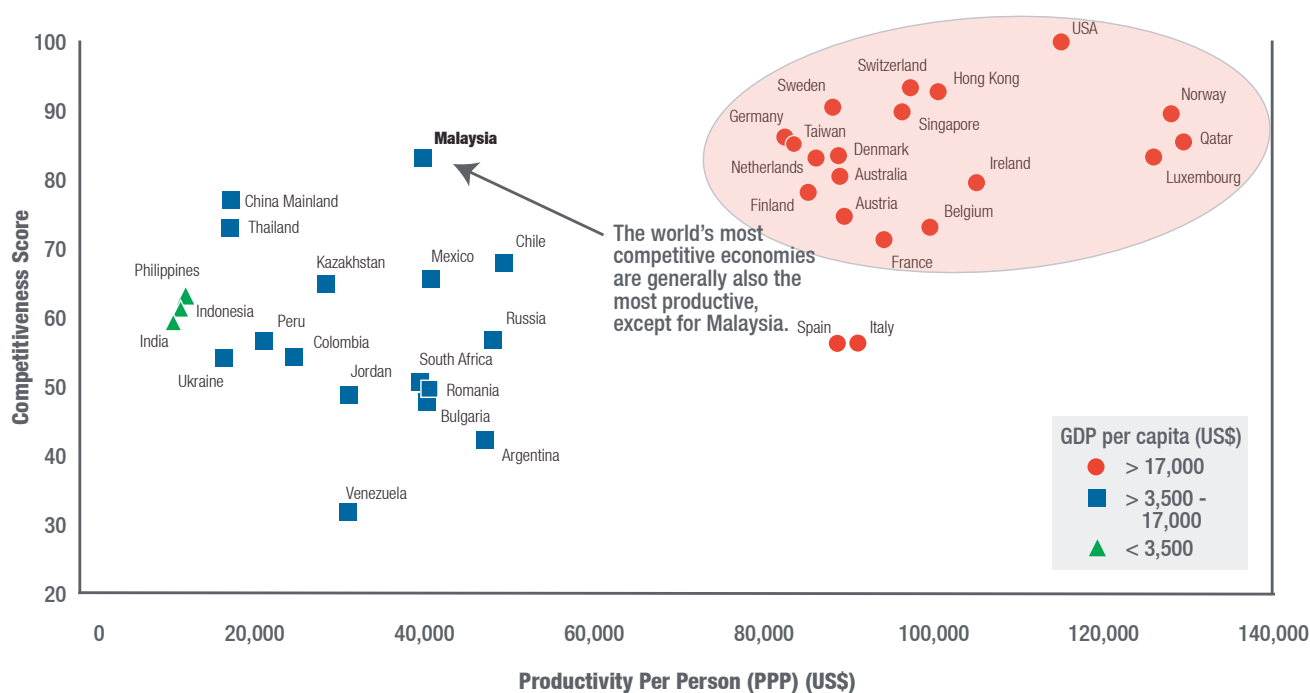


Figure 2.2: Most Productive Economies vs. Least Productive Economies, 2013



Source: IMD World Competitiveness Yearbook 2014

It is imperative that Malaysia redouble its efforts to turn its competitive edge into increased productivity. It needs to challenge the frontier and compete at regional and global levels by empowering its workers through productivity and innovation. Factors such as competitive human capital and education, government regulation, fiscal and tax policies, infrastructure and access to the capital market will support the creation of a competitive business environment. This will ultimately facilitate a boost in productivity for all industries involved and help the country achieve its goal of becoming a high-income nation by 2020.

It is imperative that Malaysia redouble its efforts to turn its competitive edge into increased productivity. It needs to challenge the frontier and compete at regional and global levels by empowering its workers through productivity and innovation.

HUMAN CAPITAL AND EDUCATION

The first factor associated with competitiveness is the quality of the country's human capital. An efficient labour market ensures that a labour force's skills and capabilities closely match the requirements of businesses. The labour market should utilise the available labour force in the most effective way while remaining flexible enough to cope with new economic conditions in the face of any market shocks that may occur.

Several factors contribute towards a country's ability to maintain high productivity, such as the wide availability of skilled labour, highly-motivated workers and sufficient training for employees. Higher workforce participation rates among part-timers and females also boost a country's productivity. Countries that rank highest in terms of productivity generally demonstrate higher levels of part-time employment and female participation in the workforce. In 2012, the Netherlands registered the

DUTCH CONTRACTS AND EMPLOYMENT LAW

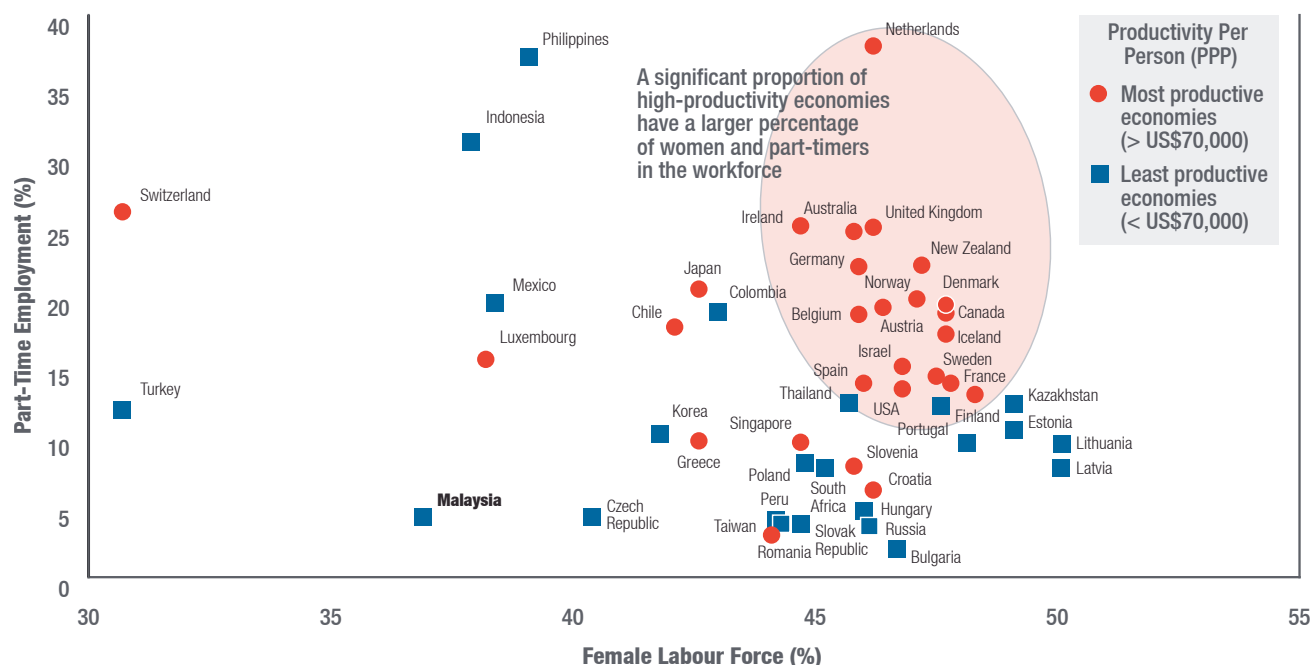
There are a many and varied Dutch laws covering employment and contracts in the Netherlands that are designed to empower the workforce and encourage citizens to contribute their labour towards the country's development goals. Legislation in the Netherlands enables every employee to tailor their working hours to their requirements, thus ensuring that the rights of part-time workers are properly protected. Working part-time is seen as an ideal way for Dutch women to combine paid employment with their duties as homemakers, giving them more incentive to become active members of the country's workforce.

highest rate of part-time employment at 37.8%. The Netherlands model demonstrates that it is possible to reduce a country's welfare bill by raising a country's overall employment rate for women and ensuring higher levels of job satisfaction.

A study by McKinsey of 366 public-listed companies in Canada, Latin America, the United Kingdom and the United States also found that companies with greater gender diversity are 15% more likely to have financial returns above their respective national industry medians. The report's findings suggest that diversity is a competitive differentiator that can shift market share toward more diverse companies. But despite the increasing number of female graduates in Malaysia, the percentage of women within the labour market still lags behind the world's most productive economies.

With female participation accounting for only 53.4% of the eligible female workforce, Malaysia trails behind Thailand and Singapore, each with 70% and 60% respectively. The reasons for this disparity may stem from the lack of support systems such as nurseries and child-care centres, along with the inflexible working hours most companies enforce. Additionally, women who were once part of the labour market but who retired to raise

Figure 2.3: Participation of Part-Time Labour and Female Labour, 2013



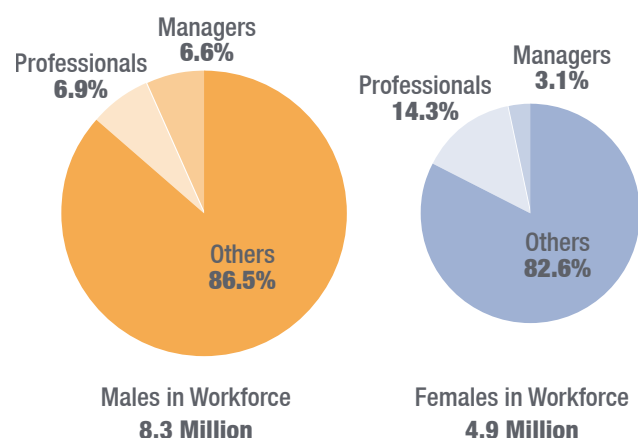
Source: IMD World Competitiveness Yearbook 2014

children often find themselves lacking the opportunity for re-employment in later years.

Having acknowledged the contribution of the female workforce to productivity, there is a pressing need to improve the percentage of working women so that their potential may be harnessed and used to contribute to the nation's economic growth. The Malaysian Government has introduced various initiatives to upgrade women with skills, such as the *Nur Bestari* training programme, the *Jejari Bestari* programme, the *Inkubator Keusahawanan Wanita* (I-KeuNITA) entrepreneurship programme and the Intensive Skill Training for Single Mothers (I-KIT). The Women Career Comeback Grant Programme is also designed to encourage employers to establish women-friendly workplace policies and facilities. To achieve similar gains in Malaysia, the support system needs to be strengthened with legislation in place to help women who stopped working to raise families re-join the labour market as part-time workers.

The quality of higher education and training is another crucial factor for economies intending to move up the

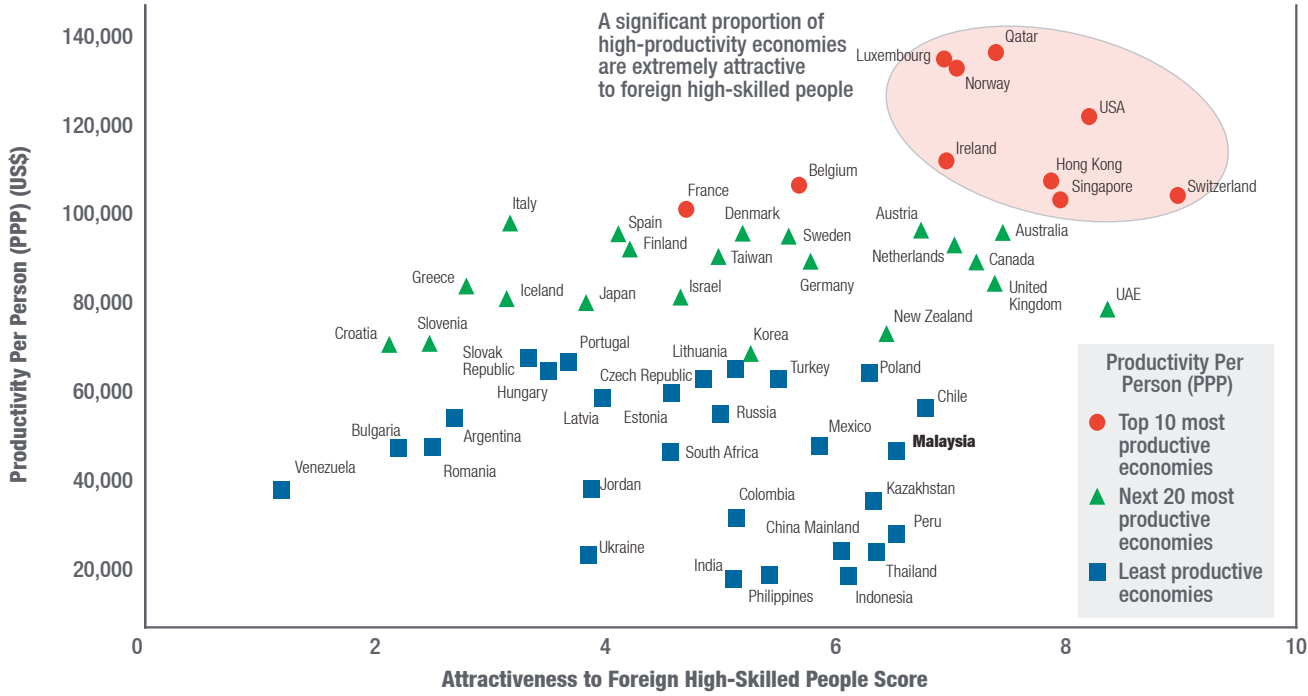
Figure 2.4: Employed Persons by Occupation in Malaysia, Males vs. Females



Source: Department of Statistics Malaysia, Labour Force Survey, 2013

value chain beyond simple production processes and products. In today's globalising economy, countries need to nurture a pool of well-educated workers who are able to perform complex tasks and adapt swiftly to a changing business environment. In Malaysia, only 30.9% of persons aged 25-34 years had attained at least tertiary education, fewer than in countries such as Singapore (72%), Luxembourg and Norway (47%), Hong

Figure 2.5: Productive Countries – Attracting High-Skilled People, 2013



Source: IMD World Competitiveness Yearbook 2014

Kong (45.2%), Ireland (45%) and USA (43%). Singapore’s leading ranking in higher education has been attributed to an education system where teachers are chosen from top graduates and trained extensively as well as a cultural respect for education.

Increased globalisation has also escalated the diffusion of talent to industrialised countries. Drawn by better salaries, working conditions and quality of life, the best global talent is able to operate anywhere in the world (Figure 2.5). As these high-skilled expats migrate, they bring not only themselves, but also their highly-transferrable skills. Countries that attract these skilled workers are therefore able to engage in knowledge transfer, thus improving local skills in the process. Malaysia’s stable economy and quality of work and life have the added advantage of attracting high-skilled foreign workers, a factor that will help improve the country’s productivity performance in the future.

FISCAL POLICY

The second important factor affecting a country’s competitiveness is associated with fiscal policy and taxes. Maintaining macroeconomic stability is an important element in the policy mix of boosting productivity and competitiveness, as it entails the creation of a business environment free of uncertainties and unanticipated costs. A stable macroeconomic environment means lower volatility in inflation rates, interest rates and exchange rates as well as lower fiscal deficit relative to GDP.

Fiscal policy has a direct impact on the creation of a competitive business environment. The lower the tax rate imposed, the more competitive it is for businesses or investors to operate in a particular country. In addition, taxes play a significant role in shaping the economic decisions of both businesses and individuals, as high taxes limit investment and wealth creation.

Governments need the right combination of fiscal policy tools to spur economic growth. Fiscal policy allows a



government to stimulate its country's economy with the use of push-and-pull methods of altering tax rates and government spending. By lowering tax rates, people have a greater after-tax buying power, which results in greater household spending. Conversely, an increase in taxes will slow buying, as people choose to save more. Governments can also directly influence the market by engaging in government spending. With the government injecting money into the economy in exchange for goods and services, businesses will have more money to spend on employees and other spending, which in turn pushes industries further.

Despite their advantages, fiscal policy tools need to be properly analysed before their use. If taxes fall too low, governments will not only have less tax income to funnel into public infrastructure but could also inadvertently drive up inflation as businesses raise prices to take advantage of consumers' greater spending power. Additionally, in the case of government spending, governments often borrow money from financial capital markets. This has the result of pushing demand for money up, which in turn results in higher interest rates that can stifle household spending. In worst-case

scenarios, overspending governments can also end up severely in debt - an issue that can cripple the economy.

Malaysia is ranked a respectable 11th out of 60 economies in IMD's World Competitiveness Yearbook in terms of its fiscal policy. The country's total tax revenues comprise 16.11% of its total GDP, which is on par with other ASEAN countries, while in developed countries such as Norway, Austria, Finland and Italy, tax revenues comprise more than 40% of GDP. The implementation of the Goods and Services Tax (GST) is intended to help broaden the tax base, diversify revenue streams, provide the country with reliable source of income and reduce the fiscal debt accumulated over past years. Unlike monetary policy, however, fiscal policy is a long-term investment. As such, the results of this move will only become apparent in the future.

Malaysia's total tax revenues comprise 16.11% of its total GDP, which is on par with other ASEAN countries, while in developed countries such as Norway, Austria, Finland and Italy, tax revenues comprise more than 40% of GDP.

ACCESS TO CAPITAL

The third factor that influences a country's competitiveness is its ability to provide businesses with easy access to capital. From start-up entrepreneurs seeking seed capital to major corporations looking to finance mega-projects, access to capital affects economic growth at every level. There is a clear, positive correlation between capital stock availability and productivity within an economy. Capital investment requires an economy to move to the next tier. Further investment is required in developing economies to create more businesses, generate job opportunities and to spur economic growth.

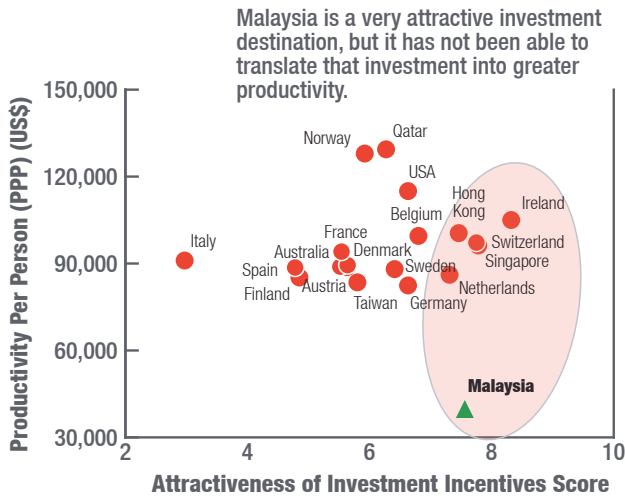
The key criteria for foreign investors when considering an investment destination include cost and ease of doing business, political stability, market conditions and the availability of investment incentives. Malaysia offers attractive investment incentives to foreign investors to attract greater international participation in origination, trading and fund management activities within the country. In WCY 2014, Malaysia recorded its best position (4th) to date with a score of 7.68 on the business community's perception of the country's investment incentives (Figure 2.6). However, although investment incentives can make a business environment more competitive, they are not able to directly contribute to the country's productivity growth. For this to happen, the investment incentives must be designed to spur activity in high-growth industries that best take advantage of the country's resources.

With the implementation of the AEC, Malaysia is expected to attract at least RM200 billion or 10% of total investment in ASEAN. It will also have access to the market of 620 million people in ASEAN countries. With its Economic and Government Transformation Programmes moving into high gear, Malaysia has all the ingredients it needs to serve investors well into the future.

INFRASTRUCTURE

Another factor that impacts a country's ability to boost productivity is its infrastructure. An advanced, high-income economy requires world-class infrastructure to support its economic activity. The Malaysian Government is committed to investing into the nation's transportation, technological, energy, public and scientific infrastructure. These investments empower businesses with access and connectivity, thus improving productivity and encouraging expansion into high value-added products and services. At the same time, greater connectivity between rural and urban areas ensures a more equitable distribution of economic benefits for all Malaysians. The country will also intensify its efforts to deepen collaboration at the government-to-government level, specifically when it comes to undertaking infrastructure projects.

Figure 2.6: Malaysia's Attractiveness in Terms of Investment Incentives, 2013



Source: IMD World Competitiveness Yearbook 2014

Technological infrastructure plays an important role in supporting the modern economy. Information and Communication Technology (ICT) is a key enabler of innovation and new employment opportunities. As these technologies increasingly impact tangible assets and key activities such as education, transportation and healthcare, it becomes increasingly important to build and strengthen digital ecosystems. The Government has undertaken various business-centric initiatives to facilitate trade through technological infrastructure (Table 2.1).

Internet bandwidth speed is a vital factor in building a competitive business environment. Malaysia was ranked 52nd out of 60 countries in terms of Internet bandwidth speed, offering speeds of about 10.65 kbps per user – far behind Hong Kong (1,046 kbps), Singapore (343.73 kbps), Thailand (24.63 kbps) and the Philippines (12.36 kbps) (Figure 2.7). Hong Kong stands out as a particularly telling example of how well-connectedness can drive business. With a total land area of only 1,104 square kilometres and a population of just over seven million, there are seven or eight major internet service providers (ISPs) vying for consumers' attention. This competition encourages ISPs to continuously improve the quality and breadth of their service offerings, forcing them to deliver greater connection speeds at reasonable prices.

Table 2.1: Government Initiatives to Facilitate Trade via ICTs

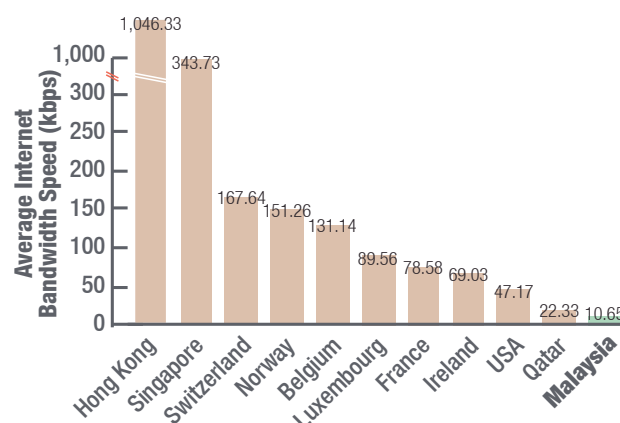
Area	Description
MyGovXchange for businesses	The MyGovXchange will be enhanced as a single regulatory gateway for businesses, covering registration, licence application, licence expansion as well as applications for loans and grants from various public agencies.
SSM Enterprise Services Gateway	Building upon the introduction of a single company identification system, MyColD, the SSM Enterprise Services Gateway will enable simultaneous registration across multiple agencies following the incorporation of a company with SSM. This reduces the need for companies to register multiple times across various different agencies. The system will be expanded from five agencies to include all public agencies dealing with business entities.
National Single Window (NSW) for trade	NSW is a web-based single point of entry for the submission of trade data and information. It avoids repetition of provision of the same data multiple times and facilitates a quick and easy release and clearance of cargo. During the Plan period, the services under the NSW will be expanded to include services of Free Zone declarations, Dangerous Goods declarations, non-customs permits, phytosanitary certificates and Convention of International Trade on Endangered Species certificates.

Source: Tenth Malaysia Plan

Malaysia was ranked 52nd out of 60 countries in terms of Internet bandwidth speed, offering speeds of about 10.65 kbps per user – far behind Hong Kong (1,046 kbps), Singapore (343.73 kbps), Thailand (24.63 kbps) and the Philippines (12.36 kbps)

If Malaysia is to realise the transformation of its services sector as an engine of growth it must make high-speed broadband a key enabler. According to a World

Figure 2.7: Internet Bandwidth Speed, Most Productive Countries vs. Malaysia, 2011 (kbps per User)



Source: IMD World Competitiveness Yearbook 2014

Bank study, a 10% increase in household broadband penetration can increase GDP growth by more than 1%. The Government has set a target of raising household broadband penetration to 75% by the end of 2015. This will be achieved via two main initiatives: High-Speed Broadband (HSBB) and Broadband to General Population (BBGP), both of which leverage wired and wireless technologies. Policy measures to stimulate demand for broadband will introduce tax rebates for broadband subscriptions, provide affordable packages for students and the rural population, encourage computer ownership and promote the development of local content in both public and private sectors.

Malaysia's scientific infrastructure is also of key importance to its ability to boost productivity. To strengthen the nation's scientific infrastructure, the Government is committed to nurturing a 'first-class' mentality by elevating the country's capacity for knowledge and innovation. Innovation is a vital ingredient for increasing productivity and ultimately raising the competitiveness of the economy, as it empowers the country to create additional value from the existing base of capital and human resources in the form of improved products, processes, and organisational structures.

The Malaysian Government has taken several steps to nurture quality R&D and scientific innovation among businesses. However, the country remained ranked

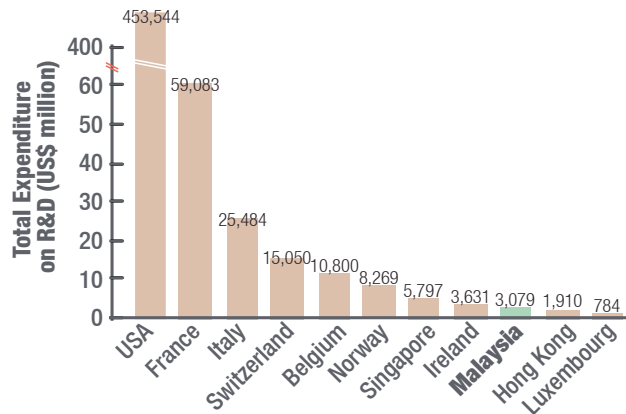
41st among 60 countries in terms of Total Expenditure on R&D per capita (Figure 2.8), a factor that has a significant impact on productivity performance. That said, ASEAN countries as a whole remain far behind developed countries in this respect, with most R&D investment being focused on incremental improvements for existing products and services. To climb the ranks, Malaysia needs to create a favourable environment for innovation that includes a competitive and open system for obtaining R&D funding as well as effective intellectual property protection. Without this support, Malaysia will continue to lack innovation credentials.

To further unleash productivity-led growth and innovation, the Malaysian Government is intensifying collaborative R&D with established research institutes to leapfrog innovation in terms of production processes and development of new high value-added products. Through this collaboration, companies could benefit from technological assistance from a Public-Private Research Network (PPRN) to encourage knowledge transfer. Additionally, the Ministry of Education in collaboration with the Malaysian Technology Development Corporation (MTDC) will spearhead the PPRN platform to boost companies' competitiveness using university-based innovation to create a knowledge-friendly ecosystem. This potentially game-changing solution utilises the best academic minds to boost companies' productivity with process and product innovation. The PPRN platform will ultimately help reduce the knowledge gap of companies and innovators in businesses.

REGULATION

One other factor affecting productivity is regulation, which is the lifeblood of a modern, well-functioning economy. Smart regulation is crucial in shaping a competitive business environment. Almost all regulations can have an impact on productivity, whether indirectly (incentives that influence operating and investment decisions) or directly (effects on compliance costs). Private sector innovation and participation in the economy requires a regulatory environment that provides necessary protection and guidelines while promoting competition.

Figure 2.8: Total Expenditure on R&D, Top 10 Most Productive Countries vs. Malaysia, 2012 (USD)



Source: IMD World Competitiveness Yearbook 2014

Modernising business regulations will lead to more competitive growth, as this will lower the cost of doing business.

Modernising business regulations will lead to more competitive growth, as this will lower the cost of doing business. The way regulations are implemented, administered and enforced can significantly impact compliance burdens for businesses. For this reason, the process for developing and implementing regulations is necessarily complex. Regulations are required to comply with the legal requirements contained in various Acts approved by Parliament and also with policies of the Government. New and amended regulations are recommended to undergo a Regulatory Impact Analysis (RIA) before they are implemented to ensure that the benefits of the proposed regulation will outweigh its costs.

Recognising the impact that regulations can have on the economy, the Government has issued the National Policy on the Development and Implementation of Regulations (NPDIR) to ensure the adoption of best regulatory practices by all federal government ministries, departments, statutory bodies and regulatory commissions. It is also applicable for voluntary adoption by state government and local authorities.

THE NATIONAL POLICY ON THE DEVELOPMENT AND IMPLEMENTATION OF REGULATIONS (NPDIR)

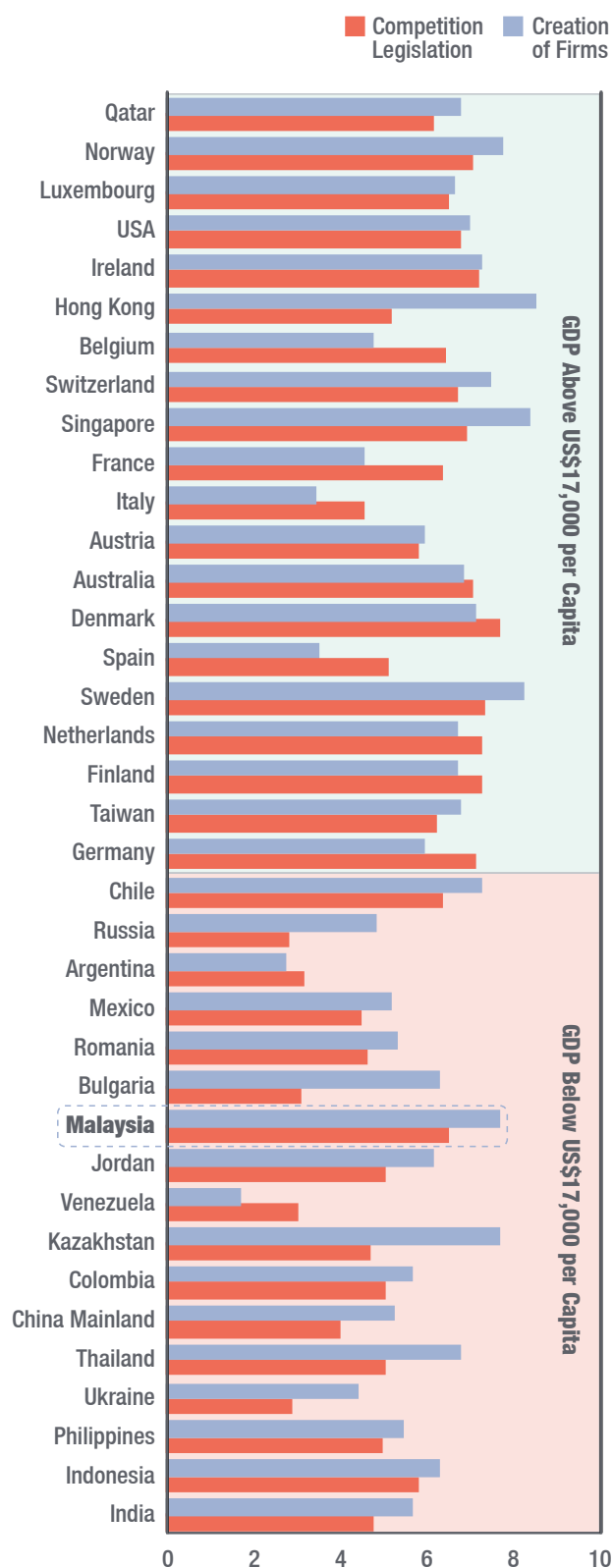
There is increasing recognition that over-regulation, poorly designed regulations or in some cases under-regulation leads to regulatory failures which undermine the intentions of good policies. Global competition and social, economic and technological changes require the Government to consider the inter-related impacts of regulatory regimes to ensure that regulatory structures and processes continue to be relevant, robust, transparent, accountable and forward-looking.

The goal of good regulatory policy is to achieve coherence, effectiveness, efficiency and accountability in the rule-making and implementation process. To this end, the National Policy on the Development and Implementation of Regulations (NPDIR) has been developed to support the modernisation of the regulatory regime. This modernisation is also an essential part of realising several of the policy objectives of the National Economic Model (NEM), including:

- Removing barriers to and reducing the costs of doing business
- Improving decision making for policy implementation
- Improving economic efficiency through enabling fair competition

The Government's initiatives to promote a competitive business environment through regulation have generally been viewed in a positive light. Like the majority of developed countries, Malaysia has legislated laws that support competition and help prevent unfair competition. It has also fared well in terms of legislation to support the creation of firms, which is an important component for open markets. In general, Malaysia outperforms most developing nations in both areas (Figure 2.9).

Figure 2.9: Competition and Regulation, Selected Countries, 2014



Source: IMD World Competitiveness Yearbook 2014

Malaysia's Regulatory Quality performance in the World Bank's Worldwide Governance Indicators (WGI) provide a useful assessment of the country's regulatory performance (Figure 2.10). Where Malaysia's governance score was 0.69 in 1996, it dropped to 0.62 in 2013. Other OECD countries with a policy for good regulatory practice (GRP) in place demonstrated better scores between these two periods. In the case of Australia, legislative instructions to reduce unnecessary regulations resulted in an improvement in regulatory quality, thus reducing the gap during the same period.

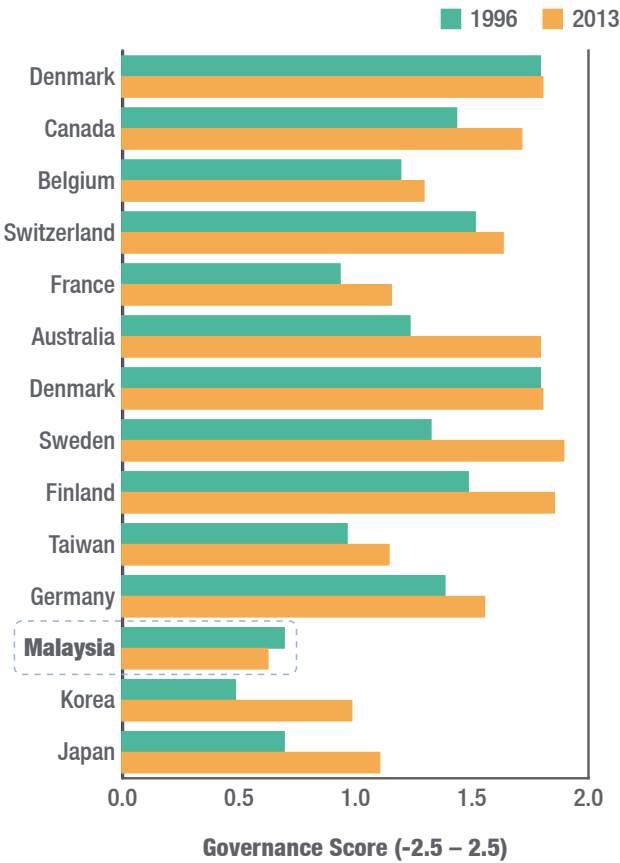
Meanwhile, Korea's radical reform in 1998 resulted in an improvement in quality of life and national competitiveness. The regulatory reform programme focused on alleviating outdated and excessive regulations and establishing a systematic mechanism to effectively review and manage new regulations. Korea demonstrated a tremendous improvement in its regulatory quality gap, moving up to a score of 0.98 in 2013 compared to 0.48 in 1996.

The wide regulatory quality gap between Malaysia and the high-income countries reveals that there is ample room for improvement. In line with the Government's aspirations towards Vision 2020, Malaysia seeks to close the gap with the productivity frontier by extensively improving its regulatory framework efficiency towards Good Regulatory Practice (GRP).

The RURB seeks to reduce unnecessary compliance burdens associated with regulation.

The RURB seeks to reduce unnecessary compliance burdens associated with regulation. It is an important part of the country's reform process to improve its competitiveness and the performance of the economy. RURB activity can reduce procedural red tape and compliance costs while at the same time increasing savings. The impact of RURB activities has significantly benefited companies within the private healthcare, logistics and oil and gas industries.

Figure 2.10: Regulatory Quality Gaps Between Malaysia and Selected OECD Countries; 1996-2013

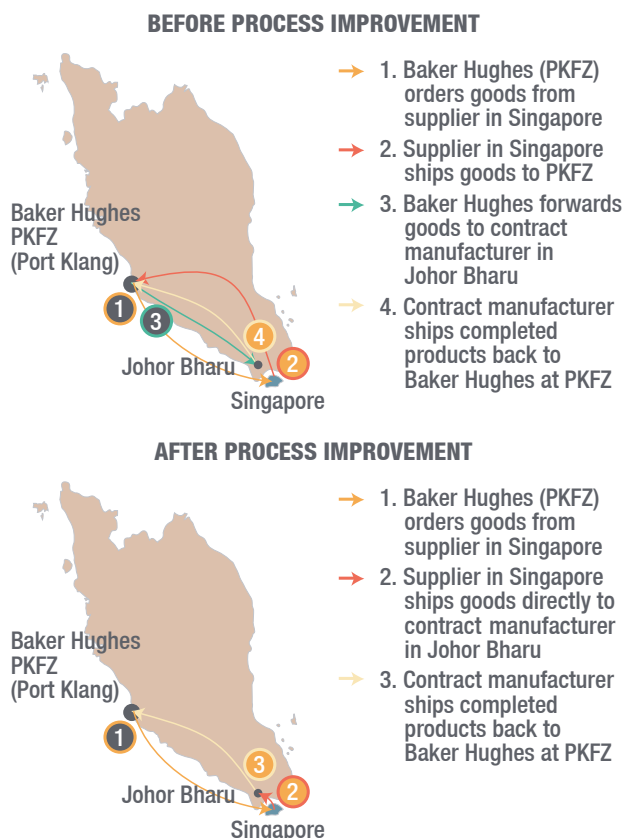


Source: World Bank

One example of how RURB can help businesses emerged recently with the plight of Baker Hughes (M) Sdn Bhd, a top-tier oil and gas service provider company based in the Port Klang Free Zone (PKFZ) (Figure 2.11). The company had been facing difficulties moving dutiable goods to outsourced manufacturers in Johor Bharu due to current regulatory requirements. Raw materials imported from Singapore had to first be transported to the PKFZ in Selangor before being trucked down to Johor Bahru for processing and then transported back to Baker Hughes in PKFZ. This inefficient model reduced the company's ability to serve its customers.

An RURB initiative by the Malaysia Productivity Corporation (MPC) in collaboration with the Royal Malaysian Customs Department (RMCD), Malaysian Investment Development Authority (MIDA) and Baker Hughes has resulted in a proposal to ship dutiable

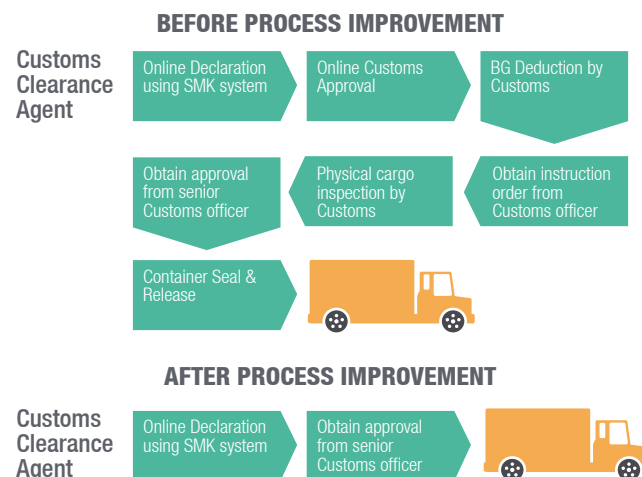
Figure 2.11: Regulatory Process Improvement for Baker Hughes in Port Klang Free Trade Zone (PKFZ)



goods from Singapore straight to Baker Hughes' contract manufacturers in Johor Bharu where they will be processed and then transported up to the PKFZ. The new model is expected to improve the efficiency of cargo transportation in the PKFZ, save the company RM1.5 million per year in compliance costs and reduce turnaround time by up to 90%. It is hoped that the successful implementation of this pilot project will enable other companies to enjoy the same conveniences in the future.

The RURB has also helped Schlumberger's Asia Pacific MRO hub at the PKFZ reduce processing time and red tape for customs processes (Figure 2.12). Schlumberger chose Malaysia's PKFZ as its main MRO hub after consolidating its support centres throughout Asia Pacific. The company has committed to deliver oil and gas equipment to its clients' operation sites within three days from the time it receives an order, sometimes

Figure 2.12: Enhancing Efficiency of Cargo Clearance Using K8's Documentation at Port Klang Free Zone (PKFZ)



from as far away as New Zealand. A focus group formed of the Royal Malaysia Customs Department, PKFZ Authority, Schlumberger, MITI and MPC found that the average clearance process time for a single cargo clearance application was 330 minutes. After exploring the possibility of removing non value-added processes and eliminating wastage, the focus group designed an improved process that reduced average cargo clearance time to 45 minutes. The success of the pilot implementation has led the focus group to extend the new K8 cargo clearance process to other oil and gas MRO operators within the PKFZ as well as to other special economic zones in Malaysia.

Conducting a systematic review of the current stock of regulation is crucial to ensure the country's efficiency and effectiveness as well as to identify priority areas where regulation needs to be improved, consolidated or removed. To be successful, regulatory reform efforts must be fully responsive to changes in the economic, social and technical conditions surrounding them. Regulatory reform is also a powerful stimulus used to further innovation. Competition-enhancing reforms in both the manufacturing and service sectors have been essential to the development and diffusion of new technologies such as the Internet, automatic teller machines (ATMs) and optical scanners in supermarkets.





Productivity Performance of the SERVICES SECTOR

In this chapter:

- Economic and productivity performance of the services sector and selected sub-sectors:
 - Wholesale & Retail Trade
 - Transportation & Storage
 - Professional, Scientific & Technical (PST) Services
 - Healthcare
- Towards the global frontier

Productivity in the services sector grew by 2.2% in 2014 thanks to significant gains within the transportation and storage and other services sub-sectors. The Government's liberalisation measures are preparing the sector to become more competitive ahead of the ASEAN Economic Community.

Malaysia's services sector can be divided into three broad categories: intermediate services, final services and government services. Intermediate services comprise finance and insurance, transport and storage, real estate and business services and communication, while sub-sectors such as wholesale and retail, accommodation and restaurants, utilities and other services are defined as final services. Under the Economic Transformation Programme (ETP), 131 Entry Point Projects (EPPs) were announced in 2010 with approximately 80 EPPs related to the services sector. These EPPs are aimed to catalyse Malaysia's economy in seven identified services sub-sectors: financial services, wholesale and retail trade, tourism, business services, communications content and infrastructure, education, and healthcare.

The government has taken measures to liberalise 45 services sub-sectors since 2009 in order to unleash their potential in spearheading economic growth.

The government has taken measures to liberalise 45 services sub-sectors since 2009 in order to unleash their potential in spearheading economic growth. These measures are aimed at attracting more foreign investment, bringing in more professionals and technology as well as strengthening the competitiveness of the services sector ahead of the implementation of the ASEAN Economic Community (AEC). The liberalisation

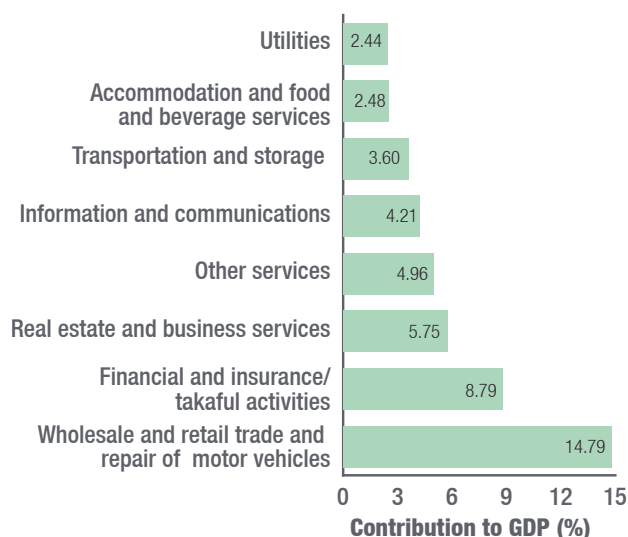
measures had an immediate impact, driving up investments and growth within certain sub-sectors such as education and healthcare services. The number of international schools grew by 9% in 2014, bringing the total number of international schools established in the country to 97.

The Government's liberalisation measures as well as the successful implementation of several EPPs have helped to prepare the services sector for the advent of the ASEAN Economic Community (AEC), which will offer local business players greater opportunities to boost their competitiveness and tap into ASEAN markets. However, exploiting the potential of these opportunities will require service providers to compete in a 21st century global economy that values open competition above protectionism. To ensure sustained growth, businesses must be able to inspire a culture of productivity within their employees, suppliers and industries as a whole.

ECONOMIC PERFORMANCE

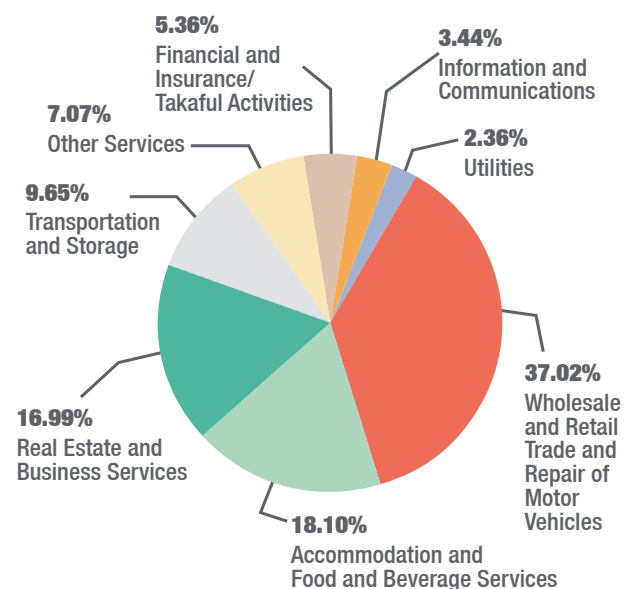
The services sector registered GDP growth of 6.3% in 2014, up from 5.5% in 2013. It accounts for 47% of Malaysia's total GDP (excluding government services), making it the country's largest economic sector. The wholesale and retail trade and repair of motor vehicles sub-sector remains its largest sub-sector, contributing 14.8% (RM123.5 billion) to GDP, followed by the financial and insurance/takaful sub-sector, which contributed 8.8% (RM73.4 billion) to GDP (Figure 3.1).

Figure 3.1: Contribution of the Services Sector to GDP, 2014



Source: Department of Statistics, Malaysia

Figure 3.2: Distribution of Employment Within the Services Sector, 2014



Source: Department of Statistics, Malaysia

The services sector was the nation's biggest employer in 2014, accounting for 45.4% of Malaysia's workforce or 6.1 million people (excluding government services). The distributive trade sub-sector remained the largest employer with 2.3 million workers, followed by accommodation and food and beverage service activities with 1.1 million workers (Figure 3.2).

Exports of services grew by 7.7% to a new high of RM126.8 billion in 2013 (Figure 3.3). The largest share

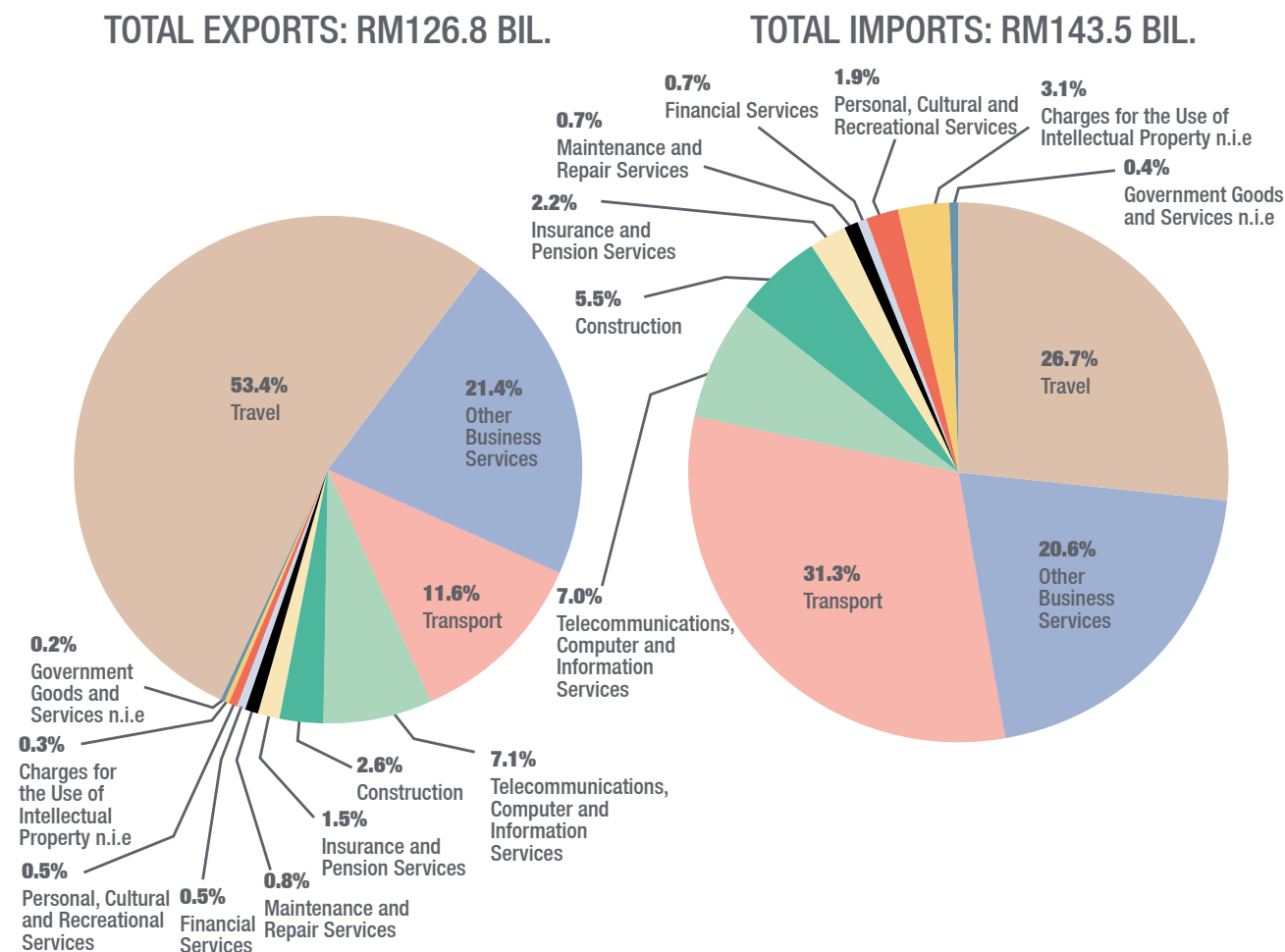
of services exports came from travel at 53.4%, followed by other business services (21.4%) and transport (11.6%) (Figure 3.4). Despite this impressive growth, imports continued to outpace exports at RM143.5 billion, compounding a trade deficit within the sector that began in 2010. Transportation and storage services comprised a major portion of imports at 31.3% followed by travel (26.7%) and other business services (20.6%).

Figure 3.3: Export and Import of Services, 2006-2013



Source: Department of Statistics, Malaysia

Figure 3.4: Shares of Exports and Imports of Services, 2013



Source: Department of Statistics, Malaysia

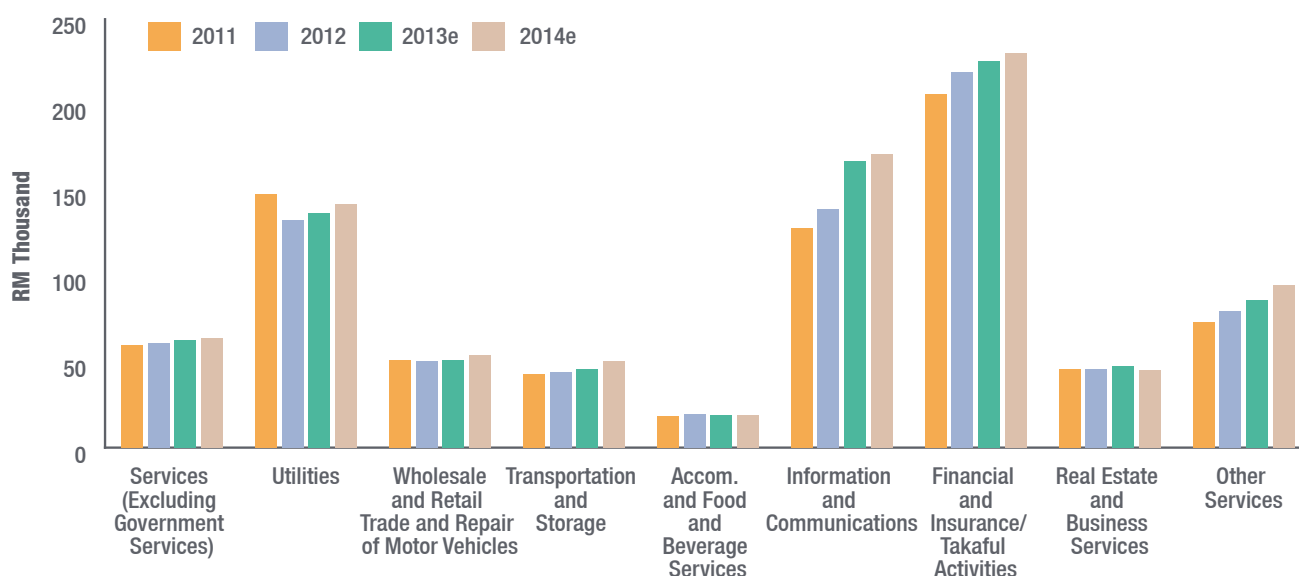
PRODUCTIVITY PERFORMANCE

Labour productivity within the services sector grew at 2.2% to RM63,897 per employee in 2014, compared with RM62,492 per employee in 2013. Productivity per hour worked stood at RM28.19. Most sub-sectors recorded higher productivity growth, although declines were recorded in accommodation and food and beverage service activities, information and communication (ICT), financial and insurance/takaful activities and real estate and business services.

The property industry was negatively affected by rising costs of living, high household debt and higher mortgage rates. In addition, the output of the industry was also impacted by cooling measures introduced to curb

rising property prices as well as tighter lending rules for financial institutions. Nonetheless, the financial and insurance/takaful sub-sector recorded the highest productivity level at RM222,765 per employee, followed by the ICT sub-sector at RM166,326 per employee. Accommodation and food and beverage service activities experienced the lowest labour productivity at RM18,631 (Figure 3.5).

The transportation and storage sub-sector recorded significant labour productivity growth at 10.06% in 2014 compared to 5.05% in 2013 (Table 3.1). Strong domestic economy activity and improvements in global trade contributed to higher levels of activity for land, sea and air transport. An improvement in trade activities also led to a higher quantity of freight transported by road, which

Figure 3.5: Productivity of the Services Sector, 2011-2014^e

Computed from: Department of Statistics, Malaysia

contributed to the growth of land transport. The opening of the Second Penang Bridge in March 2014 as well as the extension of Express Rail Link (ERL) from KLIA to KLIA2 in April 2014 led to an increase of highway and rail passengers.

Other services comprising health services, education services, sports activities and amusement activities registered the highest labour productivity growth at 10.84% in 2014, up from 7.84% in 2013. The efficiency of this sub-sector was improved by the successful implementation of various EPPs during the year – education and healthcare services have 17 EPPs each.

The wholesale and retail trade and repair of motor vehicles sub-sector also recorded significant productivity growth at 6.19% in 2014 as compared to 1.4% in 2013. This sub-sector has benefited from several EPPs that are focused on modernising and globalising retail outlets. Programmes such as 1Malaysia Unified Sales, Visit Malaysia Year 2014 and the opening of the gateway mall at KLIA2 also benefitted this sub-sector in 2014.

Several services sub-sectors registered lower labour productivity growth in 2014. Real estate and business services dropped by 3.06%, while accommodation and food and beverage service activities dropped by

Table 3.1: Productivity Growth of the Services Sector, 2012-2014

	2012	2013	2014
Utilities	-10.39	3.05	2.86
Wholesale and retail trade and repair of motor vehicles	-1.16	1.40	6.19
Transportation and storage	1.77	5.05	10.06
Accommodation and food and beverage service activities	3.81	-0.42	-3.01
Information and communication (ICT)	8.62	20.31	-0.60
Financial and insurance/takaful activities	6.12	2.97	-1.24
Real estate and business services	-0.88	3.92	-3.06
Other services	8.57	7.84	10.84
Services (excluding government services)	1.79	2.61	2.20

Computed from: Department of Statistics, Malaysia

3.01%. Although there was high demand for real estate transactions and professional services (especially engineering services in construction and computer services), inefficient workforce management and operational processes weighed down the productivity of these sub-sectors.

PERFORMANCE OF SELECTED SERVICES SUB-SECTORS

Wholesale and Retail Trade Services

Wholesale trade is defined as the resale (sale without transformation) of new and used goods to retailers as well as business-to-business trade. Retail trade includes the resale of new and used goods, mainly to the general public for personal or household consumption or utilisation.

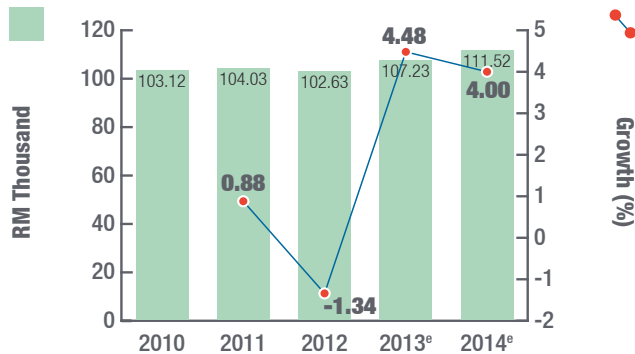
Malaysia's wholesale and retail trade sub-sector has evolved over the years. Improvements in infrastructure have enabled more rigorous sales activities from both wholesalers and retailers. Annual disposable income per household is projected to rise by 65.6% in real terms over the 2014-2030 period. This will mean an average annual real gain of 3.2%, which could contribute considerably to the steady increase of consumer expenditure in Malaysia. Continued urbanisation will create higher demand for goods and services in city centre, including higher value-added products. Malaysia's growing population will likewise contribute towards steady demand, further boosting the performance of this sub-sector.

Improvements in infrastructure have enabled more rigorous sales activities from both wholesalers and retailers. Annual disposable income per household is projected to rise by 65.6% in real terms over the 2014-2030 period.

Productivity Performance

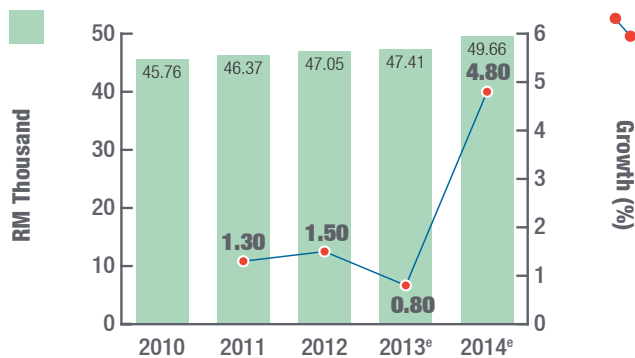
Wholesale and retail trade registered productivity growth of 4.1% amounting to RM68,632 per employee in 2014 compared with 1.5% in 2013. Productivity in wholesale trade grew by 4% to RM111,518 per employee (Figure 3.6), while retail trade grew by 4.8%

Figure 3.6: Productivity Level and Growth of Wholesale Trade, 2010-2014



Computed from: Department of Statistics, Malaysia

Figure 3.7: Productivity Level and Growth of Retail Trade, 2010-2014



Computed from: Department of Statistics, Malaysia

to RM49,664 per employee (Figure 3.7). The sub-sector employed a total of 1.7 million people in 2014, of which 1.2 million were engaged in the retail trade.

The wholesale and retail trade sub-sector is characterised by its labour-intensive nature, making the development of human capital particularly important. In terms of salaries and wages, wholesale employees enjoyed higher salaries of RM2,000 per month compared with retail employees who earned RM1,086 per month. However, the average wage within this industry is lowest among all the sub-sectors at RM6.75 per hour worked.

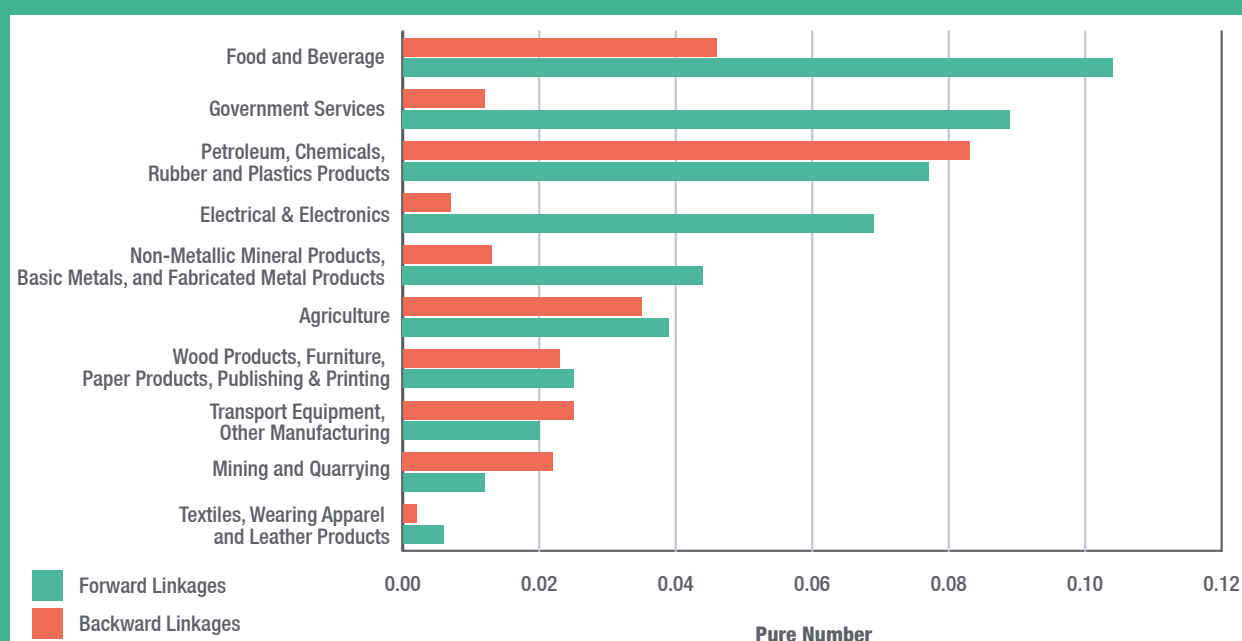
The industry's low wages contributed to its better performance in terms of labour cost competitiveness in 2014. Productivity growth of the wholesale trade sub-

BACKWARD AND FORWARD LINKAGES OF THE SERVICES SECTOR

The services sector has strong forward linkages to the food and beverages industry followed by government services at 0.1 and 0.08, respectively. On the other hand, the services sector as a whole also has strong backward linkages of 0.08 to industries such as petroleum, chemical and rubber and plastic products at 0.08.

Among the sub-sectors, the communications, financial and insurance, and logistics sub-sectors have strong backward and forward linkages because of their integration with other sub-sectors. The accommodation and restaurants sub-sector has the strongest backward linkages but weak forward linkages. This is because it utilises the products of other sub-sectors as inputs and sells its own products for final consumption.

Backward and Forward Linkages of the Services Sector



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia

sector was 4.0%, exceeding its growth in labour costs per employee of 3.0%. Unit labour costs also declined by 1.4% (Figure 3.8). Wholesale trade was more labour cost competitive than retail trade, with added value per labour costs of 4.6 and 3.8 respectively.

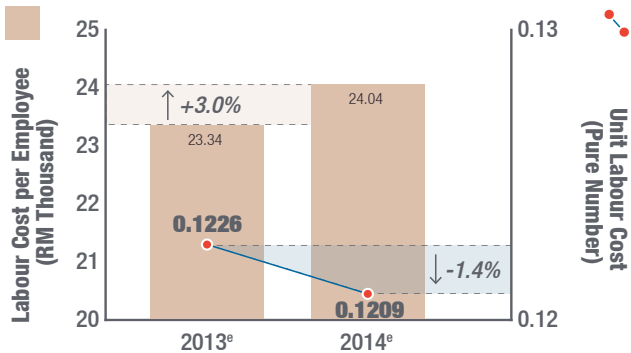
Meanwhile, capital productivity within the wholesale and retail trade sub-sector grew by 2.8% in 2014, while capital intensity increased a mere 1.3% to RM28,092. Although several Government initiatives aimed at modernising the retail trade industry have

been launched through various EPPs, capital intensity remained mostly unchanged at RM19,573 in 2014 compared with RM19,200 in 2013.

Challenges and Recommendations

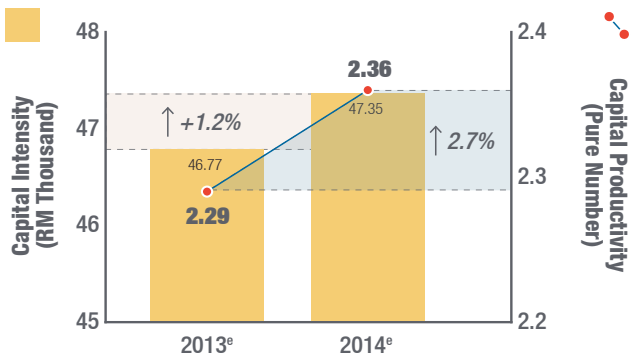
The depressed wages within the wholesale and retail trade industry demonstrate that this industry has failed to realise the benefits of its productivity gains, indicating a short-term mentality among businesses focused on

Figure 3.8: Labour Cost Competitiveness of Wholesale Trade, 2013-2014



Computed from: Department of Statistics, Malaysia

Figure 3.10: Capital Productivity and Capital Intensity of Wholesale Trade, 2013-2014

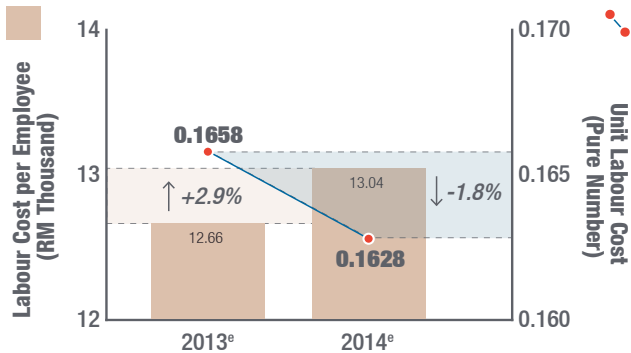


Computed from: Department of Statistics, Malaysia

cutting costs instead of increasing productivity per employee. There is tremendous scope for improvement within this sub-sector, both for businesses and the people that work for them.

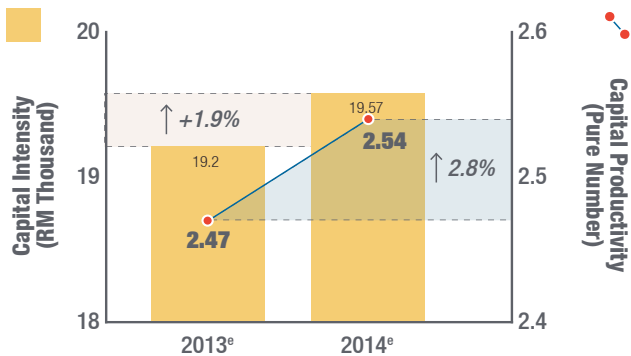
Industry research has found that higher wages invariably lead to more motivated and productive workers, resulting in lower turnover rates, improved morale and a higher overall calibre of job applicants. The study also reveals that high-wage firms can sometimes offset more than half of their higher wage costs through improved productivity and reduced hiring and turnover costs. In addition to offering higher wages, industry players could also make the sector more attractive by allowing more flexible working hours.

Figure 3.9: Labour Cost Competitiveness of Retail Trade, 2013-2014



Computed from: Department of Statistics, Malaysia

Figure 3.11: Capital Productivity and Capital Intensity of Retail Trade, 2013-2014



Computed from: Department of Statistics, Malaysia

To attract the high-quality human capital they need to raise productivity, industry players must bring about a mindset change among students and young job-seekers by promoting career paths in the retail trade. Well-trained and knowledgeable employees are the most important component of the customer service equation. To aim for true Service Excellence, wholesalers and retailers need to change their approach to human resources, provide employees with the right training and retain their best performers. Industry players should also collaborate with universities on training programmes and ensure that educational institutes offer courses that are relevant to the retail profession.

To attract the high-quality human capital they need to raise productivity, industry players must bring about a mindset change among students and young job-seekers by promoting career paths in the retail trade.

Companies can also make themselves more relevant to younger and increasingly affluent and educated market segments by providing more electronic retail channels via the internet (e-commerce and mobile commerce). Retailers also need to invest in information technology in order to cope with constant changes in the business environment such as new taxes and new accounting procedures.

Transportation and Storage Services

The transportation and storage services sub-sector plays an important role in Malaysia's economic development and is one of the fastest-growing intermediate services sub-sectors. It comprises land transport, water transport, air transport, warehousing and support activities, as well as post and courier services. The Tenth Malaysia Plan identified several areas that may be improved within this sub-sector, upgrading public transportation services in major cities as well as private and public partnership projects (PPP) for building highways, seaports and airports. In addition, the Track and Trace Entry Point Project (EPP) under the Communications Content and Infrastructure NKEA will promote the use of Radio Frequency Identification (RFID) technology within the post and courier industry.

Because of its strong link with trade, the transportation and storage services sub-sector is one of the main focuses of trade liberalisation. The five industries under this sub-sector have been autonomously liberalised to allow foreign equity participation since 2009. The sub-sector's importance will only increase once the AEC comes into effect, as the AEC pillar of a single market and production base requires the free flow of goods and services.

RETAIL PRODUCTIVITY: GLOBAL APPROACHES

IKEA

As the world's largest home furnishing retailer, IKEA invests heavily into building the capabilities of its 147,000-strong workforce. The company provides on-the-job training complemented by traditional classroom courses and a wide range of web-based training activities for all employees. Workers can create their own development plan and are encouraged to try different roles and work in different countries during their careers. Within this non-bureaucratic approach, each employee has the opportunity to share ideas with others, and mistakes are accepted as a healthy way to learn and achieve improvements.

Watson Group – Hong Kong

A.S. Watson Group is a leading health, beauty and lifestyle retailer that serves more than 26 million customers a week. The company is committed to providing a safe, healthy, supportive and discrimination-free environment for all employees, and each brand within the company develops and executes its own training and development strategy. In 2013 and 2014, Watson Group won the Best Asian Employer award for its approach to human capital.

AEON Group

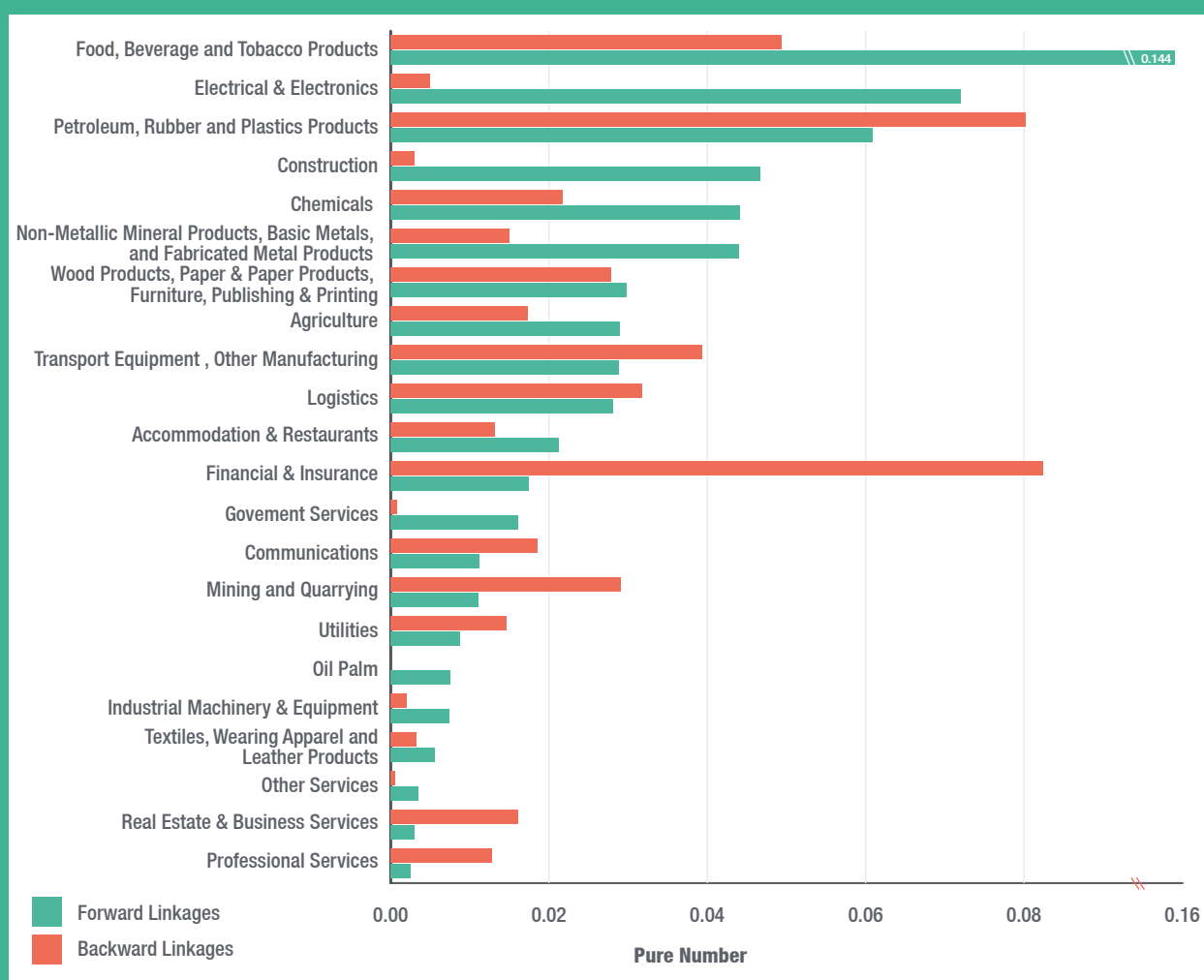
AEON Group offers a wide range of groceries, homeware, gifts, nursing care products and consumer appliances via home delivery in Japan. Launched in 2008, the AEON Net Super website offers low-cost delivery and convenient pick-up options for customers. To improve its productivity and efficiency, AEON established TopValu Co Ltd to create a supply chain within the organisation in 2007. The company has also developed an in-house training centre for its 400,000 employees in different countries. It has set up collaborative programmes with local universities in these countries (including Open University Malaysia) to train its staff. The programmes empower the employees to manage their careers, develop skills and increase their productivity.

BACKWARD AND FORWARD LINKAGES OF WHOLESALE AND RETAIL TRADE SERVICES

The importance of the wholesale and retail trade services is reflected in its indices of 0.91 in backward linkages and 0.96 in forward linkages. This indicates that the industry has high linkages with input providers and almost all industries

consume its services. The industry has strong backward linkages with finance and insurance and strong forward linkages with the food, beverage and tobacco products industry.

Backward and Forward Linkages for Wholesale and Retail Trade Services



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia

Productivity Performance

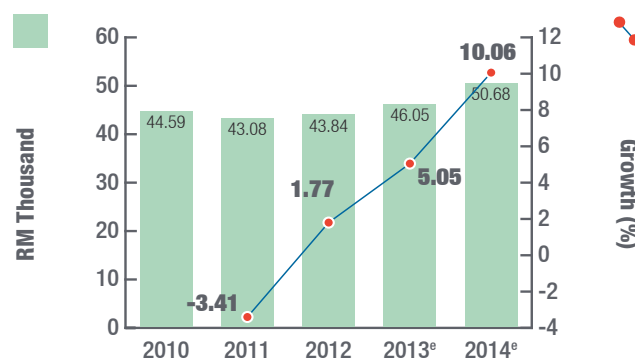
Productivity growth in the transportation and storage services grew by 10.1% to RM50,683 per employee in 2014, an improvement from RM46,051 per employee in the previous year (Figure 3.12). The sub-sector contributed 3.6% to GDP in 2014 and made up 9.7% of the services sector, while employing a total of 593,300 workers.

The sub-sector's positive performance was largely driven by the economic recovery of the U.S. and other advanced economies as well as the continued demand for trade-related activities within the region. The sub-sector's productivity performance was also driven by improvements in the freight industry, with warehousing & support activities registering the highest productivity growth of 10.7% to RM195,381 per employee in 2014. The industry generated added value of RM16.1 billion, making it the largest contributor to the sub-sector's total added value.

Despite its large employment base, all industries in this sub-sector managed to sustain their labour cost competitiveness in 2014. The land transport industry continued to be the sub-sector's largest employer, employing 184,859 people. This can be attributed to passenger transportation activities such as bus, train and taxi services, which tend to require more workers than other industries. The warehousing and support activities industry was particularly impressive at improving labour cost competitiveness, with productivity growing by 10.7% while labour cost per employee grew at 4.5% and unit labour cost dropped by 5.4% (Figure 3.13).

All industries in the transport and storage sub-sector continued to invest in capital, which is to say that all of them registered positive growth in capital intensity and capital productivity. The warehousing and support activities industry recorded the highest growth, an indication that the industry is expanding and modernising through activities such as the upgrading of petroleum storage terminals. Several new projects that launched in 2014 are expected to further support this sub-sector's continued growth. This includes the new Container Terminal 7 (CT7) at Westport, which

Figure 3.12: Productivity Level and Growth of the Transportation and Storage Services Sub-Sector, 2010-2014



Computed from: Department of Statistics, Malaysia

will increase the port's handling capacity to 11 million twenty-foot equivalent units (TEUs) per year.

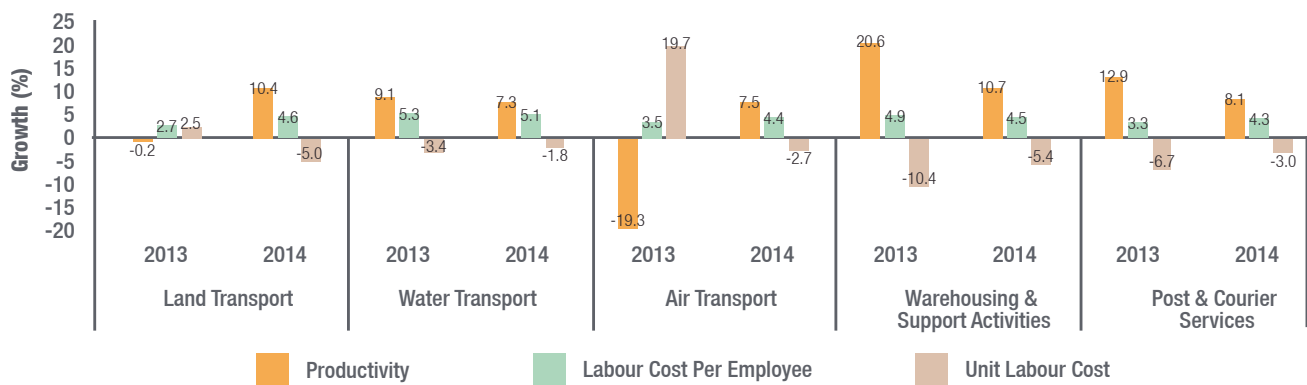
Challenges and Recommendations

The transportation and storage sub-sector is the backbone of the Malaysian and global economy, facilitating international trade, enabling economic activities, and linking producers and consumers with markets, goods, materials and services. The continued development of the transportation and storage services sub-sector will be key to the successful growth of Malaysia's various economic corridors as well as the AEC as a whole. However, it faces several challenges with regards to quality and competency, environmental compliance, innovation and differentiation as well as policy and process.

The sub-sector fared well in the World Bank Logistics Performance Index (LPI) (Table 3.2). The country was ranked in 25th place ahead of China, Turkey, Hungary and many other countries. However, Malaysia's position in terms of timeliness and logistic quality and competency dropped from 28 to 31 and 30 to 32 respectively, indicating that while other countries have made progress in these areas, Malaysia has remained stagnant.

Malaysia's inadequate performance in these two indicators can be attributed to a lack of professional talent in supply chain management, which is a critical

Figure 3.13: Growth of Labour Cost Competitiveness Within the Transport and Storage Sub-Sector, 2013-2014



Computed from: Department of Statistics, Malaysia

requirement for logistics companies. To attract the necessary talent, companies should offer more attractive and specific sets of incentives, employment packages and remuneration for logistics services careers.

In line with growing environmental awareness worldwide, the sub-sector must also prepare for the shift to green standards

In line with growing environmental awareness worldwide, the sub-sector must also prepare for the shift to green standards. Adopting these environmental requirements will require changes in the way products are handled, stored and transported. Green transportation and storage may become mandatory in the near future, meaning that a country’s exports must meet carbon footprint requirements or be prohibited from trade across borders. To comply with these requirements, goods must be handled in a green manner, stored at a green warehouse, transported via a green truck, handled at a green port and shipped on a green vessel, meaning that all of these steps should be in line with green standards.

As markets open up, trade barriers come down, and regional economies integrate under the ambit of AEC, players in the transportation and storage services sub-sector will face new competitive challenges. Most transport and storage companies offer the same

Table 3.2: Logistics Performance Index 2014

Indicator	Malaysia	Singapore	Hong Kong
Overall Ranking	25	5	15
Customs clearance and competency	27	3	17
Infrastructure	26	2	14
International shipments	10	6	14
Logistics quality and competence	32	8	13
Tracking and tracing	23	11	13
Timeliness	31	9	18

Source: World Bank, 2014

services, regardless of customers’ needs. In order to compete in a wider, regional market, companies will need to differentiate and innovate in terms of the services they offer, the business models they use and the operational processes they adopt. They can increase efficiency of delivery by digitising processes, increasing the use of automation and offering more sophisticated value-added services. These improvements will enable local logistics players to handle more complicated jobs, including overseas customers. They can also support trade, commerce, insurance and finance by adopting international best practices to promote open digital logistics platform or e-logistics.

One other issue challenging this industry is a lack of regulation among industry players such as freight forwarders. The large number of players in the industry

BACKWARD AND FORWARD LINKAGES OF THE TRANSPORT & STORAGE SERVICES SUB-SECTOR

The sub-sector is one of the top ten strongest in the country in terms of backward and forward linkages, recorded at 1.08 and 1.11 respectively. The transport services sub-sector has strong backward linkages with the petroleum, chemicals, rubber and plastics products industries; for instance, the

haulage industry requires fuel to run its vehicles as well as rubber for its wheels. The sub-sector has strong forward linkages with the food, beverage and tobacco products industry.

Backward and Forward Linkages for Transport and Storage Services



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia

has led to inefficiency and price discrimination that distorts the freight industry's competitiveness. To boost timeliness, predictability and cost-effectiveness within the sub-sector, the Government needs to create a more efficient policy infrastructure as well as streamline procedures with an electronic Customs process. The

upcoming U-Customs project is expected to help speed up export and import container traffic as well as bulk cargo through Malaysia's gateways. The system is due to begin operation in 2016 and will replace the existing Customs Information System.

Professional, Scientific and Technical (PST) Services

The PST services sub-sector comprises legal, accounting, architectural, engineering, land and quantity surveying, advertising, veterinary, management consultancy and market research and other professional services. Because of its knowledge-intensive nature, this sub-sector is highly differentiated and offers high-value skills and services. PST companies are able to charge a premium for these services, which translates into higher wages and profit margins. In developed nations, PST industries continue to drive change, boost economic growth and increase efficiency.

PST has been identified as a focus area in the NKEAs as it is one of the sub-sectors with the potential to move Malaysia towards high-income nation status by 2020. Six EPPs are associated with PST within the areas of aviation maintenance, outsourcing, data centre hubs, green technology industries, pure-play engineering services and ship building and repair.

Productivity Performance

Productivity growth within the PST services sub-sector slowed to 5.8% in 2014 compared with 8.5% growth in 2013. Despite steep declines in productivity growth, the accounting, engineering and legal services industries all

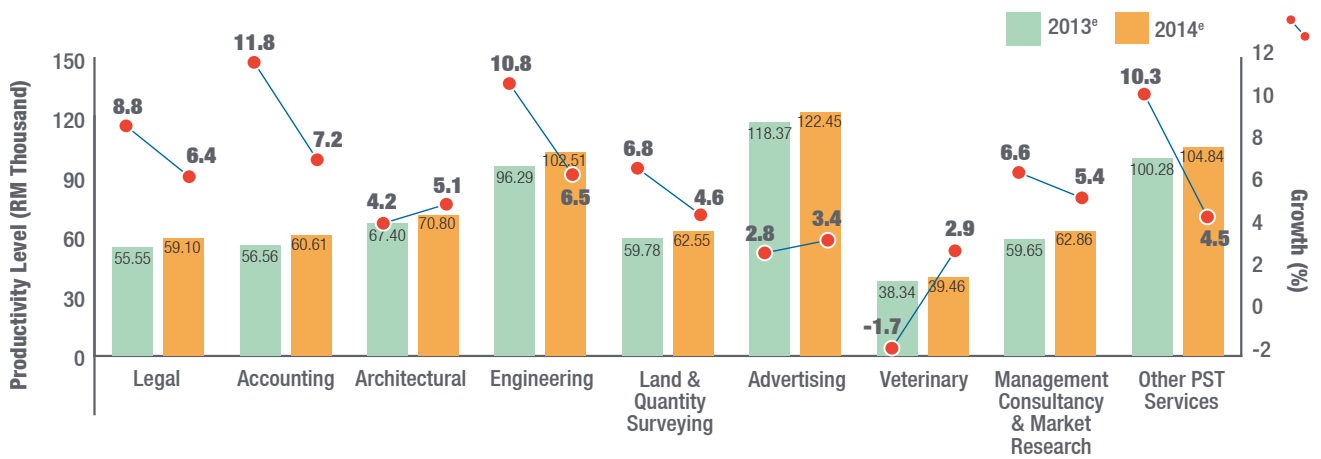
posted high productivity growth rates of 7.2%, 6.5% and 6.4% respectively (Figure 3.14). Rapid changes in the IT environment have impacted the accounting services industry in particular, pushing productivity to RM60,612. The automation of audit tasks, the development of knowledge-sharing applications and the growing usage of specialised audit software have all contributed to higher productivity growth in this industry.

The advertising industry registered the highest productivity level within this sub-sector at RM122,453 per employee in 2014. New technologies have enabled business models based on digital media such as mobile and online advertising, through which advertisers can achieve greater reach at a lower cost than before. These new advertising mediums have been complemented by the healthy growth of out-of-home media and billboards.

The productivity performance of the advertising industry also benefitted from government initiatives such as the SME Corp Advertising and Promotion grant for SMEs in the services sector.

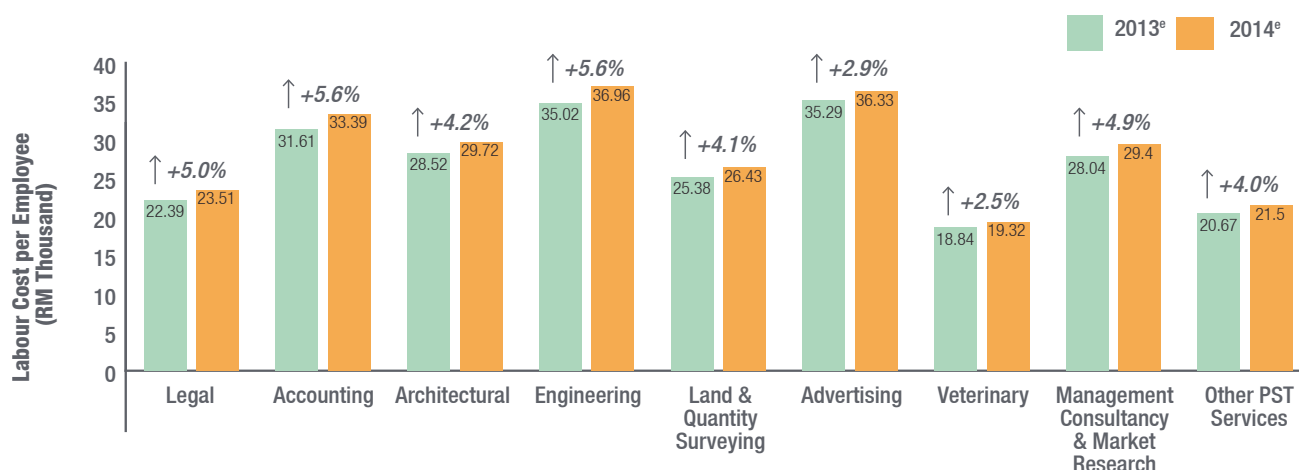
The productivity performance of the advertising industry also benefitted from government initiatives such as SME Corp’s Business Accelerator Programme (BAP), which

Figure 3.14: Productivity Level and Growth of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014



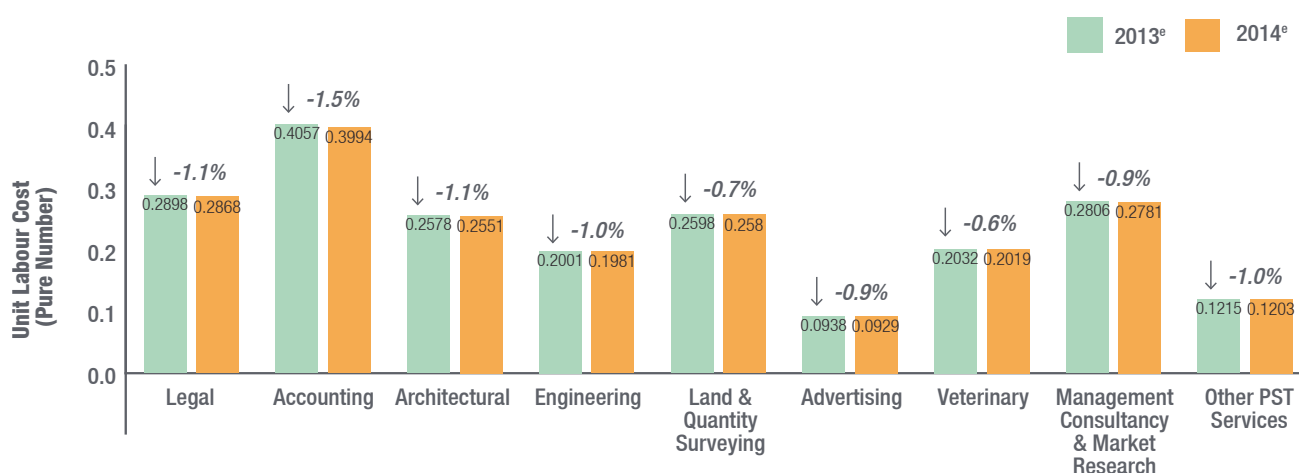
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Figure 3.15: Labour Cost Per Employee of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014



Computed from: Department of Statistics, Malaysia

Figure 3.16: Unit Labour Cost of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014



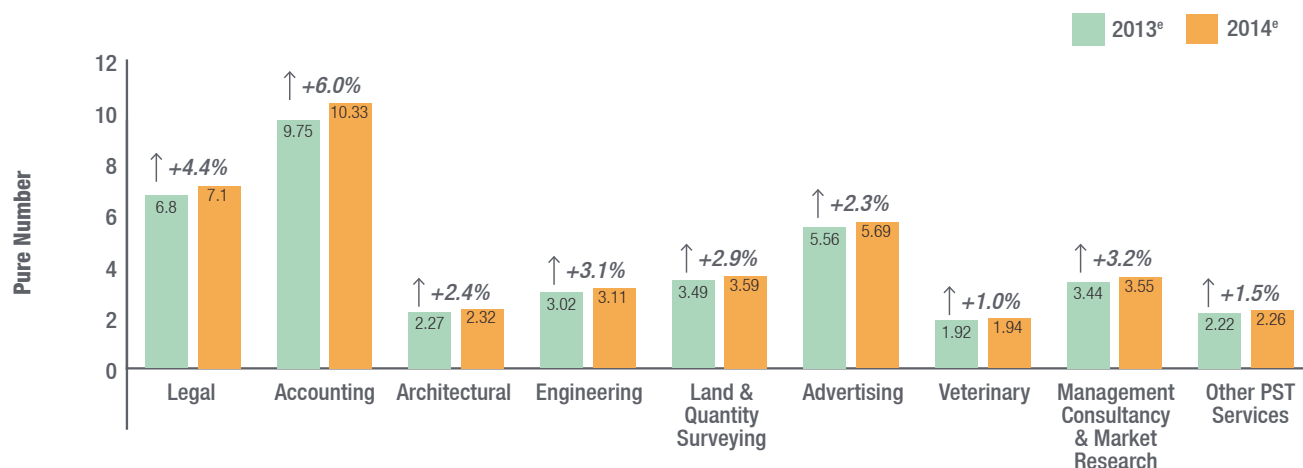
Computed from: Department of Statistics, Malaysia

offers matching grants and soft loans to eligible SMEs to help them kick start advertising and promotion activities for their businesses.

The PST sub-sector maintained its labour cost competitiveness in 2014, with productivity growth of 5.8% exceeding the growth of labour costs per employee at 5.2%. Unit labour costs declined by 0.7%. Each industry within the PST services sub-sector generated at least twice in added value what they spent on labour cost. Advertising was the leader in labour cost competitiveness, with every ringgit spent on labour cost generating RM3.40 in added value (Figure 3.15).

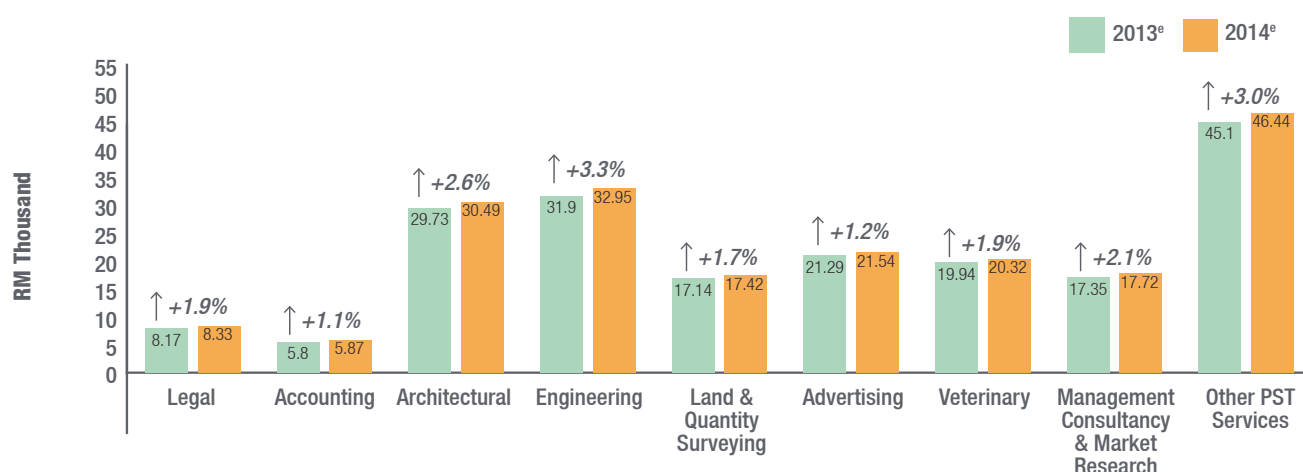
However, capital productivity in the PST sub-sector slowed to 3.4% in 2014 compared to 5.3% in 2013, although both the accounting and legal services industries posted better capital productivity growth rates of 6% and 4.4%. These two industries have fully utilised their investments – ICT assets such as advanced software and hardware – to generate added value (Figure 3.17). The engineering and architectural services industries also achieved higher capital intensity at RM32,954 and RM30,488 respectively as they began to adopt new technologies such as Building Information Modelling (BIM) and Industrialised Building Systems (IBS) (Figure 3.18). These advanced technologies

Figure 3.17: Capital Productivity of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014



Computed from: Department of Statistics, Malaysia

Figure 3.18: Capital Intensity of the Professional, Scientific and Technical (PST) Services Sub-Sector, 2010-2014



Computed from: Department of Statistics, Malaysia

represent a trade-off between high initial capital investment and returns in the long run, but due to a lack of professionals with expertise in these systems, they suffer from lower utilisation rates.

Challenges and Recommendations

The market for PST services is currently largely domestic, although exports are becoming increasingly important. However, with greater globalisation, liberalisation and a freer flow of services ushered in by the AEC, Malaysian

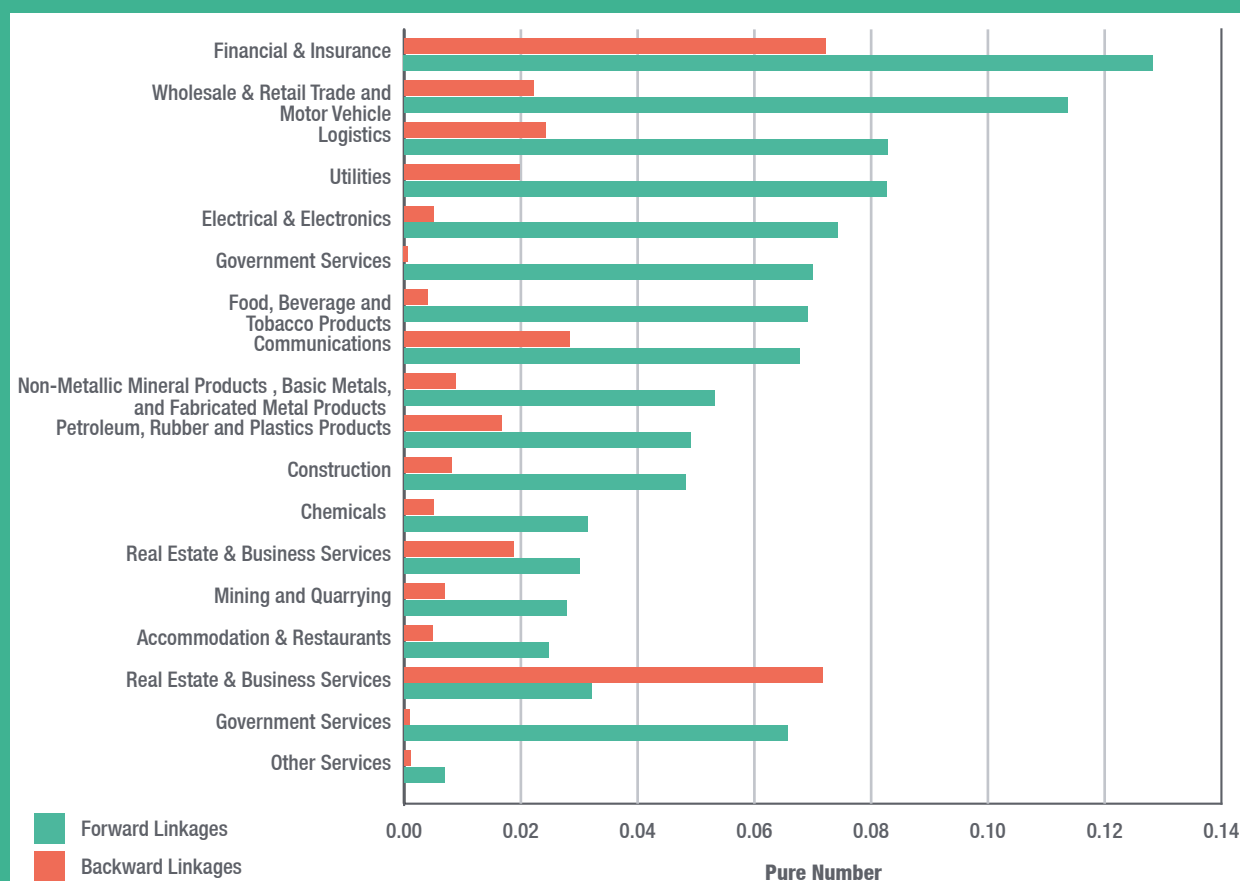
PST service providers will face increasing competition from foreign firms. This will pose many challenges to the sub-sector, as it is dominated by small firms that lack the capacity to compete on a bigger scale. Financial institutions do not consider these small firms to be key client segments and are rarely prepared to offer them the financial assistance they need to expand and achieve economies of scale. Due to their small size and lack of financial support, local professional firms will be at a competitive disadvantage compared with foreign firms that can draw upon multidisciplinary experts and wide global networks.

BACKWARD AND FORWARD LINKAGES OF THE PST SERVICES SUB-SECTOR

The PST services sub-sector provides significant multiplier effects on a wider scale to other industries of the economy which offer high value services. The industry has strong forward linkages with an index of 1.32 as compared to

backward linkages with an index of 0.78. This indicates that this industry is a significant input provider to other industries, especially financial and insurance, and wholesale and retail trade and motor vehicles.

Backward and Forward Linkages for Professional, Scientific and Technical Services



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia

To address this challenge and enhance the capabilities of small local PST firms, the Government has provided an incentive for mergers and acquisitions of small and medium service providers. The incentive is aimed at building up the capacity and enhancing the competitiveness of local service providers in the global arena. Mergers and acquisitions can create new brands,

open up access to new markets and unlock economies of scale. Eligible sectors include professional services (specialised medical and dental services, accounting, taxation, architectural and engineering services), courier services, private technical and vocational secondary education services and training.

INTERNATIONAL SALARY COMPARISON FOR PROFESSIONAL SERVICES

Legal professionals in Malaysia are paid the highest average monthly salary (USD2,108) among the professional services, but make just a third of what their counterparts earn in the United States (USD6,443) and Singapore (USD6,300). Salaries for engineers, architects and financial professionals are also comparably higher in these countries.

The tightening of the regulatory environment is expected to increase legal and compliance hiring activity in 2015.

TalentCorp has been given a mandate to attract local talent working overseas under the Returning Expert Programme. Under this initiative, companies may need to pay more to secure the highest-calibre workers, who may in turn receive counter-offers from employers. This dynamic is expected to boost the overall salary scale of professionals within these industries and challenge companies to increase productivity rapidly despite rising labour costs.

Average Monthly Salary Comparison by Country (USD)

	2011	2012	2013	2014
Job specialisation	United States	Malaysia	Australia	Singapore
Engineering	7,383	1,846	5,711	3,461
Architecture	5,920	1,559	4,167	4,119
Accounting & Finance	5,737	1,765	5,056	4,871
Legal	6,443	2,108	5,960	6,300

Source: www.salaryexplorer.com

Government agencies and government-linked companies (GLCs) should cultivate a mindset of supporting local professional firms when awarding projects. Malaysian companies investing abroad currently prefer to use foreign consultants and service providers over local firms, a practice that not only stunts opportunities for domestic services providers to venture abroad but also increases the outflow of funds to other countries. There is often no shortage of local capacity or competence. Currently, local expertise performs the actual work in many projects that are awarded to foreign firms.

However, local firms also have a role to play in increasing their competitiveness by revising the salaries they offer in order to better attract and retain professional talent in Malaysia. Local professionals are paid far less than

their foreign counterparts, especially in engineering and architectural services firms. This makes it difficult for local professional firms to compete with international firms when it comes to attracting key talent.

Malaysia's educational service providers will also play a role in this sub-sector's future, as there is an urgent need to improve the quality of graduates in professional programmes. These programmes need to be brought up to industry requirements with regards to technical know-how, communication, managerial and interpersonal skills as well as command of English. Local universities and institutions need to apply more stringent entry requirements for professional courses, while industry players should become involved with apprenticeships and other support. This will enlarge the pool of available

talent in Malaysia and allow Malaysian firms to compete more effectively on the job market.

Healthcare Services

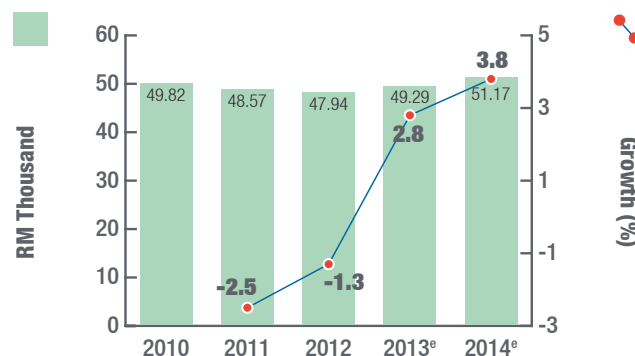
The healthcare industry encompasses private hospitals; general medical services; specialised medical and dental services; maternity homes; dialysis centres; medical laboratories; acupuncture centres; herbalist and homeopathy services; as well as other human health services. In recognition of its importance to both societal well-being and the creation of wealth, the Government has identified healthcare as one of the country's NKEAs.

The global healthcare industry is among the most dynamic and rapidly growing industries in the world economy. Demand for healthcare is likely to expand in the future based on expected demographic shifts such as the increase in the number of elderly people, extended longevity, a rise in lifestyle diseases as well as improved access to services. The growth of the private health sector in Malaysia has been largely due to the Government's efforts to increase private participation in the country's economy by reducing governmental presence in the economy and lowering the level and scope of public spending. The number of private hospitals in the country rose to 214 in 2013 providing a total of 14,033 beds. Although private hospitals still only account for 28.9% of the total hospital beds in the country, the rate of growth at 2.7% was nearly twice as fast the increase in beds in public hospitals (1.5%).

Productivity Performance

Supported in part by government initiatives such as the EPPs, productivity growth within the healthcare sub-sector surpassed its average wage growth rates in 2013 and 2014. Productivity in this industry rose by 3.8% in 2014 (Figure 3.19), giving it an average productivity growth rate of 0.7% between 2010 and 2014. This improvement may be attributed to the industry's ability to offer better facilities and a higher quality of services at affordable rates.

Figure 3.19: Productivity Level and Growth of the Healthcare Sub-Sector, 2010-2014



Computed from : Department of Statistics, Malaysia

Figure 3.20: Labour Cost Competitiveness of the Healthcare Sub-Sector, 2011-2014

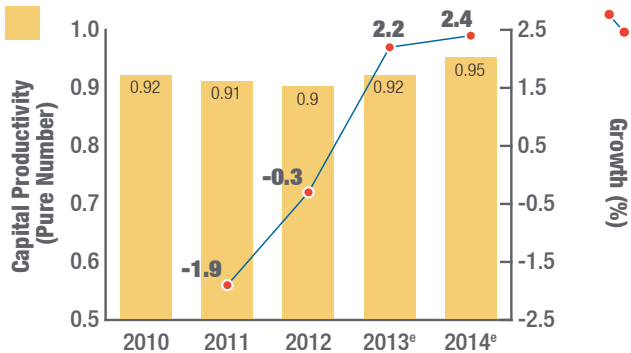


Computed from: Department of Statistics, Malaysia

The industry currently employs approximately 93,861 employees and generates RM4.8 billion in added value. Labour productivity experienced healthy growth thanks to three important factors that are shaping Malaysia's healthcare sub-sector: increased investment and savings in physical capital, the application of new medical technologies and equipment and the training of highly-skilled human capital. The industry's productivity performance was supported by hospital accreditation programmes such as Malaysia Society for Quality in Health (MSQH) and Joint Commission International (JCI).

The majority of the healthcare industry's employees are professionals. In 2013, the industry employed 11,697

Figure 3.21: Capital Productivity of the Healthcare Sub-Sector, 2010-2014



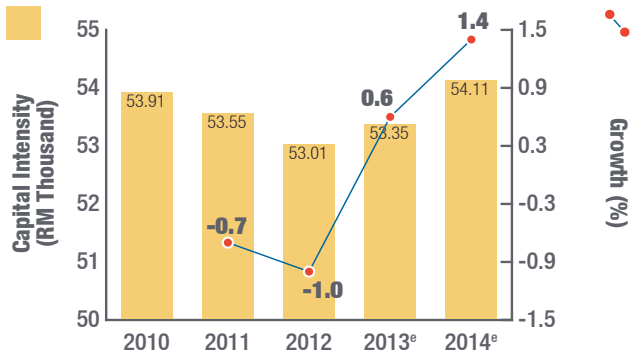
Computed from: Department of Statistics, Malaysia

doctors, 1,979 dentists, 3,325 pharmacists, 3,060 opticians, 1,015 optometrists and 26,653 nurses. It has successfully maintained its labour competitiveness, with productivity growth of 3.8% outstripping growth in labour costs per employee at 2.9% while unit labour costs dropped by 1% (Figure 3.20). The improvement in labour cost competitiveness came as a result of using skilled workers, investments into automation and technology, increasing access to capital, process innovation and information technology. Technology-enabled automation has also replaced some manual jobs, further improving productivity.

Capital productivity in the healthcare services sub-sector remained stable, posting a growth rate of 2.4% in 2014 compared to 2.2% in 2013 (Figure 3.21). While utilisation rates of fixed assets such as machinery and equipment increased, the pace of adoption appears to have slowed down due to low demand. Several private hospitals have moved towards shared facilities for devices that require huge investment, such as Magnetic Resonance Imaging (MRI) and Computerised Tomography (CT) scan machines.

Meanwhile, capital intensity in healthcare services grew by 1.4% in 2014 (Figure 3.22), which is perhaps unsurprising considering the huge investments industry players need to make in this capital-intensive industry. Many aspects of healthcare delivery have become increasingly dependent on information technology and the computerisation of almost all aspects of patient care, diagnosis and treatment. If properly utilised,

Figure 3.22: Capital Intensity of the Healthcare Sub-Sector, 2010-2014



Computed from: Department of Statistics, Malaysia

SINGAPORE'S NATIONAL HEALTH INFORMATION SYSTEM

Singapore is working towards a National Health Information System that will allow the seamless flow of information, such as electronic medical records, across all healthcare establishments. Healthcare providers will be responsible for deploying the system and ensuring sufficient numbers and the right mix of health professionals to meet the needs of consumers. The national list of essential medical products and technology will also be made available electronically, supported by a national programme to promote rational prescribing.

The implementation of the system will cover a regulatory system for the marketing, safety, and quality of medical products as well as a system for monitoring the price and availability of products.

these investments can serve as a powerful engine for productivity growth.

Challenges and Recommendations

The Government's continued promotion of medical tourism is expected to support the industry's growth,

while the take-up of private insurance, particularly among the adult population, will also contribute to the sub-sector's expansion. Projections by the Ministry of Health's Institute for Health Systems Research suggests that expenditure on healthcare will rise from 3.7% of GDP in 2011 to 4.4% of GDP by 2030. Nonetheless, the industry also faces several challenges in terms of workforce quality and over-regulation.

Workforce quality is a serious concern in Malaysia's private healthcare industry, particularly because of the shortage of qualified nurses. Although private institutions are producing large numbers of nurses, the industry consensus is that these graduates lack the experience or competence to care for patients. Meanwhile, many trained nurses have shifted to public hospitals, drawn by better compensation packages and training opportunities. Private hospitals find it difficult to send their nurses for post-basic training due to a shortage in training capacity. As a result, they are unable to comply with the Government's requirement of having 50% post-basic nurses on their staff.

Several new opportunities for growth are emerging within this sub-sector, especially in niche areas such as palliative care and aged care services. Although Malaysian public hospitals have had dedicated palliative care units since the mid-1990s, demand for palliative care in private healthcare facilities is rising fast. This will require a corresponding supply of health personnel with the expertise to offer this specialised care.

Aged care services is another niche area that is expected to grow in the healthcare industry, particularly given the shift in Malaysia's demographics – by the year 2020, an estimated 3.4 million Malaysians will be aged 60 or older, representing some 9.9% of the total population. The volume of healthcare required to meet the needs of the elderly is therefore expected to increase. Key industry players are beginning to offer aged care services centres that provide a personalised and home-like environment to residents. The Retirement Village EPP has identified a similar concept that could yield significant economic benefits. A prototype model for introducing world-class aged care services to the Malaysian market is currently

PROVIDING ASSURANCE THROUGH JCI ACCREDITATION

JCI accreditation enables healthcare providers to provide an assurance of quality through their medical insurance. Kameda Medical Center in Japan was the first hospital accredited by JCI in 2009. Today, the institution receives numerous inquiries from abroad and admits 1,200 international patients annually.

As a leader in Malaysia's healthcare industry, KPJ relies upon international accreditation to sustaining its quality service. To date, 10 KPJ hospitals have obtained MSQH accreditation while four KPJ hospitals have both MSQH and JCI accreditation. In 2013, revenue from the medical tourism segment accounted for 4% of KPJ's revenues. The Group's overall quality efforts have led to an 8.83% increase in the number of international patients.

being developed with an eye to its long-term business potential.

Malaysian healthcare providers can become more competitive and attract an international clientele by leveraging international hospital accreditation through the JCI scheme. JCI accreditation addresses specific areas promoted by the International Patient Safety Goals, and it enables healthcare providers to leverage international patients through their medical insurance. Only 12 private hospitals have been accredited by JCI to date, indicating that there is plenty of scope for improvement.

The healthcare industry is also stifled by too many regulations – approximately 112 at present. These regulations can be divided into three aspects: regulations for healthcare facilities and services, healthcare professionals and practices. The main regulatory issues today are very much related to healthcare professionals, which is the main reason why licences are not issued or applications are deferred.

Much more needs to be done to simplify regulatory requirements for the healthcare industry. To reduce the regulatory burden of licence renewal, the Ministry of Health adopted an information-based approach to planning approval that has successfully saved 131 registered private hospitals an estimated RM1.13 million annually.

Technology also plays a part in developing the productivity of the healthcare industry. At present, each independent hospital has its own system for maintaining patient records. However, best practices in developed countries point to the need to establish integrated electronic medical records of all patients in the country in order to improve patient care across all the different parts of the healthcare system, including hospitals and general practitioners. In the UK, the Health and Social Care Information Centre (HSCIC) uses the NHS number and gender rather than patient name to link patient records in a secured system. All records in the system are strictly controlled by law and subject to strict confidentiality rules.

New developments in monitoring and wearable devices should also be assessed for their potential to drive change in the healthcare industry. These devices will have an impact on telehealth services such as home monitoring and home consultations, particularly for remote or less-served areas.

TOWARDS THE GLOBAL FRONTIER

Despite its key role as the largest contributor to GDP in the Malaysian economy, the services sector has much to do before it can become the primary driver of future job creation and productivity growth. At the international level, the productivity of Malaysia's services sector lags far behind other countries. In 2013, its productivity level was only 32.9% of that of the USA's services sector, 35.3% that of Hong Kong's, 35.9% that of Singapore's, and 38.4% that of Taiwan's (Table 3.3).

One challenge facing Malaysia's services sector is that it has failed to successfully diversify into export-oriented sub-sectors such as financial and ICT services. Activities

Table 3.3: Productivity in the Services Sector (PPP) – Malaysia vs. Selected Countries

Country	(GDP (PPP) per person employed in services, US\$)			
	2012		2013	
	Ranking	US\$	Ranking	US\$
USA	2	105,441 (33.7%)	2	112,703 (32.9%)
Hong Kong	3	104,061 (34.2%)	3	105,141 (35.3%)
Singapore	5	99,016 (35.9%)	4	103,617 (35.9%)
Taiwan	6	94,140 (37.8%)	9	96,830 (38.4%)
Japan	26	65,970 (53.9%)	21	74,675 (49.7%)
Korea	37	51,402 (69.2%)	39	52,191 (71.1%)
Malaysia	47	35,572	47	37,150

Source: World Competitiveness Yearbook 2013 and 2014

such as remote management and maintenance of IT networks, transcribing medical records, financial research and analysis have more potential to exploit the global trade opportunities presented by the AEC. Instead, the bulk of Malaysia's services sector comprises traditional services such as construction, wholesale and retail trade, and travel and transportation.

Another challenge is that most of the small and medium enterprises (SMEs) that make up the vast majority of businesses in Malaysia's services sector are not yet equipped to compete on the global scale. Often, the SMEs do not have the size, capacity and credentials to handle large-scale international projects. There is a shortage of local services companies that may be categorised as high-touch; that is, capable of providing personalised services to customers. One answer is to partner local SMEs with strong collaborators through a consortium programme in order to raise their performance levels, increase their market knowledge, and improve their marketing and branding.

Local services firms also struggle to secure financing from commercial banks that do not fully understand the services business model. Improving access to capital

CHALLENGING HONG KONG

Hong Kong's economy has undergone a remarkable transformation in the past two decades. The services sector has expanded rapidly, growing to account for 93% of Hong Kong's Gross Domestic Product (GDP) in 2012 (83%, if Government services are excluded). Its value-added growth of services rose at an average annual rate of 5.4% to USD241.4 billion in the ten years ending 2012. The fastest growth came from accommodation and food, real estate, professional and business, and finance and insurance.

If Malaysia is to emulate Hong Kong's success in becoming one of the leading services-driven economies in the world, it is essential to examine and benchmark the factors behind this success story. Hong Kong is renowned for its free flow of capital and information, which facilitates the growth of financial services. Not only do investors benefit from Hong Kong's freely convertible currency, their rights are safeguarded by strong rule of law, as enforced by an independent judicial system.

While Hong Kong lacks two of traditional economic assets – natural resources and population – it excels in its institutional strengths. The Global Competitiveness Index rates Hong Kong favourably with Rank 8 for its institutions (9 for public, 7 for private), compared with Malaysia which ranks 20 for institutions (23 for public, 14 for private).

Hong Kong's government has encouraged the growth of its services sector with a highly business-friendly regulatory regime. Hong Kong achieved Rank 3 in Doing Business 2015 as well as Rank 8 for starting a business, Rank 6 for

enforcing contracts, Rank 2 for trading across borders, Rank 4 for paying taxes and Rank 1 for dealing with construction permits. By comparison, Malaysia was ranked 18 in Doing Business 2015 as well as Rank 13 for starting a business, Rank 29 for enforcing contracts, Rank 11 for trading across borders, Rank 32 for paying taxes and Rank 28 for dealing with construction permits.

These institutional strengths helped Hong Kong to develop highly-advanced financial infrastructure: A total of 70 of the world's top 100 banks have a presence in Hong Kong, making it one of the largest banking centres in the world. Hong Kong also plays a critical role as a renminbi (RMB) offshoring centre, providing a full range of RMB banking services. Hong Kong has done much to leverage on its economic and financial integration with mainland China, creating abundant opportunities for a wide range of services. While Malaysia lacks physical proximity to China, it has the potential to expand its services sector's involvement with China, as well as the vast ASEAN market following further realisation of the AEC.

Each of Hong Kong's services industries receive strong support and promotion from specific organisations, such as the Financial Services and the Treasury Bureau; the Hong Kong Trade Development Council; and the Commerce and Economic Development Bureau, which provides the Professional Services Development Assistance Scheme. Malaysia needs to empower its services industries with focused support from organisations in a similar manner.

will remove a major hurdle in enabling these businesses to pursue large international projects. The Government would do well to establish a global or regional champion for reference or benchmarking purposes, especially given the challenges faced by services companies in closing gaps. Maybank is one example of a home-grown, high-touch company that has successfully expanded

abroad and could serve as a champion. It may also be necessary to enhance existing franchise development programmes to further build the capabilities of local services providers such as Smart Reader, which now has 150 franchise centres in the Philippines, China, Thailand, Brunei and Middle East, while KPJ Healthcare has expanded to Indonesia and Bangladesh.





4

Productivity Performance of the **MANUFACTURING SECTOR**

In this chapter:

- Economic and productivity performance of the manufacturing sector and selected sub-sectors:
 - Electrical & Electronics
 - Machinery & Equipment
 - Chemicals & Chemical Products
- Multiplying the potential of the manufacturing sector

As the country progresses towards becoming an advanced economy, a manufacturing sector that focuses on innovative products and technology-based skills can ensure that it stays more productive, competitive and relevant. This is the envisioned goal for Malaysia's manufacturing sector as the country's economic transformation goes into high gear.

Malaysia's manufacturing sector is broadly divided between the domestic-oriented and export-oriented industries. Under the Economic Transformation Programme (ETP), three manufacturing sub-sectors – E&E, palm oil and refined petroleum products – were identified as National Key Economic Areas (NKEAs) with potential multiplier effects on other sub-sectors along their supply chains. As export-oriented industries, these three sub-sectors are also expected to contribute to the country's export income and boost economic growth.

In 2014, productivity in the manufacturing sector grew by 3.8% to RM90,556, compared with 4.1% in 2013. The electrical and electronics (E&E) sub-sector was the largest contributor to the sector's total output and recorded a significant growth of 11.8%.

The ASEAN Economic Community (AEC) has the potential to raise Malaysia's trade competitiveness to a new level.

The ASEAN Economic Community (AEC) has the potential to raise Malaysia's trade competitiveness to a new level. Greater integration could produce productivity benefits in the manufacturing sector due to the elimination of tariffs on intermediate inputs, thus further reducing the input costs. The automotive, electronics and food sub-sectors in particular will gain from leveraging on the impact

Figure 4.1 Malaysia's Manufacturing Sub-Sectors

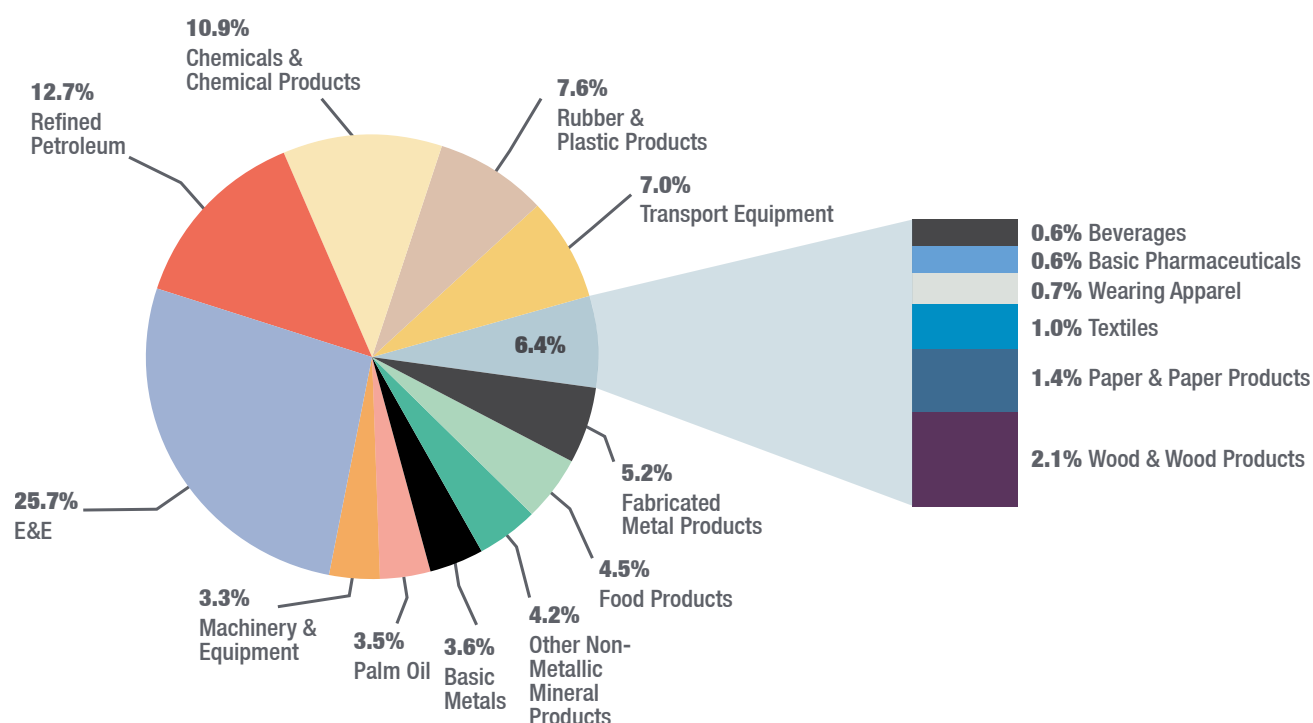
Export-Oriented Sub-Sectors	Domestic-Oriented Sub-Sectors
- Chemicals & Chemical Products - Palm Oil - Refined Petroleum - Electrical & Electronics - Textiles - Wearing Apparel - Wood & Wood Products - Paper & Paper Products - Rubber & Plastic Products	- Basic Metals - Pharmaceuticals - Machinery & Equipment - Transport Equipment - Food Products - Other Non-Metallic Mineral Products - Fabricated Metal Products - Beverages

of AEC to achieve economies of scale; optimise labour and input sourcing; and reduce the costs of inventory, logistics and transactions.

ECONOMIC PERFORMANCE

In 2014, the manufacturing sector registered GDP growth of 6.2% at RM205,200 million, compared with 3.5% in 2013. The manufacturing sector remains the second largest sector in the Malaysian economy, contributing 24.7% to GDP. Among the manufacturing sub-sectors, E&E remained the largest contributor to added value at 25.7%, followed by refined petroleum and chemicals and chemicals products with contributions of 12.7% and 10.9% respectively (Figure 4.2).

Figure 4.2: Added Value Contribution of Selected Manufacturing Sub-Sectors, 2014



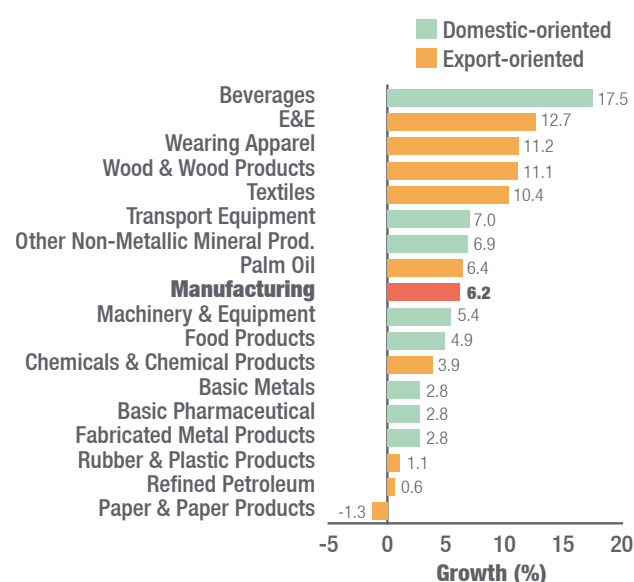
Computed from: Department of Statistics, Malaysia

The majority of export-oriented sub-sectors showed better growth than the domestic-oriented sub-sectors.

The majority of export-oriented sub-sectors showed better growth than the domestic-oriented sub-sectors. E&E, wearing apparel, wood and wood products as well as textiles all registered double-digit growth of 12.7%, 11.2%, 11.1% and 10.4% respectively. Meanwhile, added value in the domestic-oriented industries of beverages, transport equipment and other non-metallic mineral grew by 17.5%, 7.0% and 6.9% respectively (Figure 4.3).

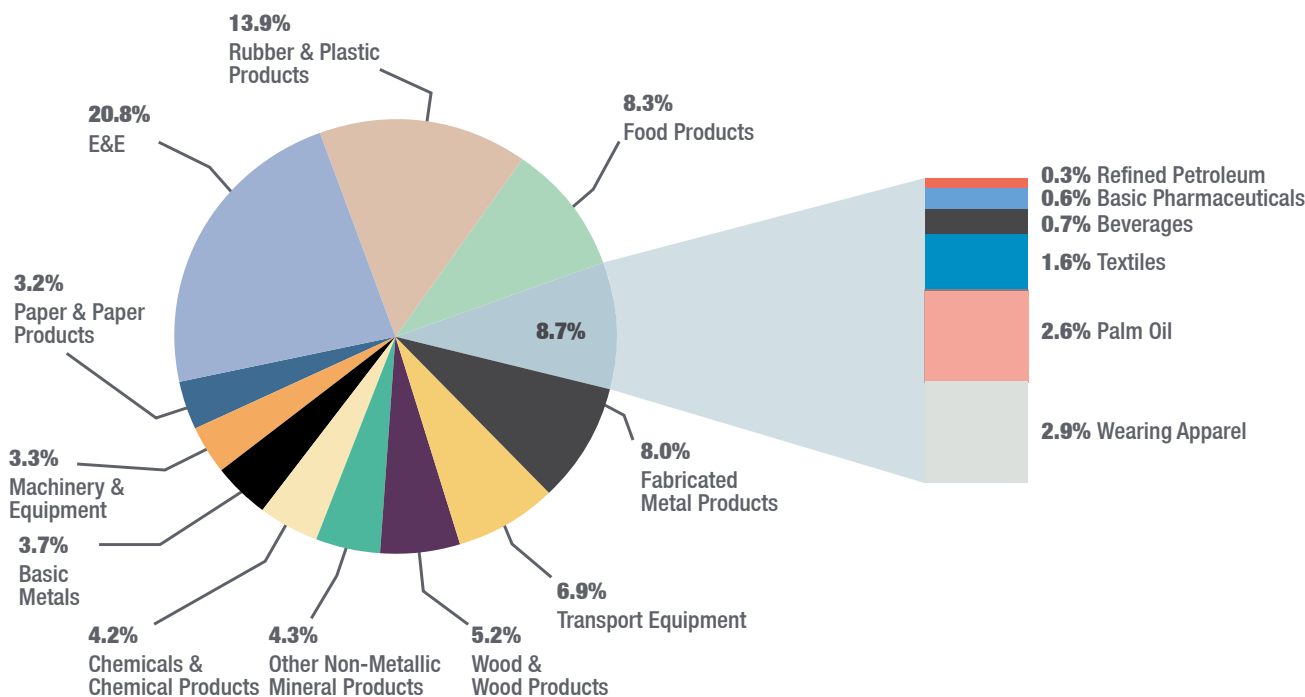
Employment in the manufacturing sector grew 2.3% to 2.3 million in 2014, making up 16.5% of the total Malaysian workforce. E&E was the biggest employer with 471,672 workers, followed by the plastic and rubber products (314,305 workers) and the food sub-sectors (188,950 workers). Although the refined petroleum sub-sector employed a mere 0.3% of the manufacturing workforce with 6,273 workers, it contributed the second

Figure 4.3: Added Value Growth of Selected Manufacturing Sub-Sectors, 2014



Computed from: Department of Statistics, Malaysia

Figure 4.4: Employment Distribution Among Selected Manufacturing Sub-Sectors, 2014



Computed from: Department of Statistics, Malaysia

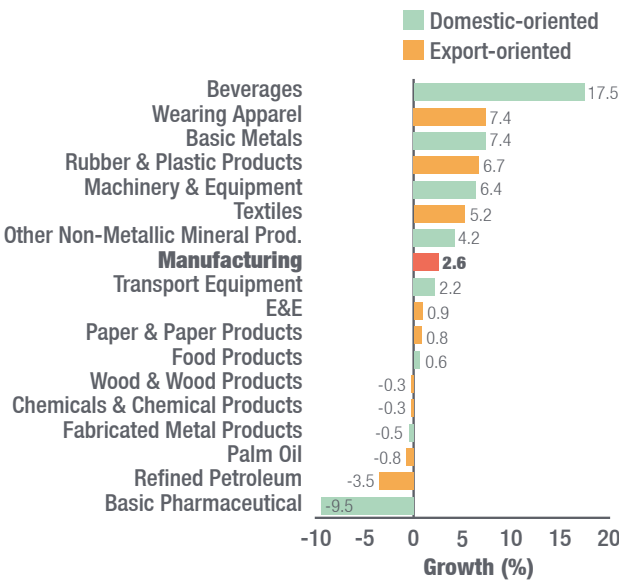
largest share to total manufacturing value added (Figure 4.4). Employment in the beverages sub-sector surged by 17.5% (Figure 4.5).

Total manufacturing exports amounted to RM582 billion in 2014, an increase of 6.1% from RM543.3 billion in 2013. The surge in exports was due to recovering demand from the USA and EU especially for E&E products such as semiconductors. Receipts from E&E products grew by an impressive 8.1% to RM256.1 billion from RM236.98 billion in 2013. While E&E contributed the largest share of the sector's total exports (42.7%), other sub-sectors also made significant contributions, namely refined petroleum (11.5%), chemicals and chemical products (9.1%), and machinery (5.1%).

PRODUCTIVITY PERFORMANCE

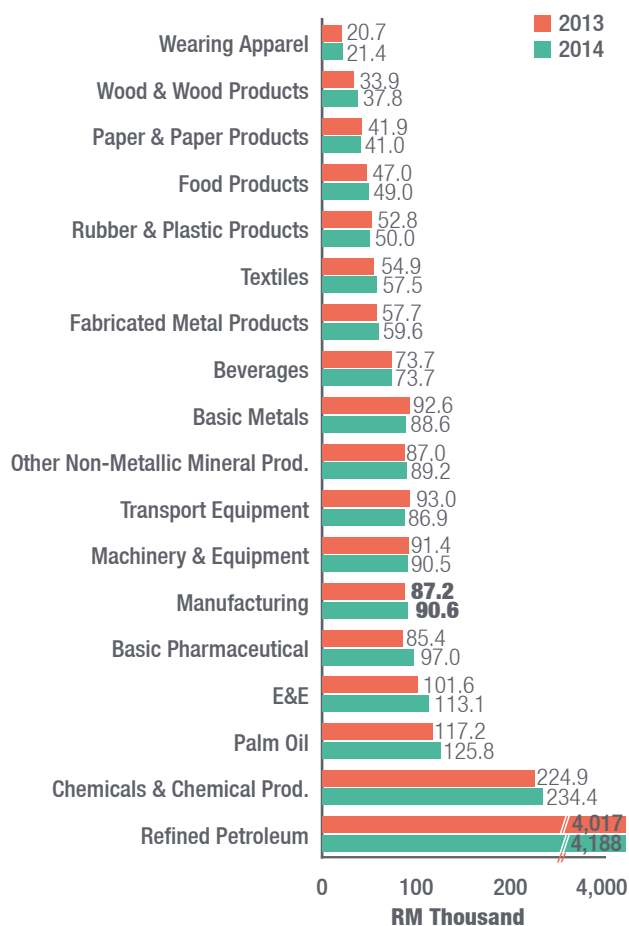
In 2014, productivity in the manufacturing sector grew by 3.8% to RM90,556, up from RM87,248 in 2013. The productivity growth was supported by resilient domestic demand as well as recovery in the export-oriented sector,

Figure 4.5: Employment Growth in Selected Manufacturing Sub-Sectors, 2014



Computed from: Department of Statistics, Malaysia

Figure 4.6: Productivity of Selected Manufacturing Sub-Sectors, 2013-2014

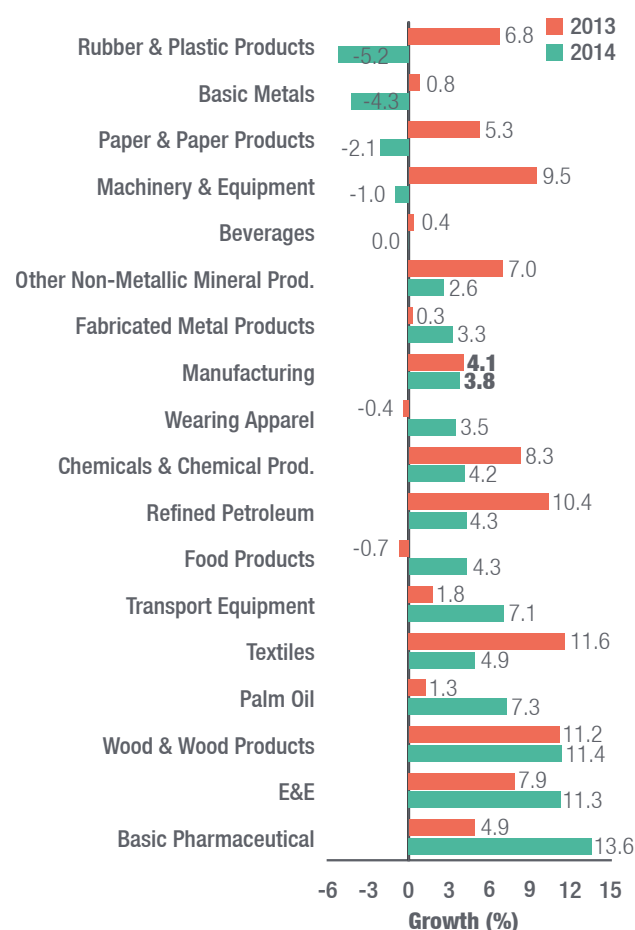


Computed from: Department of Statistics, Malaysia

mainly in E&E, textile, wearing apparel, leather product and footwear. Productivity was highest in the refined petroleum sub-sector at RM4.2 million followed by chemicals and chemical products at RM234,377. Other sub-sectors with above-average productivity were palm oil products, E&E and basic pharmaceuticals products. In contrast, wearing apparel experienced the lowest productivity at RM21,382 (Figure 4.6).

Basic pharmaceutical products recorded impressive productivity growth of 13.6% in 2014, up from 4.9% in 2013 (Figure 4.7). The sub-sector's double-digit productivity growth resulted from a large contraction of employment of 9.5% while added value increased by 2.8%. This performance can be attributed to growth of spending on generic medicine in emerging markets,

Figure 4.7: Productivity Growth of Selected Manufacturing Sub-Sectors, 2013-2014



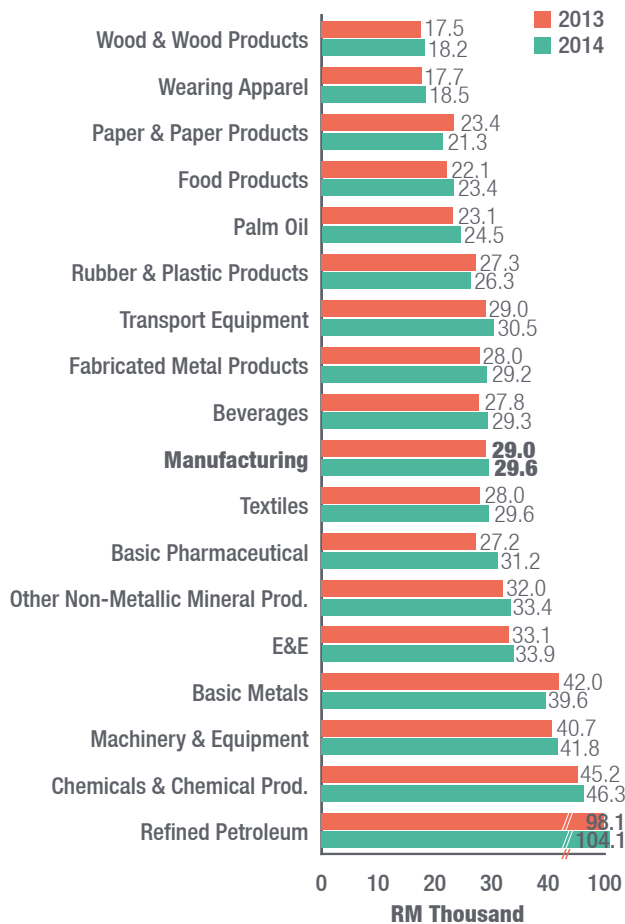
Computed from: Department of Statistics, Malaysia

new developments in high-value bio-generics and the potentially lucrative halal drugs market.

E&E productivity also grew significantly at 11.3% as a result of a 12.2% increase in its added value. This corresponded with the progress of Entry Point Projects (EPPs) that placed greater focus on higher-value activities such as design, assembly, packaging and the provision of total solutions. In addition, strong global demand of E&E products contributed to the added value growth.

Wood and wood products also posted double-digit growth of 11.4% in 2014, up from 11.2% in 2013. The sub-sector's productivity performance benefited from the utilisation of machinery and equipment which enabled

Figure 4.8: Labour Cost per Employee of Selected Manufacturing Sub-Sectors, 2013-2014

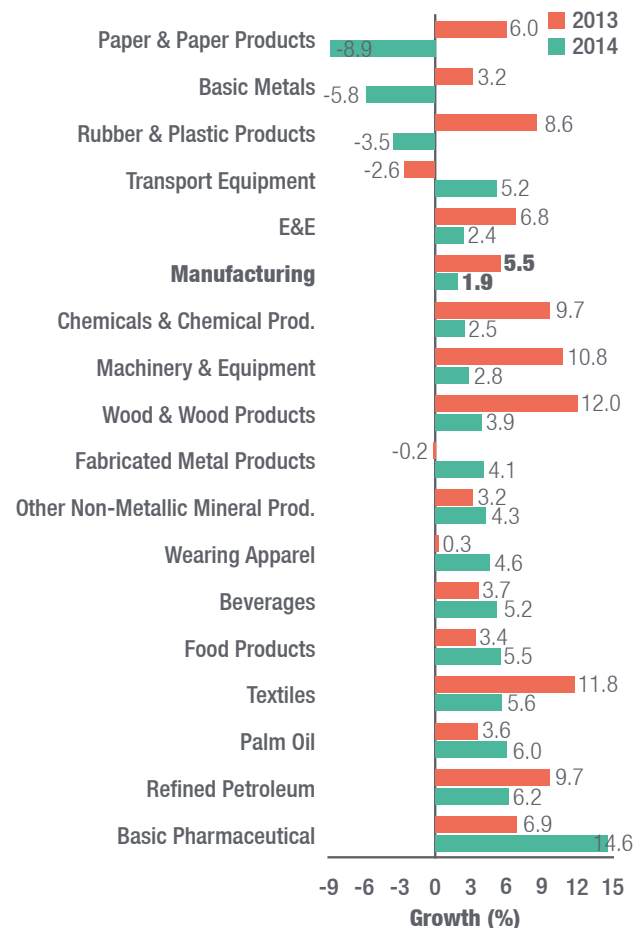


Computed from: Department of Statistics, Malaysia

the sub-sector to generate double-digit added value growth at 11.1%.

As a result of this growth, overall labour cost competitiveness in the manufacturing sector improved significantly in 2014 (Figure 4.8), with productivity growth of 3.8% outpacing growth in labour cost per employee at 1.9%, while unit labour costs decreased by 1.5%. The E&E, wood and wood products, transport equipment, chemicals and chemical products, and palm oil products sub-sectors all sustained their labour cost competitiveness. In contrast, and despite its large contraction in employment, the basic pharmaceutical products sub-sector was unable to sustain its labour cost competitiveness, with labour costs rising by 14.6%

Figure 4.9: Growth of Labour Cost per Employee of Selected Manufacturing Sub-Sectors, 2013-2014



Computed from: Department of Statistics, Malaysia

and outstripping productivity growth of 13.6%, while unit labour cost increased at 1.3%.

In the manufacturing sector, wage rate as measured by labour cost per employee grew by 1.9% to RM29,571 in 2014, a drop from its growth of 5.5% in 2013 (Figure 4.9). The wage rate for the selected manufacturing sub-sectors ranged from RM18,188 to RM104,146. Manufacturing employees received an average of RM2,796 per month, with the highest wage rate observed in the refined petroleum sub-sector at RM8,679 per month, followed by chemicals and chemical products at RM3,857 per month. The range of wages was commensurate with productivity level, as these sub-sectors mainly employed a highly skilled workforce made up of technical professionals such as

BACKWARD AND FORWARD LINKAGES OF THE MANUFACTURING SECTOR

Three manufacturing sub-sector groups namely wood, paper, furniture, publishing and printing; chemical products; and basic metal and fabricated metal products were observed to have strong backward and forward linkages. They use a significant amount of other sub-sectors' outputs as their inputs, while considerable amounts of their outputs are also sold to other sub-sectors as inputs (Quadrant 1).

Food, beverages and tobacco has strong backward linkages but weak forward linkages because while the sub-sector uses a substantial amount of other sub-sectors' products as inputs, most of its products are sold for final consumption (Quadrant 2).

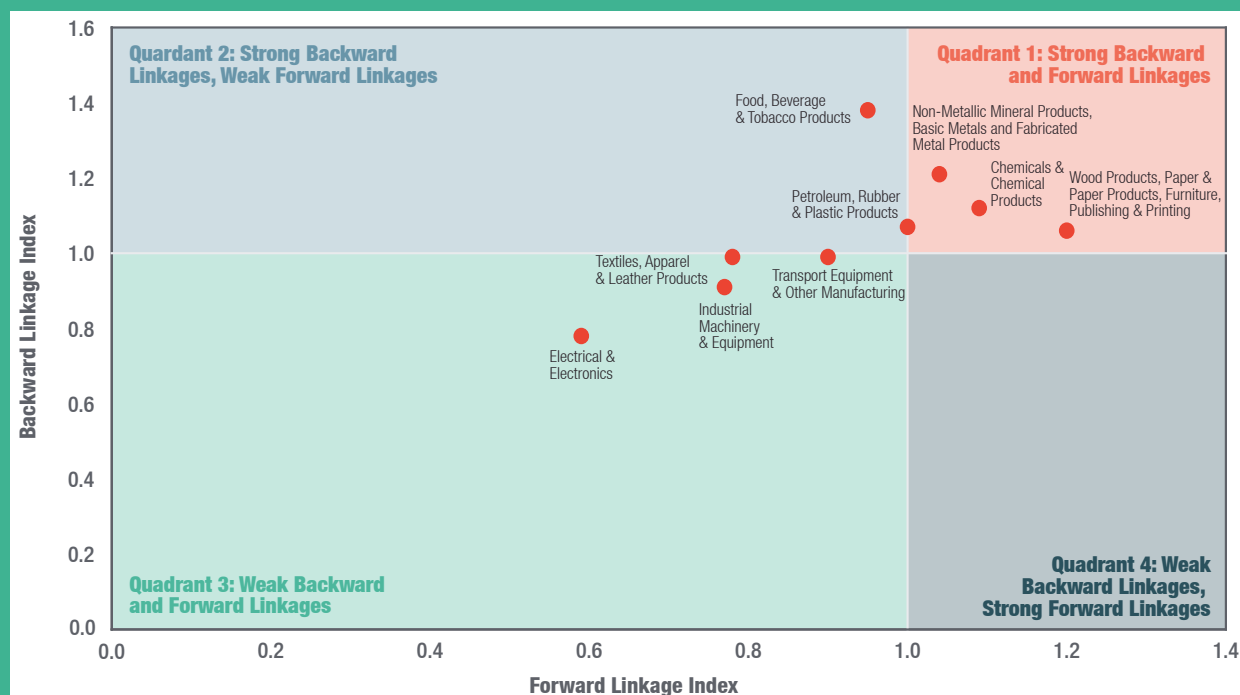
Forward and backward linkages are weak in the four other sub-sectors, namely textile, apparel and leather products;

transport equipment and other manufacturing groups; industrial machinery and equipment; and electrical and electronics. This is because they use a large portion of imported inputs relative to other sectors and most of their products are sold for final consumption (Quadrant 3).

None of the manufacturing sub-sectors fall within the quadrant of weak backward linkages but strong forward linkages (Quadrant 4).

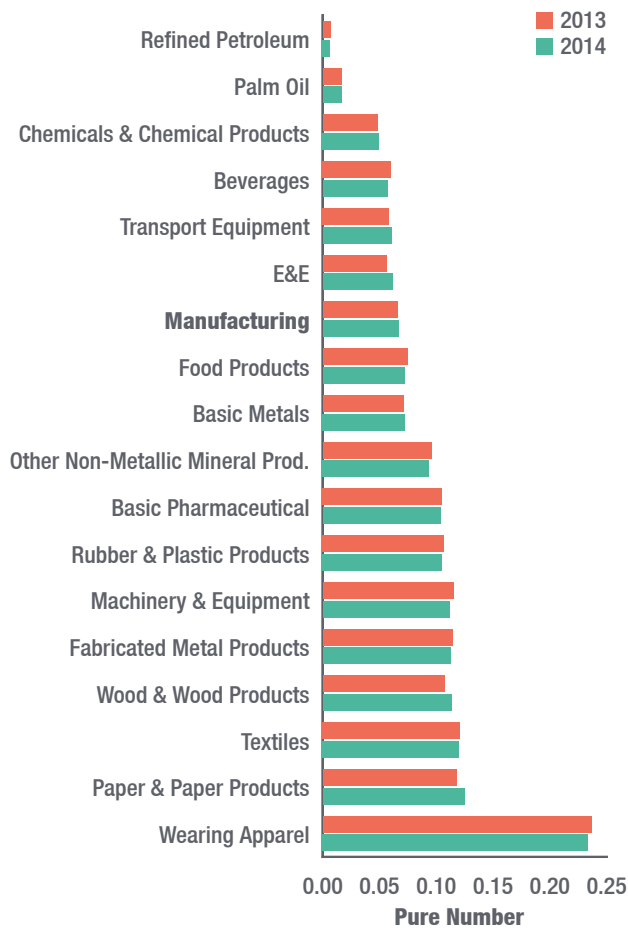
To transform the manufacturing industry's landscape and move into high value-added products, Malaysia needs to fully realise the potential of industries in fields such as nanotechnology, MRO services via E&E component manufacturing and electric vehicle component manufacturing.

Manufacturing Industries Linkages Matrix, 2010



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia

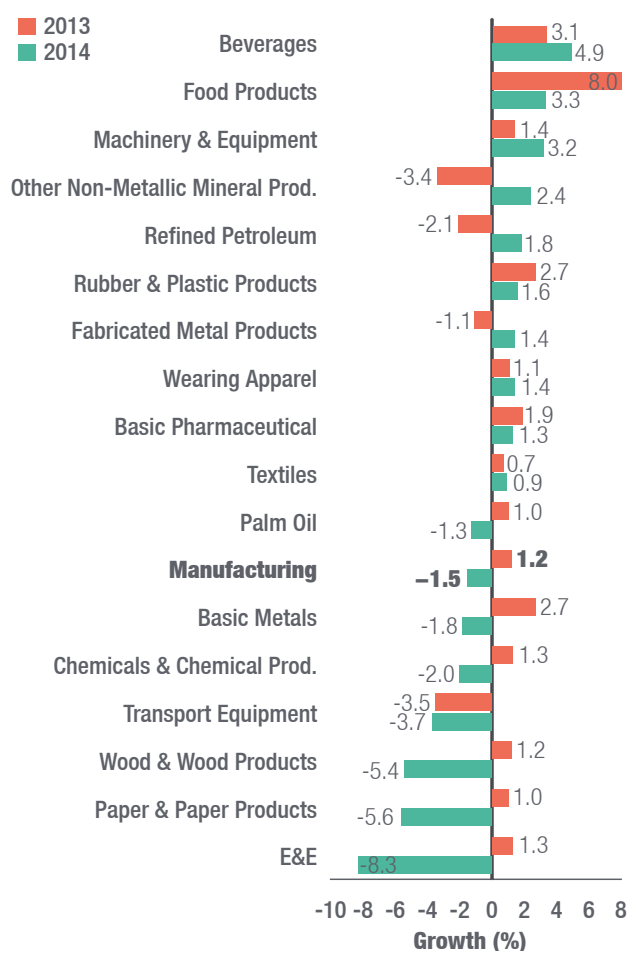
Figure 4.10: Unit Labour Cost per Employee of Selected Manufacturing Sub-Sectors, 2013-2014



Computed from: Department of Statistics, Malaysia

engineers, scientists and specialised technicians. On the other hand, employees in the wood and wood products received the lowest pay at RM1,516 per month, followed by wearing apparel at RM1,539 per month and paper and paper products at RM1,778 per month. The low pay was mainly due to the production activities of these sub-sectors, all of which are labour-intensive industries relying on low-skilled workers.

Figure 4.11: Growth of Unit Labour Cost per Employee of Selected Manufacturing Sub-Sectors, 2013-2014



Computed from: Department of Statistics, Malaysia

PERFORMANCE OF SELECTED MANUFACTURING SUB-SECTORS

Electrical and Electronics

The E&E industry may be broadly divided into two divisions: electrical equipment; and computer, electronic and optical products (Figure 4.12). A total of 20 EPPs have been identified in the E&E NKEA spanning the entire value chain, including semiconductors and industrial electronics as well as new technologies like solar and LED. The E&E NKEA is now in its second phase of implementation, with 19 EPPs already underway.

Figure 4.12: Classification of E&E Industries

ELECTRICAL & ELECTRONICS SUB-SECTOR	
Computers, Electronics and Optical Products	Electrical Equipment
- Irradiation, Electrometrical & Electrotherapeutical Equipment - Electronic Components & Boards - Computers & Peripheral Equipment - Communications Equipment - Consumer Electronics - Measuring, Testing, Navigating & Control Equipment, Watches & Clocks - Optical Instruments & Photographic Equipment - Magnetic & Optical Media	- Electric Motors, Generators, Transformers & Electricity Distribution & Control Apparatus - Wiring & Wiring Devices - Domestic Appliances - Other Electrical Equipment

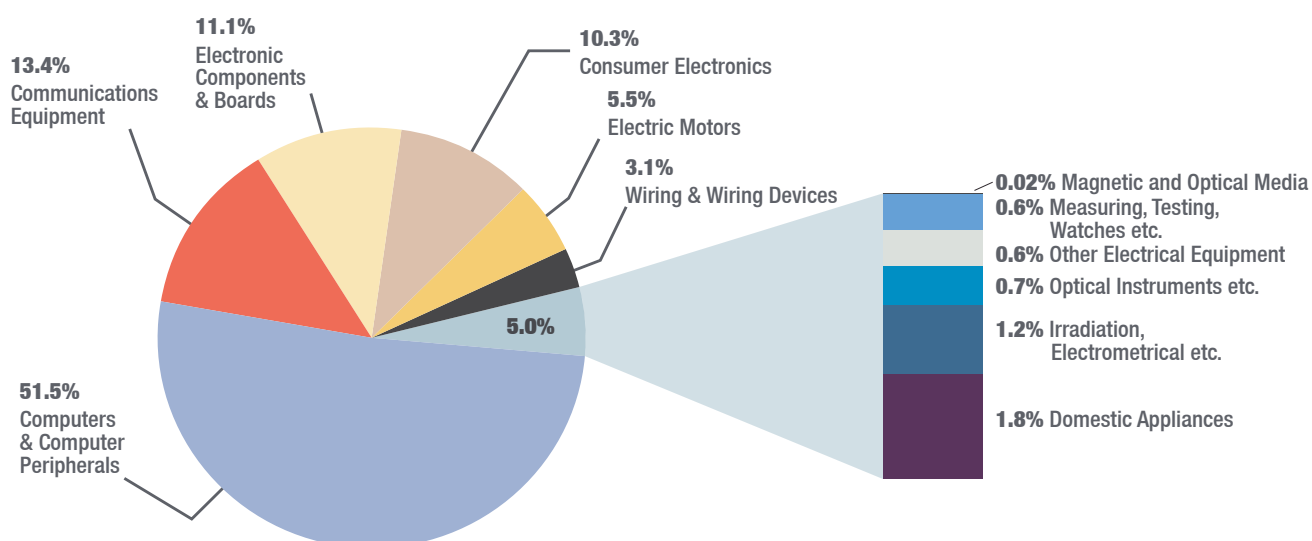
The combined computer, electronic and optical products industries contributed the largest share of added value in 2014 at 88.3% while electrical equipment contributed the remaining 11.7%. The computers and computer peripherals industry remained the largest contributor to the E&E sub-sector with a share of 51.5% followed by communications equipment (13.4%), electronic component and boards (11.1%) and consumer electronics (10.3%) (Figure 4.13).

The E&E sub-sector is responsible for a major portion of total added value in the manufacturing sector (26.5%) as well as its employment (21%). The sub-sector's contribution to Malaysia's exports decreased steadily over the past decade and half, shrinking from 61.7% in 2000 to 33.4% in 2014. However, the value of the sub-sector's exports over the same period has increased, from RM230 billion in 2000 to RM256.2 billion in 2014. This indicates that the sub-sector has managed to remain competitive in higher value added industries while surrendering lower value added E&E manufacturing to other countries.

In 2014, the E&E sub-sector accounted for 42.7% of the manufacturing sector's exports and 33.4% of the country's overall total exports. The major E&E export destinations were China, USA, Singapore, Hong Kong and Japan. E&E products also account for most (27.9%) of the country's imports – Malaysia imported RM190.8 billion worth of E&E goods in 2014, mostly from China, Singapore, USA, Japan and Taiwan.

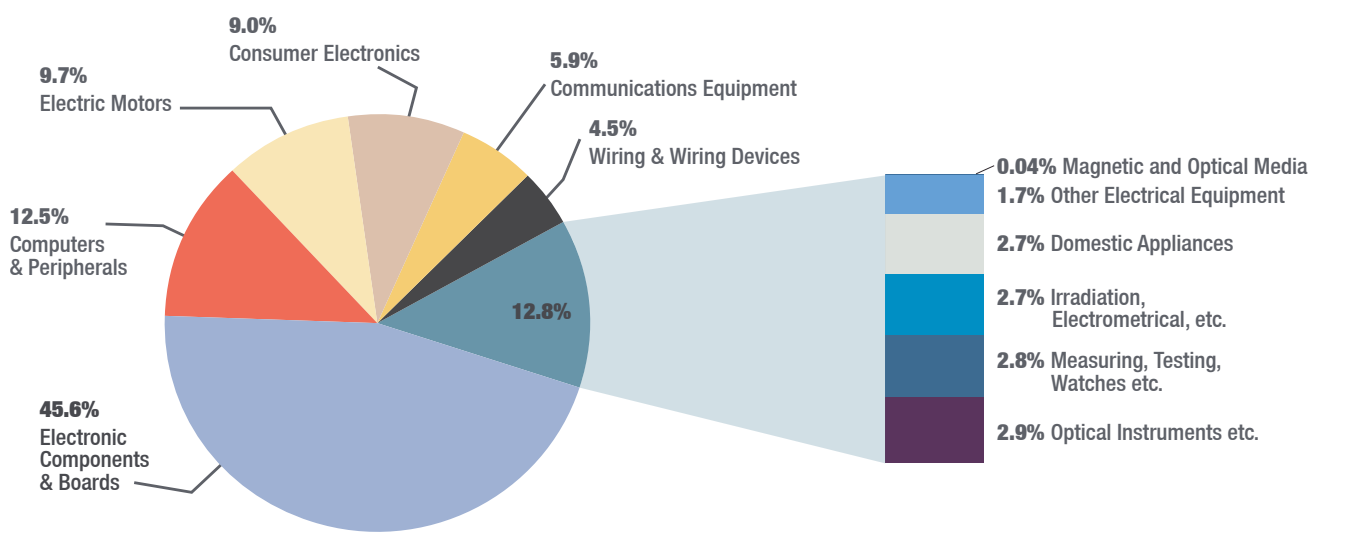
There were 473,129 people employed in the E&E sub-sector in 2014 (Figure 4.14), the vast majority of which were in the computer, electronic and optical products division (81.5%) with the rest in the electrical equipment division (18.5%). The electronic components and boards industry employed the most workers (45.6%), followed by

Figure 4.13: Added Value Contribution of E&E Industries, 2014



Computed from: Department of Statistics, Malaysia

Figure 4.14: Employment Distribution Among E&E Industries, 2014



Computed from: Department of Statistics, Malaysia

computers and peripheral equipment (12.5%), electric motors (9.7%) and consumer electronics (9.0%).

Productivity Performance

In 2014, productivity in the E&E sub-sector surged by 11.3% to RM113,110, spurred by the US economic recovery and weakening ringgit. Favourable global demand for Malaysian E&E products helped boost the sub-sector's added value growth to 12.2%, helping it keep far ahead of the sub-sector's employment growth rate of 0.8% (Figure 4.15), a trend that began in 2012. The steady divergence between added value growth and employment growth over the past few years indicates that the sub-sector is slowly but surely making the shift into knowledge-intensive industries that require fewer workers but higher skills. This reflects the country's new focus on industries such as integrated circuit (IC) design, advanced packaging, LEDs, solar and wafer technology.

Among all the electronics industries, productivity growth was highest in the computer and peripheral equipment industry at 18.1% (Table 4.1). This notable increase can be attributed to the growing e-services trend, which includes e-government services for increasing business efficiency. With rising affluence and mobility, many desktop computers are also being replaced with

Figure 4.15: Added Value, Employment and Productivity of the E&E Sub-Sector, 2011-2014



Computed from: Department of Statistics, Malaysia

laptops or tablets. However, these mobile devices have much shorter lifespans than desktops and thus require replacing much more frequently, which benefits the mobile devices industry.

Electronic components and boards registered the second highest productivity growth at 13.6%, followed by communication equipment at 11.6%. These industries were driven by growth in global demand and expansion in other industries along their supply chain, especially wearable devices and automotive. The increasing

Table 4.1: Labour Cost Competitiveness of the E&E Sub-Sector, 2014^a

Industries	Productivity Growth	Labour Cost per Employee	Unit Labour Cost
Electrical & Electronics Sub-Sector	11.3	2.4	-7.3
<i>Computer, Electronic and Optical Products</i>	<i>11.7</i>	<i>1.7</i>	<i>-8.3</i>
Electronic Components & Boards	13.6	0.7	-7.4
Computers & Peripheral Equipment	18.1	7.3	-8.4
Communication Equipment	11.6	-0.3	-19.0
Consumer Electronics	2.4	1.7	-6.2
Measuring, Testing, Navigating & Control Equipment; Watches & Clocks	9.4	-1.5	-9.0
Irradiation, Electrometrical & Electrotherapeutic Equipment	9.3	-0.3	-8.1
Optical Instruments & Photographic Equipment	-0.3	5.9	-5.9
Magnetic and Optical Media	6.7	-2.6	-8.9
<i>Electrical Equipment</i>	<i>8.0</i>	<i>6.2</i>	<i>-1.4</i>
Electric Motors, Generators, Transformers & Electricity Distribution & Control Apparatus	7.3	9.5	0.7
Wiring & Wiring Devices	6.0	-0.5	-2.0
Domestic Appliances	17.0	8.0	-7.0
Other Electrical Equipment	0.3	2.3	4.7

Computed from: Department of Statistics, Malaysia

Note: e-estimate

popularity of in-car entertainment in emerging markets is also leading to new competitive pressures in these industries.

The large share of employment at 45.6% in the electrical components and boards industry compared with its relatively low value added at 11.2% indicates that this particular industry is still very labour intensive. The E&E sub-sector was able to sustain its labour cost competitiveness as evidenced by the drop in unit labour costs of 7.3% in 2014. Although the labour cost per employee increase by 2.4%, productivity of the employee grew higher more than 5 times of its labour cost per employee. In fact, all industries in this sub-sector sustained their labour cost competitiveness in 2014 except for optical instruments and photographic equipment, which saw productivity contract by 0.3%.

Challenges and Recommendations

Malaysia's E&E sub-sector continues to face increasing competition from China and Vietnam, both of which offer businesses labour-intensive, low-cost manufacturing expertise. At the same time, Malaysia has not yet completed its transition into a high-tech manufacturing destination. Singapore and Taiwan remain the premier locations for such high-end manufacturing, with China catching up fast. Strengthening the country's global competitiveness in the E&E sub-sector will call upon its industry players to climb the value chain into high-tech, high-value activities or risk becoming irrelevant.

The Government is helping the industry tackle this issue by encouraging more companies to set up or expand E&E design and development (D&D) centres. It offers businesses various financial and non-financial incentives, specifically within the seven NKEA areas: solar, LED, electronic manufacturing services (EMS), semiconductors, industrial electronics, electronic systems and automation. Government and private sector

representatives have also formed an E&E strategic council to set the industry's direction especially in front end activities. Transportation and logistics must be made efficient enough to handle the needs of high-value activities such as testing and calibration, which are mostly done in Europe.

Intensifying domestic demand for solar and LED products will help these industries boost production and achieve economies of scale, thus supporting their activities for exploiting the export market. Support from other industries, especially construction and automotive, will create strong forward linkages for these industries in the future. Government procurement can help to maximise the utilisation of solar and LED, while government incentives can further encourage take-up of these technologies in other industries.

However, there is a more serious issue: industries such as solar and LED are still focused on the low value-added industry segments such as manufacturing of solar panels. This is being addressed by the solar technology EPPs for growing producers of silicon, wafers and cells, and for moving up to higher value-added activities such as downstream maintenance, repair and overhaul (MRO) activities and balance of systems (BOS) businesses. Meanwhile, the LED EPPs are aimed at developing front-end operations to help the market expand into new classes of intermediate products such as organic light-emitting diodes (OLEDs), expanding LED packaging and equipment, and creating local solid state lighting champions.

The E&E sub-sector is highly dependent on a highly skilled workforce with expertise in areas such as research, design and development (R&D&D) and electrical engineering.

The E&E sub-sector is highly dependent on a highly skilled workforce with expertise in areas such as research, design and development (R&D&D) and electrical engineering. It employs about 472,000 workers,

SINGAPORE ELECTRONICS INDUSTRIES: GOVERNMENT ROLES

Singapore's investment promotion agency and the country's Economic Development Board (EDB) work hand-in-hand to attract new investment and encourage existing industry players to reinvest in Singapore. Beside business-friendly regulatory and labour policies and a range of investment incentives, Singapore also provides special incentives directed at high-tech firms such as the Initiatives in New Technology, Research Incentive Scheme and Technopreneur investment incentive. EDB also acts as a co-investor, taking a stake in high-profile ventures such as the new United Microelectronics factory and several other wafer fabrication plants.

about 30% to 40% of which are engineers and managers. However, there is an acute shortage of experienced engineers within the sub-sector, and the quality of engineers that are available has fallen below employers expectations. These shortages are holding back D&D efforts and making it difficult for the sub-sectors to move up the value chain.

The Government has provided many facilities and institutional support to help industries innovate their way out of this predicament. Agencies like TalentCorp and the Collaborative Research in Engineering, Science and Technology (CREST) help nurture industry-ready graduates and R&D collaborations within E&E disciplines through industry-academia partnerships, while intervention programmes such as MyBrain 15, Fast Track and CREST internships help cater to immediate industry needs. CREST members are also actively pursuing research collaborations that utilise the combined capabilities of its MNC members to innovate new E&E products and processes. The research alliance is also exploring potential ideas in related businesses such as medical devices.

The E&E sub-sector needs to deepen and strengthen the three major ecosystems of semiconductors, solar

and LED technologies. Because of the growing global demand for mobile devices (smartphones, tablets), storage (cloud computing, data centres, personal data drives), optoelectronics (photonics, LEDs, fibre optics) and embedded technology (integrated circuits, PCBs, LEDs), semiconductors are expected to continue spearheading the growth of the E&E industry in Malaysia. The ongoing EPPs will help to increase export growth by strengthening capabilities across the value chain, especially in higher value-added upstream activities.

Machinery and Equipment

The machinery and equipment (M&E) sub-sector provides important contributions to other major manufacturing sub-sectors and produces a wide variety of machinery and equipment for power generation, specific industry processing, metalworking and general industrial activities. It supports a large number of small and medium enterprises (SMEs) that produce M&E for both domestic and export markets, and is in turn supported by a wide range of important engineering services mainly provided by other SMEs. These engineering services cover machining; metal casting; sheet metal working; heat treatment; general fabrication; design, development and prototyping; and testing and certification services.

M&E contributed 3.3% of RM6.77 billion to total manufacturing GDP in 2014. The largest added value share, amounting to 24.1%, came from the metal-forming machinery and machine tools industry, followed by other general-purpose machinery (18.9%) and air-conditioning machines, including for motor vehicles (18.0%). It accounted for 3.3% of the 2.3 million employees in the manufacturing sector in 2014, or 75,472 people. Employment was highest in the other general-purpose machinery industry (28.7%), followed by metal-forming machinery and machine tools (21.4%) and other special-purpose machinery (17.4%).

Machinery, appliances and parts valued at RM30 billion contributed 5.2% to the country's total manufacturing exports in 2014, up from RM27 billion in 2013. Exports of machinery, appliances and parts expanded by 12%

in the first half of 2014 compared with 1.4% in 2013 due to strong demand from Singapore, USA, China and Australia. The largest portion of these exports were for special purpose machinery for particular industries, especially in the field of civil engineering; equipment for the semiconductor industry; cooling and heating equipment as well as handling equipment and spare parts. Despite this healthy growth, imports of RM57.1 billion resulted in a trade deficit of RM27.1 billion within this sub-sector and accounted for 8.4% of the country's total imports.

Productivity Performance

The M&E sub-sector experienced tremendous productivity growth between the years 2011 and 2013, when it averaged 9.8% per year. This high productivity growth rate was the result of a concerted effort by the Government and private sector to position Malaysia as a regional centre for M&E production, distribution and maintenance under the Third Industrial Master Plan (IMP3). However, this pace of growth was checked in 2014 as productivity dropped by 1.0% to RM90,546 (Figure 4.16).

The decline in productivity growth was largely due to a sharp rise in the growth of employment, from -8.0% to 6.4%. This rise in employment pushed up labour cost per

Figure 4.16: Added Value, Employment and Productivity of the M&E Sub-Sector, 2011-2014



Computed from: Department of Statistics, Malaysia

Table 4.2: Labour Cost Competitiveness of the M&E Sub-Sector, 2014^e

Industries	Productivity Growth	Labour Cost per Employee	Unit Labour Cost
Machinery and Equipment Sub-Sector	-1.0	2.8	3.2
<i>General Purpose Machinery</i>	<i>-5.0</i>	<i>1.8</i>	<i>4.3</i>
Other Pumps, Compressors, Taps & Valves	-1.4	-1.5	-0.5
Air-Conditioning Machines, Including for Motor Vehicles	-11.0	3.3	10.6
Other General-Purpose Machinery	0.5	2.8	1.9
<i>Special Purpose Machinery</i>	<i>2.7</i>	<i>3.0</i>	<i>0.6</i>
Metal-Forming Machinery And Machine Tools	7.3	6.0	-1.2
Machinery For Agricultural And Forestry; Metallurgy; Mining, Quarrying & Construction; Food, Beverage & Tobacco Processing	4.1	3.4	-0.3
Other Special-Purpose Machinery	-5.0	-1.5	3.8

Computed from: Department of Statistics, Malaysia

Note: e-estimate

employee by 2.8% and unit labour cost by 3.2%. Despite the dip in productivity growth, added value of M&E nonetheless increased by 5.4% as companies reaped the benefits of high productivity gains from the earlier years.

The general purpose machinery industry saw a huge decline in productivity growth, which slowed to 5.0% (Table 4.2). The unfavourable performance came from reduced productivity in air-conditioning machines including motor vehicles at 11.0% and other pumps, compressors, taps and valves at 1.4%. The decline in productivity in these industries was due to an 8.3% contraction in the production of air-conditioning machines as well as labour inefficiency in other pumps, compressors, taps and valves.

Labour cost competitiveness of this sub-sector deteriorated as shown by the increase in labour cost per employee at 2.8%, while unit labour cost increased by 3.2% and productivity declined by 1.0%. Within the sub-sector, industries which manufactured special purpose machinery rather than general purpose machinery experienced greater labour cost competitiveness. This was observed in the metal-forming machinery and machinery for agricultural industries, which registered productivity growth rates of 7.3% and 4.1% respectively while wage rates grew at 6% and 3.4%. Both industries

also recorded a decline in unit labour cost by 1.2% and 0.3% respectively (Table 4.2).

Challenges and Recommendations

The machinery equipment sub-sector comprises knowledge-based industries that are very dependent on high-skilled labour, especially in high precision mechatronics and engineering. Retaining talent in these areas is a challenge to employers, and the turnover rate is generally quite high.

TalentCorp is facilitating a holistic approach through private-public partnership to address mismatches between graduate skills and market needs. These partnerships have established various technical educational institutions such as the German-Malaysian Institute (GMI), Japan-Malaysia Technical Institute (JMTi), Advanced Technology Training Centre (ADTEC) Shah Alam and Institut Latihan Perindustrian (ILP), all of which offer diplomas and advanced diplomas in mechatronics, computers, electronics and manufacturing technology.

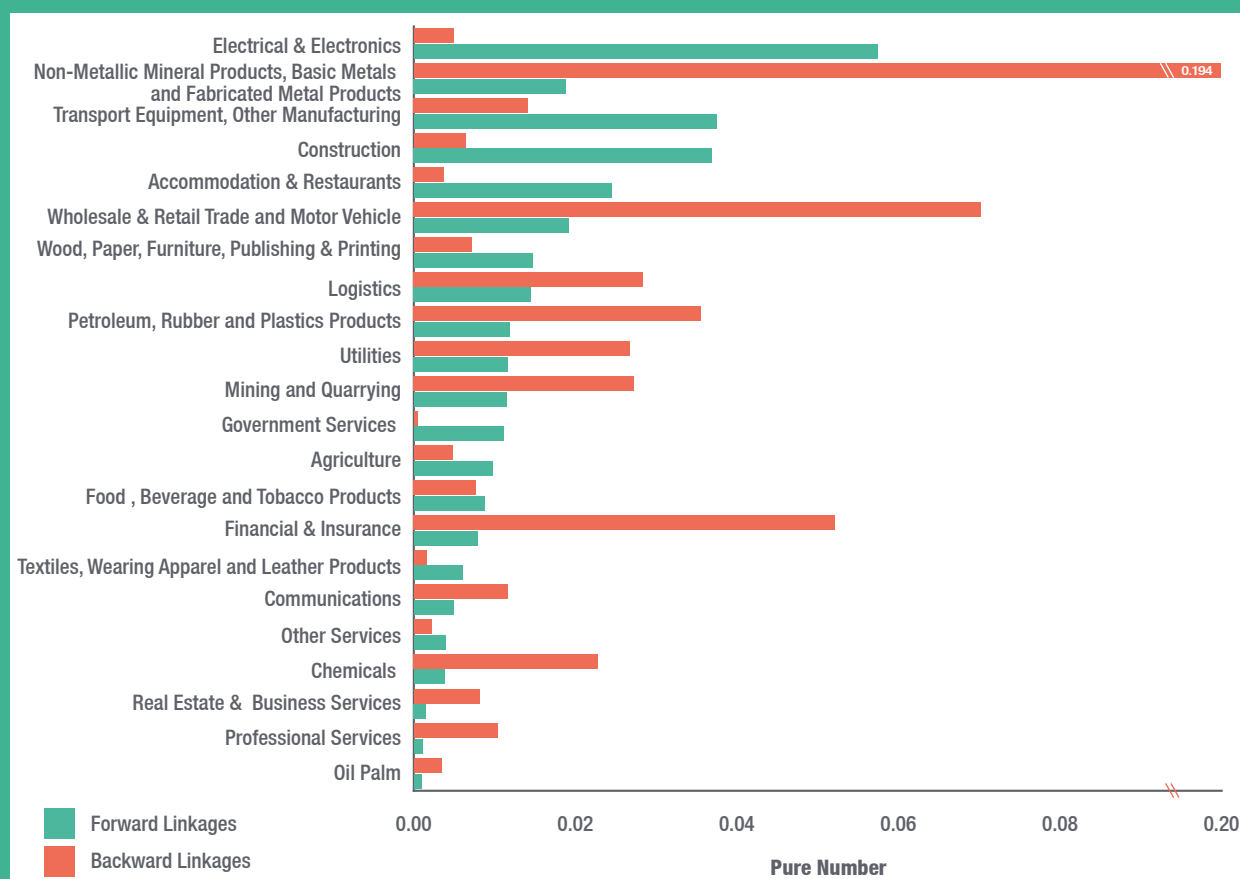
In the M&E sub-sector, special purpose machinery is becoming increasingly important in providing support to other industries. Malaysia has proven strengths in utilising machinery for working with rubber and plastics,

BACKWARD AND FORWARD LINKAGES OF THE MACHINERY & EQUIPMENT SUB-SECTOR

The M&E industry is categorised as having weak backward and forward linkages of 0.91 and 0.77 respectively. However, there is a huge potential for this sub-sector to provide strong linkages to other industries. Revitalising the other industries would provide a boost to M&E. Sub-sectors such as non-metallic mineral products; wholesale and retail trade and

motor vehicles; and financial and insurance provide input to the M&E sub-sector. Wholesale and retail and financial and insurance industry groups also have strong linkages. The sub-sector has strong forward linkages with E&E, transport equipment and construction.

Backward and Forward Linkages of the M&E Sub-Sector



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia

textile processing, metal working, paper making, as well as uses in agriculture and E&E. This means that there are significant opportunities to expand M&E and strengthen both backward and forward linkages for existing and new companies in the sub-sector, including SMEs.

Chemical and Chemical Products

The chemical and chemical products sub-sector covers a wide range of goods including oleo-chemicals, petrochemicals, industrial gases, agricultural chemicals and fertilizers, inorganic chemicals, soaps and detergents, and cosmetics and paints. It is one of the country's leading economic sub-sectors in Malaysia, accounting for 6.7% of Malaysia's total exports of manufactured goods. It also has very strong backward and forward linkages to almost every other sub-sector in the economy, contributing key components to the automotive, E&E, pharmaceutical and construction industries among others.

The number of employees registered in this sub-sector continued to decline in 2014 at slower rate of 0.3% compared with a decline of 6.5% recorded in 2013. It nonetheless employed 96,197 people in 2014, which accounted for 4.2% of the manufacturing sector's total workforce. It also contributed 10.9% (RM18.8 billion) to the country's total added value in manufacturing, making it the sector's third largest contributor to GDP.

The reason for the sub-sector's sterling performance over the years is that Malaysia has one of the most developed chemical industries in the world.

The reason for the sub-sector's sterling performance over the years is that Malaysia has one of the most developed chemical industries in the world. The sub-sector is not only able to fulfil the country's needs for chemicals, but also exports its products to countries like Japan, Hong

Kong, China, Singapore, Thailand and USA. Exports of chemicals and chemical products have nearly doubled over the past decade – in 2014, exports grew by 8.5% to RM51.5 billion from RM47.5 billion in 2013.

Productivity Performance

In 2014, productivity for chemical and chemical products grew by 4.2% to RM234,377 from RM224,944 in 2013 (Figure 4.17). Productivity growth was highest in the fertilisers and associated nitrogen products industries at 10.1%, followed by basic organic chemicals, inorganic compounds and other basic chemicals at 9.5%. Productivity growth in the other chemical products and man-made fibre industries hit 6.5% in 2014.

The sub-sector's productivity growth was due to the increase in exports and expansions of domestic industries that require chemical inputs such as agriculture, construction, automotive and machinery. These factors helped the sub-sector maintain its labour cost competitiveness, as productivity growth of 4.2% exceeded growth in labour cost per employee of 2.5%, while unit labour cost decreased by 2%. The sub-sector's most labour cost competitive industry was that of basic organic chemicals, inorganic compounds and other basic chemicals, which saw unit labour costs declining by 4% (Table 4.3).

Figure 4.17: Added Value, Employment and Productivity of the Chemicals & Chemical Products Sub-Sector, 2011-2014



Computed from: Department of Statistics, Malaysia

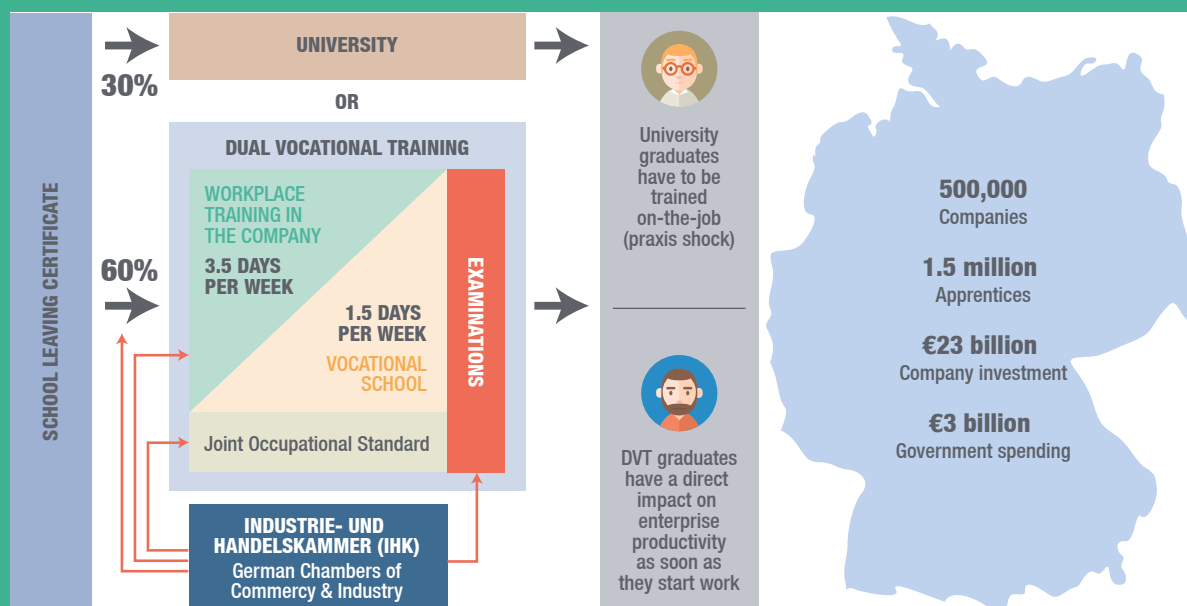
GERMAN SUCCESS: THE DUAL VOCATIONAL TRAINING SYSTEM

In Germany, about 60% of school leavers go through Dual Vocational Training (DVT), a system in which trainees receive practical vocational training in a workplace, supported by lessons in vocational training schools at a 70%:30% ratio.

The private sector manages the system through its representative body, the Chambers of Commerce (IHK), which is responsible for:

- Registering the apprenticeship contracts between companies and apprentices
- Certifying companies to participate in the system
- Ensuring that the companies comply with their duties as defined in the occupational standard for the full 2–3 year duration
- Organising the final examination for all apprentices

Companies benefit from this system by providing input on the content of the training, ensuring that the trainees are made ready for the needs of the workplace, and by gaining an assured supply of skilled workers at low recruitment costs. DVT also enables school-leavers to boost their employability through workplace training, provides better remuneration and helps them develop work-related social skills. The German government's 3 billion Euro investment has paid off: the private-sector contribution lowers public-sector vocational training costs and the country currently has one of the lowest unemployment rates in Europe.



Source: WTO International Trade Statistics 2012. Adapted from Handelskammer Hamburg.

Table 4.3: Labour Cost Competitiveness of the Chemicals & Chemical Products Sub-Sector, 2014^e

Industries	Productivity Growth	Labour Cost per Employee	Unit Labour Cost
Chemicals and Chemical Products Sub-Sector	4.2	2.5	-2.0
<i>Basic Chemicals, Fertilizers & Nitrogen Compounds, Plastic & Synthetic Rubber in Primary Forms</i>	<i>4.1</i>	<i>3.1</i>	<i>-1.7</i>
Liquefied or Compressed Inorganic Industrial or Medical Gases	2.2	4.4	0.5
Basic Organic Chemicals, Inorganic Compounds and Other Basic Chemicals	9.5	7.3	-4.0
Fertilizers and Associated Nitrogen Products	10.1	8.4	-2.4
Plastics in Primary Forms	-2.0	-3.6	-2.8
<i>Others Chemical Products and Man-Made Fibre</i>	<i>6.5</i>	<i>2.0</i>	<i>-3.3</i>

Computed from: Department of Statistics, Malaysia
Note: e-estimate

Labour costs per employee for the chemical and chemical products sub-sector grew by 2.5% to RM46,291 in 2014 as compared to RM45,176 in 2013. However, pay in this sub-sector is generally commensurate with its productivity level as it employs a mainly high-skilled workforce with technical skillsets such as laboratory specialists, chemists and specialised technicians.

Challenges and Recommendation

Although chemicals and chemical products offer improvements to our daily lives, some chemicals do pose certain threats to the safety and health of humans as well as the environment. The industry recognises that it requires more stringent safety standards to ensure that it complies with international Safety, Health and Environment (SHE) and quality standards, especially if it

expects to continue its sterling growth in lucrative export markets.

One example of a successful chemical safety programme is the “Responsible Care” initiative that was launched by the Chemical Industry Association of Canada in the wake of the 1985 Bhopal disaster. Responsible Care has since become the global chemical industry’s de facto voluntary standard for promoting good chemical management and environmental, health and safety (EHS). It has been adopted in 52 countries around the world to drive continuous improvements in performance, technologies, processes and products over life cycles to safeguard people and the environment.

The sub-sector would also benefit from diversifying into new products besides commodities and specialty chemicals (Figure 4.18). A look at Malaysia’s trade

Figure 4.18: Types of Products in the Chemical Industry

Fine chemicals	True commodities	Branded commodities	Specialty chemicals
• Pure and defined chemical substances, both intermediate and active principles, of high added value • Sold in less than 10- or 20-ton drums • Priced over €3 per kilo	• Highly pure chemical molecules, usually manufactured by a continuous process • Sold in bulk • Priced less than €3 per kilo	• Mixtures of chemicals of known formulation and in general, products for chemical consumers • Sold in bulk • Priced less than €3 per kilo	• Mixtures of chemical compounds of high value for use in different chemical as well as non-chemical processes • Sold in less than 10- or 20-ton drums • Priced over €3 per kilo

Source: Journal of Business Chemistry, May 2011

balance sheet suggests that Malaysian chemical manufacturers have not yet fully exploited the potential of fine chemicals, which command higher prices compared to other types of chemicals but require significant investments into R&D. Malaysia has a grown increasingly dependent on imported active principles from countries like Japan, Germany and China, suggesting that there is a ready domestic market for these and other fine chemicals. Indeed, imports of chemicals have nearly doubled over the past decade, rising from RM35.1 billion (7.3%) of the country's total imports in 2006 to RM62.1 billion (9.1%) in 2014.

MULTIPLYING THE POTENTIAL OF THE MANUFACTURING SECTOR

Lower energy prices and rising demand in the USA and other regional economies is likely to lift the fortunes of Malaysia's manufacturing sector while boosting consumption and investment. Global demand for mobile devices, tablets and automotive sensors continues to be strong and will further drive growth of E&E and the non-resource-based sub-sectors. This strong global market is expected to be complemented by robust domestic demand driven by resilient private sector spending amid an improvement in public expenditure growth.

The government is committed to developing the manufacturing sector as a catalyst for economic growth and investment through the Economic Transformation Programme. To fulfil the potential of the manufacturing sector, Malaysia needs to focus on activities that will have significant multiplier effects on key industries. These activities should focus on promoting innovation, upgrading skills that support technology, developing strong linkages along the value chain and strengthening industrial capabilities.

The manufacturing sector has the potential to develop strong backward and forward linkages across all industries along its value chain, which will in turn have a multiplier effect on economic growth. Malaysia already has strengths in raw material supplies such as petroleum, rubber, palm oil and wood products. The manufacturing sub-sectors need to strengthen their

forward linkages in converting these inputs into higher value-added products. For example: palm oil has the potential to be used for producing polyurethanes that in turn are used for the manufacture of rigid foam insulation panels, microcellular foam seals and gaskets, durable elastomeric wheels and tires, coatings and surface sealants, synthetic fibres, hard-plastic parts for electronic instruments, and many other products and components. The multiplier effect from these stronger linkages will manifest in the growth of new and existing industries, which will promote productivity and economic growth.

In addition, the Government's Education Blueprint (Higher Education) will expand enrolment in Technical and Vocational Education and Training (TVET) programmes and raise TVET qualifications to be on par with university qualifications. Domestic and global recognition of TVET qualifications will make this education path more attractive to school leavers and provide the E&E sub-sector with a steady supply of high-skilled talent well into the future.







Productivity Performance of the **AGRICULTURE SECTOR**

In this chapter:

- Economic and productivity performance of the agriculture sector and its sub-sectors:
 - Rubber
 - Paddy
 - Fruits and vegetables
 - Livestock
 - Fisheries
 - Oil palm
- Ensuring competitiveness under a freer trade environment
- Labour issues
- Addressing food security

The agriculture sector provides a sizable contribution to the country's exports, supplies inputs for the food and beverage industry, and plays an essential role in ensuring national food security. New technologies, policies and human capital management will be key to the sector's future agribusiness transformation.

The agriculture sector plays an important role in Malaysia's economic development. Beyond its contribution to gross domestic product (GDP), it also provides job opportunities and elevates incomes in rural areas while helping to ensure national food security. The sector comprises various sub-sectors including oil palm, rubber, livestock, forestry and logging, fisheries, aquaculture and other agriculture (paddy, fruits, vegetables, coconut, tobacco, tea, flowers, pepper, cocoa, and pineapple). At a time of high global demand for agricultural products due to the growing world population and a strengthening world economy, Malaysia's agriculture sector has a great opportunity to expand its contribution to national income and to support the ringgit's foreign exchange valuation.

The Agriculture National Key Economic Area (NKEA) aims to transform the agriculture sector from an uneconomic, small-scale industry into a large-scale, multi-pronged agribusiness that supports the country's economic growth and sustainability. A total of 17 Entry Point Projects (EPPs) have been identified to spur growth in the agriculture sector. This strategy seeks to create RM26.9 billion in incremental GNI and 201,196 new employment opportunities in the sector by 2020.

The agriculture sector must increase its productivity by fully utilising resources such as land, labour, capital and entrepreneurship. To achieve change in its operations, the sector also needs to adopt new technologies while continuously enhancing the knowledge and skills of its workforce. Agricultural performance will also be indirectly affected by the launch of the ASEAN Economic

Community (AEC) at the end of 2015, which will involve the liberalisation and facilitation of trade in goods, services, and investment as well as the protection and promotion of investment.

The agriculture sector should gain a significant cost advantage with the implementation of Malaysia's Goods and Services Tax (GST) on 1 April 2015.

The agriculture sector should gain a significant cost advantage with the implementation of Malaysia's Goods and Services Tax (GST) on 1 April 2015. Since major agriculture sub-sectors such as oil palm and rubber are export-oriented in nature, their products are categorised under zero-rated supply (0% GST) and producers are entitled to claim all GST paid on their inputs used in the furtherance of business. This is expected to reduce the cost of production for the agriculture sector, allowing industry players to become more competitive exporters.

Besides the technological change and policy transformation, other factors that can increase the productivity of the agriculture sector include R&D, human capital and prices (input and output). The productivity of the agriculture sector is also vulnerable to unfavourable weather conditions, particularly in low-lying areas – the massive floods that occurred in the

East Coast of Peninsular Malaysia in December 2014 seriously affected the production of selected crops.

ECONOMIC PERFORMANCE

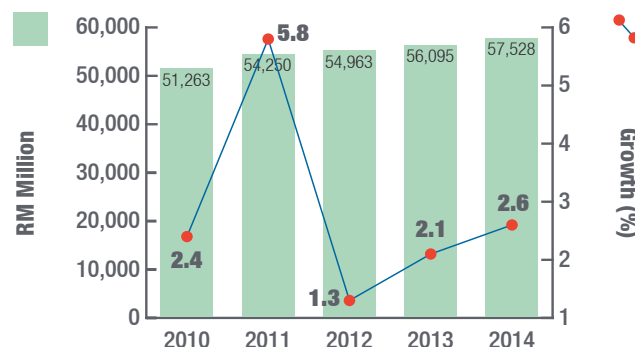
The agriculture sector grew marginally at 2.6% in 2014. The sector's contribution to GDP trended upwards, increasing from RM56,095 million in 2013 (2.1% of GDP) to RM57,528 million (2.6% of GDP) as a result of higher output of palm oil and key food commodities such as poultry, vegetables and fruits (Figure 5.1). The largest contributor of the agriculture sector to GDP was the oil palm sub-sector at 36.6%, followed by other agriculture (20.1%) and fisheries and aquaculture (14.6%). Employment in the agriculture sector, which accounts for 12.2% of national employment, recorded a marginal decline of 1.3% to 1.66 million in 2014 (Figure 5.2).

The sector's external trade was valued at RM82.1 million in the first nine months of 2014 due to stronger external demand and higher prices of major commodities, especially palm oil (Figure 5.3). The export value of crude palm oil (CPO) increased to RM11.5 million in 2014, up 18.6% from RM9.7 million in 2013. Meanwhile, the value of imports declined to RM57.6 million for the first nine months of 2014, down 17.7% from RM75 million in 2013. The agriculture sector remained a net exporter for the Malaysian economy, with a balance of trade recorded at RM24.5 million in the first nine months of 2014, down from RM30.9 million in 2013.

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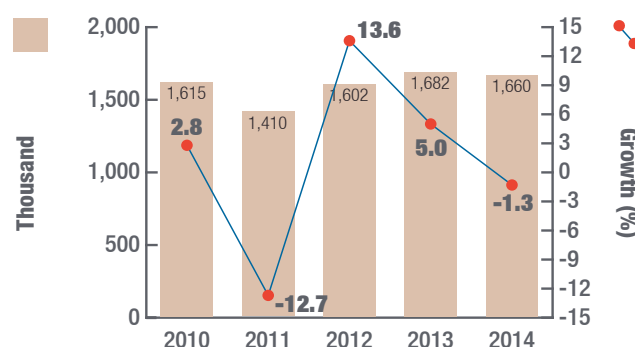
Oil palm maintained its role as the largest contributor to the agriculture sector at 36.6%. CPO production grew by 2.3% to 19.7 million tonnes in 2014, partly due to an increase in matured areas, especially in Sarawak, as well as higher oil extraction rates. The price of CPO

Figure 5.1: GDP Performance of the Agriculture Sector, 2010–2014



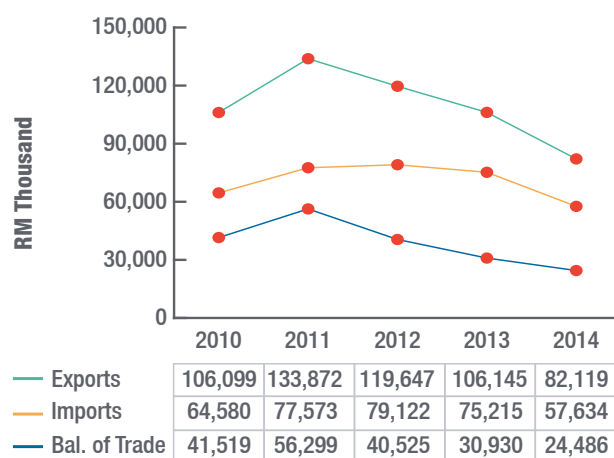
Source: Department of Statistics, Malaysia

Figure 5.2: Employment in the Agriculture Sector, 2010–2014



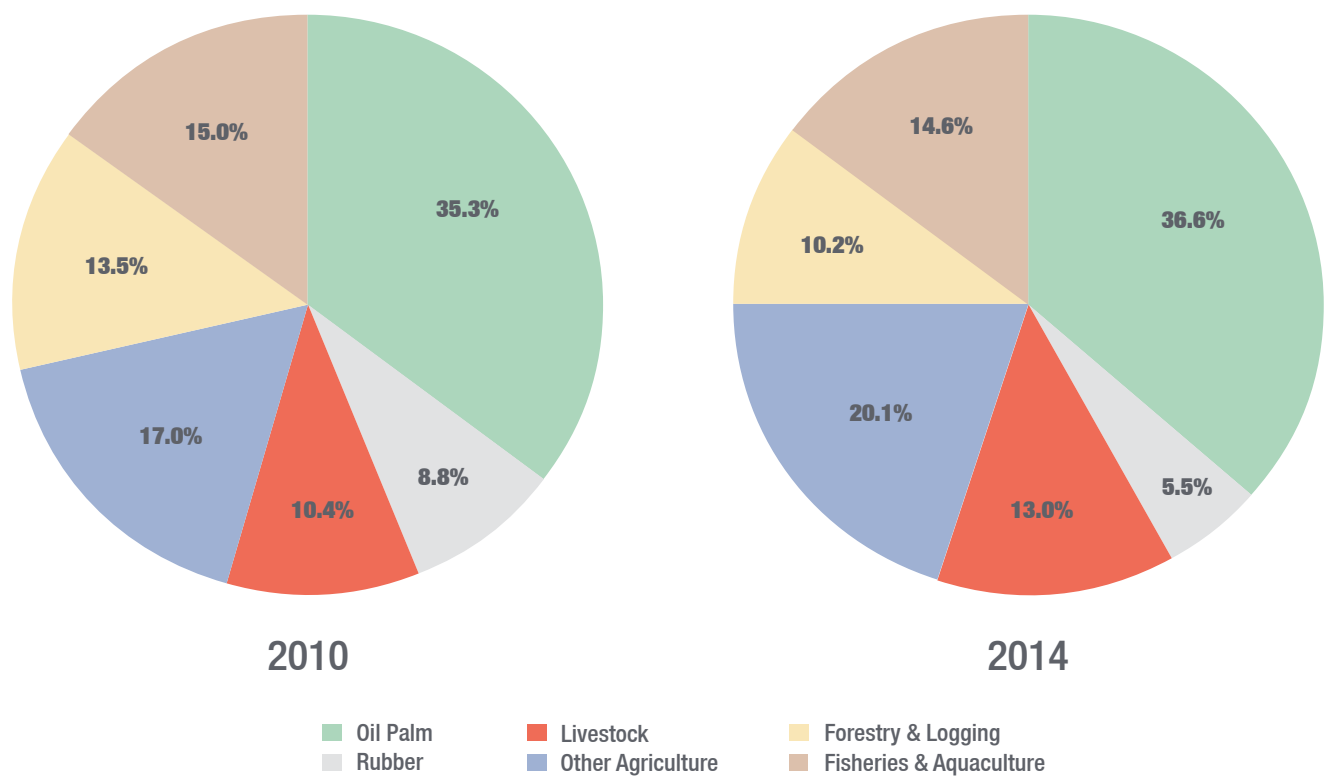
Source: Department of Statistics, Malaysia

Figure 5.3: External Trade of the Agriculture Sector, 2010–2014*



Source: Ministry of Agriculture
Note: * January - September 2014

Figure 5.4: Shares of the Agriculture Sub-Sectors, 2010 vs. 2014



Source: Department of Statistics, Malaysia

strengthened at RM2,367 per tonne in 2014 due to stable global demand in the world market.

By contrast, the rubber sub-sector’s contribution to the sector’s GDP declined to RM3,188 million (5.5% of the sector’s GDP) in 2014 from RM 3,947 million in 2013 due to lower production and prices. Natural rubber production dropped mainly due to increasingly hot weather conditions and a prolonged wintering season during the first quarter of the year. The price of natural rubber (SMR 20) remained subdued at RM5.83 per kg during the first eight months of 2014, dropping to a low of RM4.65 per kg in September 2014. The lower prices of rubber were partly due to sluggish demand from China’s automobile industry following measures to restrict the production of new cars to reduce air pollution and traffic congestion.

Other agriculture, including vegetables, fruits, food crops and paddy, recorded a contribution of 20.1% or RM11,584 million in 2014 compared with RM10,750 million in 2013. This was in line with Government efforts

to increase outputs of agro-food and aquaculture as well as enhance food security.

Government efforts to increase outputs of agro-food and aquaculture as well as enhance food security has shown higher contribution at 20.1% from 17.%.

The fisheries sub-sector, which comprises marine fishing and aquaculture, contributed 14.6% of the sector’s GDP or RM8,408 million in 2014, slightly lower compared with its contribution of RM8,237 million in 2013.

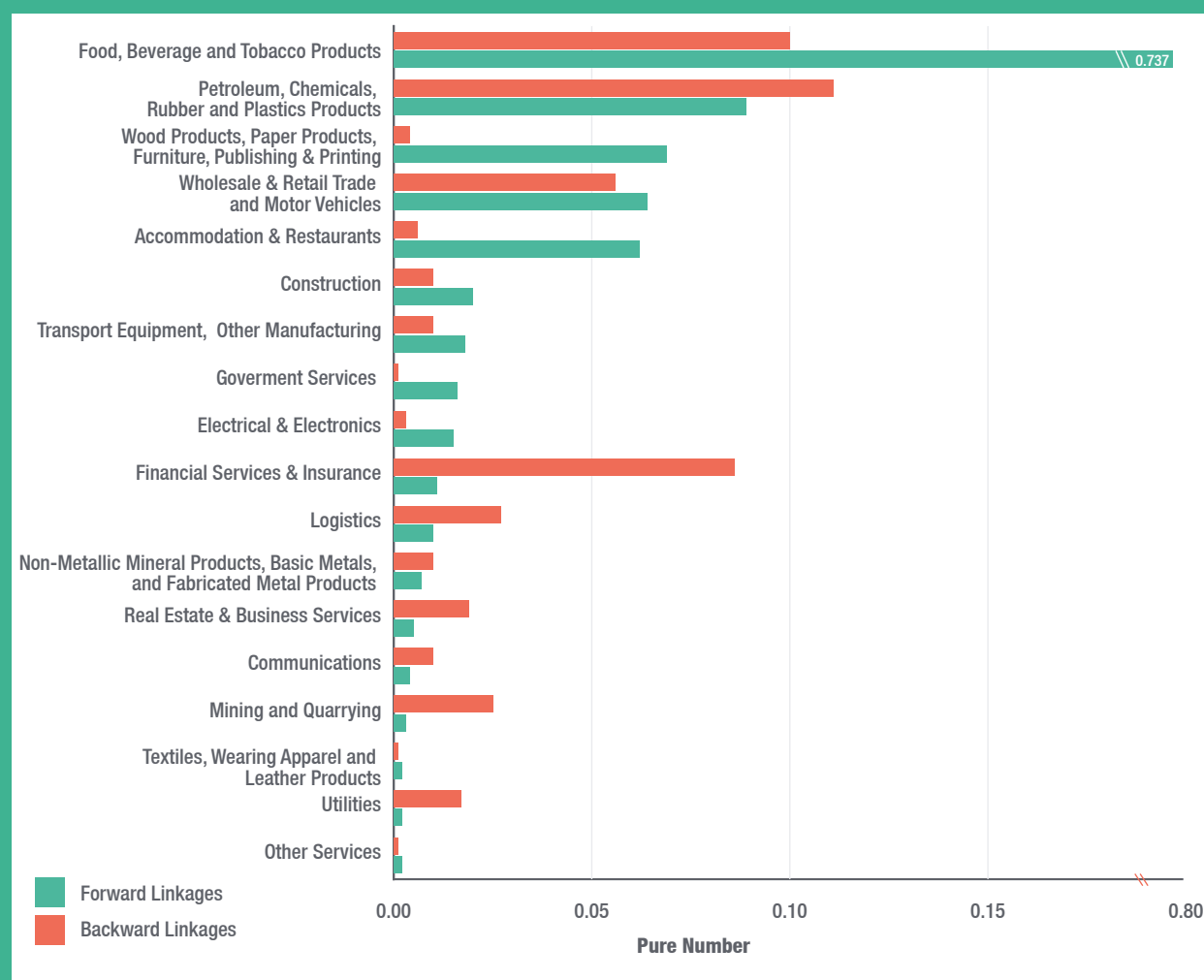
The livestock sub-sector, comprising poultry, cattle and other livestock, contributed 13% of the sector’s GDP or RM7,480 million in 2014, down from RM6,945 million in 2013. The value-added of the livestock sub-sector grew on account of higher output of poultry and eggs to meet higher external and domestic demand.

BACKWARD AND FORWARD LINKAGES OF THE AGRICULTURAL SECTOR

The agriculture has strong forward linkages, especially with the food industry. The outputs of the agriculture sector are mainly consumed as inputs for food, beverage and tobacco products. Agriculture outputs also serve as inputs for

petroleum, chemicals, rubber and plastic products. Biomass produce such as rubberwood and rice husks are also widely used in the manufacture of wood products, paper products and furniture.

Backward and Forward Linkages of the Agriculture Sector



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia

PRODUCTIVITY PERFORMANCE

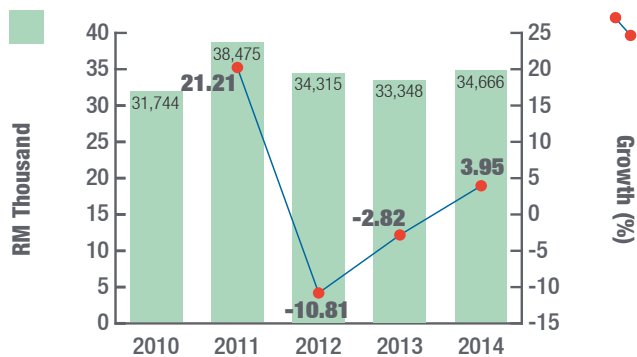
The sector experienced significant productivity growth of 3.9% to RM34,666 per employee in 2014, an improvement from -2.8% in 2013 (Figure 5.5). In terms of productivity per hour worked, the agriculture sector improved to RM18.91 in 2014 from RM18.19 in 2013. The increase in agricultural productivity was attributed to the decline in agricultural input prices supported by the increase in agricultural output prices — prices for fertilisers dropped by between 6% and 12% in 2014 compared with the previous year. Prices for urea in particular declined by 6.6% to RM85 per bag compared with RM91 per bag in 2013.

The increase in agricultural productivity was attributed to the decline in agricultural input prices supported by the increase in agricultural output prices.

The boost in agriculture productivity was also due to marginal increases in prices experienced by the plantation industry, particularly in the case of oil palm. The Government’s implementation of a nationwide switch to B7 biodiesel from B5 biodiesel in November 2014 is expected to further support CPO prices in the year ahead. The B7 biodiesel blend uses 7% palm biodiesel, 2% more than the B5 biodiesel blend.

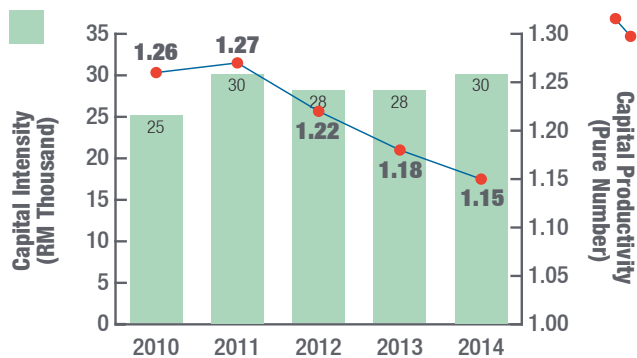
The agriculture sector slowed its negative growth in capital productivity to -2.6% in 2014, an improvement from -3.3% in 2013 (Figure 5.6). The continued negative capital productivity growth in the sector was due to the low adoption of modern technology and machinery, particularly among smallholders. However, the implementation of the minimum wage regulation on 1 January 2014 may be expected to spur producers to invest into labour-saving technology in order to reduce long-term labour costs. The rule requires that workers receive a minimum wage of RM900 in Peninsular Malaysia (RM800 in Sabah, Sarawak and Labuan). The impact of this regulation on labour productivity will

Figure 5.5: Productivity of the Agriculture Sector, 2010–2014



Computed from: Department of Statistics, Malaysia

Figure 5.6: Capital Intensity and Capital Productivity of the Agriculture Sector, 2010–2014



Computed from: Department of Statistics, Malaysia

become more evident in the year ahead as producers adjust to the new rule.

Capital intensity (CI) in the agriculture sector grew by 6.7% to RM30,058 in 2014 from RM28,162 in 2013. The positive performance in this sector’s capital intensity indicates that some labour-intensive agriculture sub-sectors are making an effort to shift towards being a more capital-intensive.

Malaysia’s agriculture productivity still lags far behind other high-performing countries. The nation’s agriculture sector is only 25.4% that of USA and 26.7% that of Australia, two countries where farming methods are more mechanised, technology-reliant and holistic in approach. On the other hand, Malaysia’s agriculture productivity was more than 70% that of Taiwan, Korea and Japan (Table 5.1).

Table 5.1: International Agriculture Productivity Comparison, Malaysia vs. Selected Countries, 2012 – 2013

	2012		2013	
	Ranking	US\$	Ranking	US\$
USA	4	84,104 (26.5%)	5	85,474 (25.4%)
Australia	6	78,866 (28.3%)	6	81,300 (26.7%)
Taiwan	26	28,447 (78.5%)	30	28,447 (76.3%)
Korea	30	25,781 (86.6%)	35	23,389 (92.8%)
Japan	32	24,906 (89.6%)	37	22,896 (94.8%)
Malaysia	36	22,325	40	21,709

Source: World Competitiveness Yearbook 2013 and 2014

PERFORMANCE OF SELECTED AGRICULTURE SUB-SECTORS

Rubber

Total planted area of rubber increased by 0.9% to 1.07 million hectares in 2014 following the opening of new areas in line with the Government's target of 30,000 hectares of new planting annually, 90% of which are in Sabah and Sarawak. Meanwhile, rubber replanting is targeted at 40,000 hectares annually. The government aims to open some 250,000 hectares of rubber plantations across Sarawak by 2020.

Malaysia's natural rubber production in 2014 shrank by 19.5% to 665,479 tonnes compared with 826,421 tonnes in 2013. This was mainly due to the prolonged decline in rubber prices, which reduced tapping activity, along with hot weather conditions and a prolonged wintering season during the first quarter of 2014. Smallholding was the main contributor of natural rubber production at 91% while the estate sector only contributed 9%. The annual productivity of natural rubber recorded an upward trend at 1,420 tonnes per hectare in 2014 compared with 1,400 tonnes per hectare in 2013. In comparison, high-yield rubber produced using biotechnology has a potential latex yield ranging from 2,300 to 2,800 kg per hectare annually.

The added value of the rubber sub-sector declined 19.2% to RM 3.2 million in 2014 from RM3.9 million in 2013



due to lower output and prices. Malaysia plans to build rubberised roads starting in 2015 to boost domestic consumption and to shore up battered prices of rubber. This follows the failure to implement a price floor plan among major producing nations.

The industrial and general rubber products industry comprises 185 companies producing a wide range of rubber products, largely in the domestic market. The rubber products industry will need to diversify further, emphasising high value-added and high-technology rubber products, such as products for engineering, construction and marine applications. Under the Palm Oil and Rubber NKEA, four EPPs are being implemented, including accelerating downstream activities and commercialising new rubber products. The rubber industry is targeted to contribute RM52.9 billion to GNI by 2020.

Paddy

Total planted area of paddy declined to 688,000 hectares in 2013 compared with 690,000 hectares in 2012. This may have contributed to the decline in Malaysia's paddy production to 2.59 million tonnes in 2014 from 2.63 million tonnes in 2013. Indonesia had the highest paddy production in ASEAN, measured at 70.29 million tonnes, while Thailand produced 38.25 million tonnes in 2014 (Table 5.2).

Malaysian paddy yield improved marginally to 4.2 tonnes per hectare in 2013 (Table 5.3). This was due to favourable weather conditions and continued government support on farm inputs and machinery. In January 2014, the Government set the Guaranteed Minimum Price (GMP) at RM1,200 per tonne. Malaysia's rice import is expected to reach 992,000 tonnes in 2014, mostly unchanged from the previous year.

Kemubu Agricultural Development Authority (KADA) and the Integrated Agricultural Development Areas (IADAs) have initiated various programmes and strategies to increase rice yield. These include paddy mini estates (MEP), 10-tonne projects, *Ladang Merdeka* projects,

Table 5.2: Production of Paddy of Selected ASEAN Countries ('000 tonnes), 2012 – 2014

	2012	2013	2014
Cambodia	8,779.4	9,290.9	9,390.0
Indonesia	69,056.1	71,291.5	70,290.6
Thailand	38,102.7	38,000.2	38,246.8
Vietnam	43,748.3	44,076.1	44,268.3
Philippines	18,032.4	18,439.4	18,985.9
Myanmar	29,009.9	27,703.7	23,526.6
Malaysia	2,599.5	2,626.9	2,594.0

Source: Department of Statistics, Malaysia

Table 5.3: Average Yield of Paddy 2010-2013* (Metric Tonne/Ha)

	2010	2011	2012	2013
MADA, Perlis	4.725	4.955	5.093	5.026
KADA, Kedah	3.974	4.096	4.156	4.136
Barat Laut, Selangor	5.612	5.908	5.695	4.495
Malaysia	3.944	4.077	4.136	4.211

Source: Department of Agriculture, Ministry of Agriculture And Agro-Based Industry

Note: * All Seasons

a water management group, an irrigation scheme, government intervention in rice production and food security. The effort to strengthen Malaysia's long-term food security and increase the income of paddy farmers is led by Muda Agricultural Development Authority (MADA). To achieve its targets, MADA will promote the adoption of estate farming under a single management in Muda, Kedah, which will help support its goals of social and economic growth in the area as well as develop the agriculture sectors in Kedah and Perlis. The initiative will amalgamate 50,000 hectares of paddy fields by 2020, representing 51% of the country's total 96,558 hectares of paddy fields. MADA's effort will lead the adoption of technologies across the paddy and rice production chain, promote larger-scale mechanisation and improve irrigation, ultimately raising paddy yields to a targeted eight metric tonnes per hectare by 2020.

Fruits and Vegetables

The Middle East and Europe are valuable export markets for Malaysia's agriculture sector. EPP 7: Premium Fruits and Vegetables aims to export premium Malaysian produce to these markets, which import more than 50% of the global production of higher-quality fruits and vegetables. This means that items must comply with food safety standards.

Initiatives such as the establishment of the Food and Agro Council for Export (FACE) are expected to boost exports and output of fruits. Six high-value non-seasonal tropical fruits (rock melon, starfruit, papaya, banana, pineapple and jackfruit) and three high-value highland vegetables (lettuce, tomato and capsicum) have been identified as target products. In addition, Malaysia has undertaken large-scale pineapple cultivation. The country is capable of exporting up to 100 containers of pineapples a month by 2015 as 22,000 hectares of pineapple plantations are expected to reach maturity.

In 2014, the Government allocated RM28 million under the three-year replanting program to help villagers in Raub replant fruit trees with high-quality saplings that can provide higher production. The replanting initiative will help reduce the fruit trading deficit of the country, which exceeds RM1.0 billion annually. The program will benefit some 6,000 villagers and will focus on several types of fruits, including durian and mangosteen.

Durian has become another fruit with export potential due to increasing demand from China and higher prices. Local durian exporters will benefit from modified atmosphere packaging technology developed by the Malaysian Agricultural Research and Development Institute (MARDI), which can seal in the freshness of durian flesh for up to three weeks.

Livestock

Malaysia's livestock industry is critical to ensure the country's food security in the face of an expanding population and growing imports. EPP 5: Cattle Integration in Oil Palm Estates focuses on integrating

FROM TRADITIONAL FARM TO COMMERCIAL SUCCESS



Located in Masjid Tanah, KLAS Farm started operations as a traditional farm in 2008. In 2010, it took up the challenge of modernising its farming methods and was recognised in the same year as a Bionexus status company by Malaysian Biotechnology Corp Sdn Bhd (BiotechCorp).

KLAS Farm is involved in the commercialisation of livestock bred using artificial insemination. The farm has conducted R&D in order to support its Sustainable Integrated Goat Farming concept, and currently has over 1,000 elite boer goats. KLAS Farm's products include livestock supply for breeding, semen, contract farmers/mentor-mentee services, organic fertiliser and effective microbes, and training and consultancy.

Goat husbandry at KLAS Farm is an involved business, taking into consideration important factors such as diet, care, breed selection and marketing. For example, kids (young goats) receive supplemental nutrition through a method known as creep feeding to ensure rapid growth. The farm also keeps careful track of breeding data such as date of birth, type of medicine given and treatment schedule for operators. KLAS Farm is also looking into the use of forward contracts so that it can plan ahead for the number of goats that need to be bred to meet demand.

In 2012, KLAS Farm was recognised with the Livestock Farm Accreditation Scheme (SALT). This accreditation has since been replaced by MyGap, a single certification scheme for Good Agricultural Practices (GAP) that supports breeding quality. The farm's commercial success is an important example of how modern methods can help to increase the national self-sufficiency level (SSL), boost foreign exchange earnings and provide job opportunities.

and rearing an additional 300,000 heads of cattle in large oil palm plantations by 2020. Estate owners will implement the programme through a cattle breeding and rotational grazing program in compliance with Good Animal Husbandry Practices (GAHP). This effort is supported by a programme to address rising production costs by increasing the supply of locally-produced feed and a breeding programme using artificial insemination to fast-track the breeding of good quality cattle.

Another related focus area, EPP 12: Expansion of Cattle in Feedlots, aims to establish 300 satellite farms to support anchor companies involved in feedlot operations that improve the national self-sufficiency level for beef. At present, FELDA Gedung Makanan Negara (GMN) is the sole champion of this project and is tasked to oversee operations across the entire feedlot services value chain and manage the integration and consolidation of downstream processes. Improvements in the downstream process will include the enforcement of abattoir certification, cold-chain delivery of chilled cuts, promotional exercises to create market awareness of imported buffalo meat versus beef and the development of other beef by-products.

To reduce the country's dependency on imported fresh milk, anchor companies identified under the EPP will champion dairy clusters to produce milk on a large-scale basis. These companies will approach individual farms with a deal to guarantee purchases of milk at a pre-determined price. Steps will also be taken to improve existing cold-chain milk facilities to ensure that milk quality is maintained during shipment from farm to marketplace.

Fisheries

The country's total export of fish and other seafood exceeds RM2.5 billion per annum. Malaysia can improve the production of fully-certified export quality shrimp for premium markets by establishing an Integrated Zone for Aquaculture Models (IZAQs). IZAQs comprise networks of industrial-scale and land-based aquaculture zones, each of which is equipped with integrated infrastructure championed by an anchor company. The anchor

company is expected to collaborate with local and foreign experts on aquaculture R&D projects to enhance Malaysia's aquaculture industry by improving production through biotechnology. Each IZAQ project consists of a large-scale R&D centre, high-productivity hatchery centres, an 800-hectare shrimp farm, frozen and dried seafood processing facilities and a high-capacity cold storage warehouse. The processing plant will run at a full capacity of 30 tonnes per day and the frozen warehouse has a storage capacity of 1,000 tonnes.

Malaysia's marine fish production stands to gain a major boost from Integrated Cage Farming. Farms using this technique in both Sandakan and Silam in Sabah have targeted to produce approximately 800 tonnes of high quality hybrid grouper annually for domestic consumption and export to Hong Kong and mainland China.



Oil Palm

Malaysia's competitive advantage in the palm oil industry stems from many decades of hard-won experience and strong leadership in productivity, research and development. Today, the oil palm industry is one of the major contributors to Malaysia's economic growth, especially in rural economic development. The industry will continue to be relevant as it is projected to contribute an estimated RM178 billion to Malaysia's export value by 2020, about three times its export value of RM63.6 billion in 2014. The industry is expected to achieve this growth by replacing ageing oil palm trees with higher yielding oil palm fruits, improving the oil extraction rate, raising productivity through mechanisation in plantations and promoting downstream value-added products.

In 2014, Malaysian palm oil accounted for 11.2% of global oils and fats produced and 25% of global oils and fats exports. The palm oil industry in Malaysia has the highest productivity among all palm oil producing countries, with CPO productivity of 4.19 tonnes per hectare in 2014, 6.3% higher than that of Indonesia at 3.94 tonnes per hectare. Malaysia's CPO production reached 19.7 million tonnes with matured planted area of 4.7 million hectares in 2014, while Indonesia's CPO production was recorded at 31.5 million tonnes with 8.0 million hectares of matured planted area.

The palm oil industry in Malaysia has the highest productivity among all palm oil producing countries, with CPO productivity of 4.19 tonnes per hectare in 2014, 6.3% higher than that of Indonesia at 3.94 tonnes per hectare.

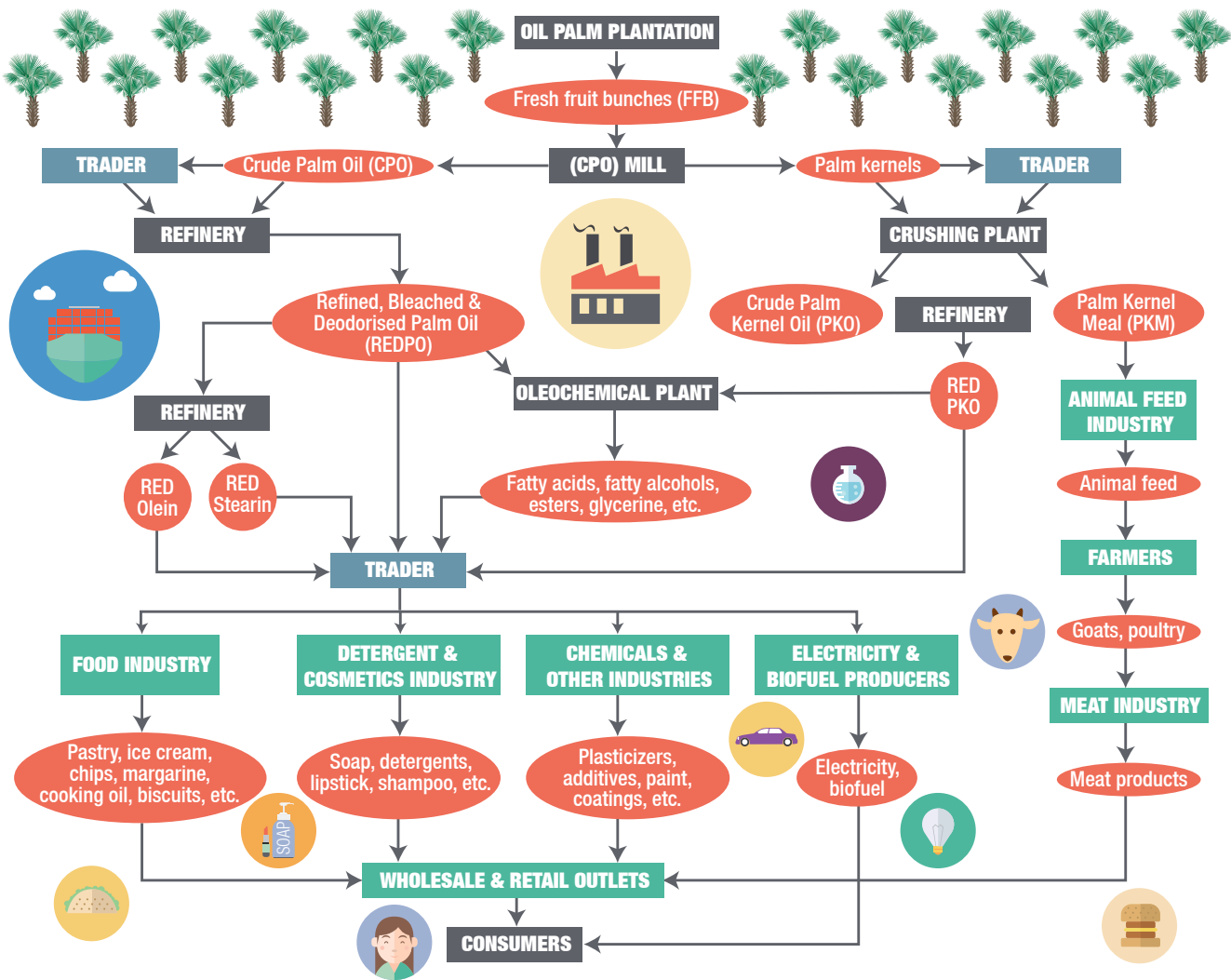
The palm oil industry spans the value chain from upstream plantations to downstream processing. As suitable land for planting has become scarcer and land productivity has stagnated, Malaysia needs new strategies to maintain its comparative advantage in the global oils and fats market. The only way forward is to capture the full potential of downstream products, which

currently make up 21.4% of Malaysia's palm oil output compared with 78.6% exported as upstream products either in crude or processed form. As at the end of 2014, there were 443 mills, 44 crushers, 57 refineries and 17 oleochemical facilities in operation. Total capacity in operation in 2014 for fresh fruit bunch (FFB) mills was registered at 106.7 million tonnes, palm kernel (PK) crushers at 6.9 million tonnes, refineries at 27.1 million tonnes and oleochemicals at 2.6 million tonnes.

To ensure the sustainability of the industry going ahead, it is important to identify and focus on high-potential downstream activities that are yet untapped and to invest resources in downstream segments, both food-based and non-food-based. The Government has initiated four EPPs that are targeted to generate an incremental GNI of RM14.0 billion by 2020:

- Capturing Biogas at Palm Oil Mills:** To mitigate environmental damage and safeguard the image of the palm oil industry, this initiative targets the development of biogas plants at 500 palm mills to capture methane gas for electricity generation. Of these mills, a total of 250 mills are targeted to supply electricity to the national grid by 2020, another 233 mills will capture biogas as fuel for their own boilers, and 17 mills will use the methane gas for both options. The development of biogas plants will also enable mills to gain another revenue source from the sale of palm kernel shells, previously burnt as fuel. This EPP will be wholly funded by independent millers and plantation companies with a total estimated cost of RM2.8 billion. It is targeted to generate an estimated RM2.9 billion in GNI in 2020 while creating 2,000 jobs, without requiring any incremental Government funding. To date, one mill has been successfully connected to the national grid and is selling electricity under the Feed-in-Tariff (FiT) programme.
- Developing High-Value Oleo Derivatives:** Basic oleochemicals constitute 99% of Malaysia's palm oil non-food downstream production

Figure 5.7: Overview of the Palm Oil Production Chain



Source: Adapted from World Wide Fund For Nature (also Known as World Wildlife Fund)

segment, while the remaining 1% is contributed by oleo derivatives that are developed from basic oleochemicals. However, global demand is far lower than the capacity for the two basic oleochemicals, fatty acids and fatty alcohols, and this gap is not expected to close in the near future. These oleochemicals also have lower profit margins compared with high-value oleo derivatives.

This initiative proposes to shift national production from basic oleochemicals to higher value oleo derivatives, increasing the latter's share from 1% to a forecasted 40% by 2020

and increasing Malaysia's share of global demand for these products to 14% valued at RM25 billion. Since the start of this EPP, seven companies have committed investments totalling RM1.35 billion to develop plants and factories that specialise in producing these high-value oleo derivatives.

- **Commercialising Second-Generation Biofuels:** The biomass potential of the oil palm industry remains significantly underutilised. In 2009 alone, the industry generated over 60 million tonnes of oil palm biomass in the form of empty fruit bunches, tree fronds and trunks.

This initiative is intended to fast track the commercialisation of second-generation bio-fuels to leverage the biomass generated in the industry. This EPP will rely entirely on RM3.2 billion worth of private investment over 10 years. These investments will be targeted at building 29 bio oil plants and sourcing empty fruit bunches (EFBs) as raw material. In 2020, this EPP will generate RM3.3 billion in additional GNI and create 1,000 local jobs.

- **Expediting Growth in Food and Health-based Downstream Segment:** This initiative focuses on driving the palm oil industry to expand its downstream activities (e.g. halal products, biscuits, ice cream, tocotrienols, carotenoids and phenolics) to balance the current reliance on upstream and overcome the land constraints on future growth in upstream. Malaysian companies are offered tax incentives to acquire foreign food companies with proven product and market success. These expansion efforts are managed in a hands-on manner to ensure transfer of knowledge in R&D, product development, branding and marketing expertise. By 2020, this EPP will generate RM4.9 billion in additional GNI and create 74,900 local high-skilled jobs.

In 2013, MPOB identified three new high-value investments that amount to RM218 million. These comprise a project in Pasir Gudang, Johor, which will produce specialty fats while two other plants in Kuantan, Pahang and Bintulu, Sarawak, will be producing tocotrienols. The development of the three plants is expected to be completed by mid-2015. Additionally, agreements for three research and development projects were signed in 2013, following approval by the NKEA steering committee in 2012.

CHALLENGES AND RECOMMENDATIONS

Ensuring Competitiveness Under a Free Trade Environment

At the global scale, Malaysian farmers are subject to increasingly competitive trading environments as a result of the WTO and AFTA free trade frameworks that Malaysia is a signatory to. Trading blocs around the world have enacted preferential tariff schemes coupled with discriminatory tariff and non-tariff barriers that will affect Malaysia's agriculture sector.

The Malaysian agriculture sector must be prepared for increased competition when the ASEAN Economic Community (AEC) takes effect at the end of 2015.

The Malaysian agriculture sector must be prepared for increased competition when the ASEAN Economic Community (AEC) takes effect at the end of 2015. Industry players from other ASEAN countries will have the advantage of cheaper locally produced agricultural inputs and lower labour costs in sub-sectors such as poultry. Since Malaysia imports nearly all of its poultry feed ingredients, which make up 70% of total cost of production of broiler chicken, the local poultry sub-sector will find it hard to compete with ASEAN countries that use locally available ingredients to reduce cost.

Malaysia has the advantage of commitment and good governance by institutions and agencies, including the National Science and Research Council, Malaysian Institute of Microelectronic Systems (MIMOS), Teraju, Malaysia Technology Development Corporation (MDTC) and SME Corporation Malaysia. The agencies will enable the agriculture sector to take advantage of the AEC. The Government has also made an immense commitment to entrepreneurship development, which will support the

creation of goods and services that will be competitive in an enlarged common market.

Labour Issues

The agriculture sector is vulnerable to labour shortages because of its high dependence on foreign labour. As local labour remains reluctant to enter agriculture due to the relative attractiveness of the manufacturing and services sectors, the agriculture sector’s dependence on foreign labour has reached critical levels. Oil palm, the largest agriculture sub-sector, is particularly dependent on the massive involvement of labour since there are very few prospects for effective mechanisation.

On a related note, the imposition of the current minimum wage policy for domestic and foreign labour will have major impacts across the oil palm and rubber sub-sectors, among others. Since the agriculture sector’s productivity level is only 38% of that of the manufacturing sector, the cost of hiring labour will increase if the minimum wage is not commensurate with an increase in labour productivity.

Addressing Food Security

Encouraging farmers to make better use of technology is one of the greatest challenges facing Malaysia’s

agriculture authorities. Boosting technology take-up is integral to achieving the goal of food security. According to forecasts from the Food and Agriculture Organization of the United Nations, by 2030 the world will require 50% more food than today and by 2050 global food demand will surpass supply. With this in mind, the Government aims to ensure that Malaysians will have enough in the years to come.

Recognising the vital importance of food security and nutrition in meeting the nation’s needs, Malaysia has made it a point to ensure that sustainable agriculture, food security and nutrition are high on its national agenda.

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THE IMPACT OF GOVERNMENT PROGRAMMES

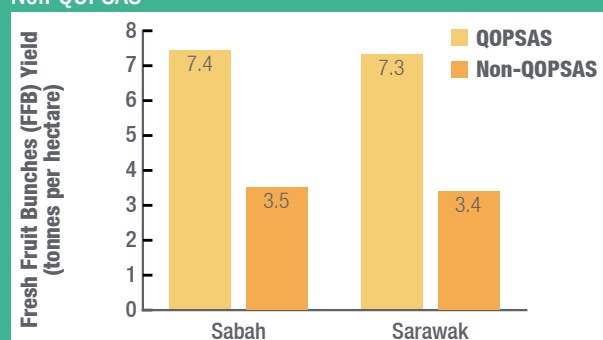
The Government's continued efforts to revitalise the plantations of smallholders with subsidies for replanting is beginning to bear fruit

The Government has continued new planting and replanting schemes for smallholders and plantations in 2014. The scheme offers incentives worth RM7,500 per hectare in Peninsular Malaysia and RM9,000 per hectare in Sabah and Sarawak. Approved area for oil palm replanting increased by 22% to 10,522 hectares in 2014. The new planting scheme approved 25,985 hectares in 2014, double the amount approved in 2013. The increase in applications for new planting and replanting can be attributed to low fresh fruit bunch (FFB) prices and aggressive promotion by the relevant agencies.

The Quality Oil Palm Seedlings Assistance Scheme (QOPSAS) was implemented from 2006 to 2010 to help improve FFB yield and income for smallholders. The scheme allocated RM37.6 million and successfully increased productivity and income for total of 5,697 smallholders, especially in Sabah and Sarawak. The average price for the first year harvested FFBs in 2014 was at RM430 per tonne. Based on the price, the gross incomes for the QOPSAS and non-QOPSAS smallholders were estimated. For the QOPSAS smallholders, the estimated gross income for the first year of harvest in Sabah and Sarawak was around RM3,182 per hectare and RM3,139 per hectare respectively, double the estimated gross income recorded by the non-QOPSAS smallholders.

The low productivity of the agriculture sector is linked to its labour intensity, especially in the oil palm industry, which is very dependent on field labour for FFB harvesting and collecting activities. To increase labour productivity, reduce dependency on foreign labour and reduce the cost of FFB production, the Cantas mechanical harvesting pole was introduced with a discounted price. According to a MPOB study, Cantas could increase the productivity of a harvester from 350 to 750 FFB per day. Labour productivity for harvesting activities could be further increased by about 30% to 40% compared with manual harvesting. It is believed that continuous improvement of the tool could boost future

Comparison of the First Year FFB Yields Under QOPSAS and Non-QOPSAS



Status of Oil Palm Replanting and New Planting Scheme in 2013 and 2014 (ha)

	Replanting		New Planting	
	2013	2014	2013	2014
Applied	9,591.78	11,355.89	7,743.55	21,291.21
Approved	8,623.81	10,522.22	13,243.97	25,984.49

Source: Malaysian Palm Oil Board

market demand, which will indirectly help the Malaysian oil palm industry to be more productive and competitive.

Small and medium enterprises have been enlisted to promote products related to the oil palm industry. In 2007, MPOB signed an agreement with Jariz, which focuses on design and supply of motorised machines for manufacturing and agriculture, to produce and market Cantas. As of 2014, Cantas has been marketed in more than 10 countries including Indonesia, Columbia and India.

Meanwhile, Premium Food Corporation Sdn Bhd has pioneered the commercial production and sales of a palm milk substitute for coconut milk named Khalis Santan Sawit. The product, developed using MPOB formulations, has achieved market success with increasing sales from year to year. Today, Khalis Santan Sawit is available in various hypermarkets such as Giant, Tesco, Jusco and Mydin.





Productivity Performance of the **CONSTRUCTION SECTOR**

In this chapter:

- Productivity performance of the construction sector
- A growing industry
- Capitalising on high-skilled foreign labour
- Ensuring the supply of building materials
- Spurring the adoption of advanced building methods
- The road to a more productive construction sector

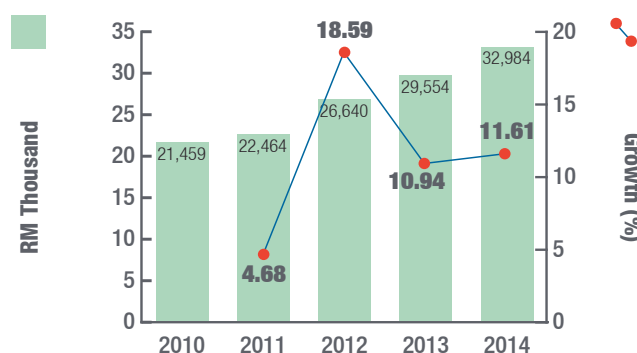
Productivity growth within the construction sector improved by 13.2% in 2014, demonstrating the sector's commitment to enhancing productivity performance. Despite great strides, however, much needs to be done as the sector turns towards newer avenues and technologies in a bid to leave behind labour-intensive methodologies.

The construction sector is split into four key sub-sectors: residential, non-residential, specialised activities and civil engineering. The first three sub-sectors generally encompass all building activities with the specialised activities sub-sector providing essential services such as mechanical and electrical work, plumbing, glass work, painting, tiling and others. Civil engineering involves the construction of infrastructure such as oil and gas facilities along with transportation and utilities networks.

The construction sector's contribution to the country's GDP surged by 11.6% to RM33 billion in 2014 compared to RM29.5 billion in 2013, giving it a share of 3.9% of the country's total GDP.

The construction sector's contribution to the country's GDP surged by 11.6% to RM33 billion in 2014 compared to RM29.5 billion in 2013, giving it a share of 3.9% of the country's total GDP. It is also the fourth largest employer within Malaysia, utilising roughly 1.2 million workers - 9% of the country's total labour force. Non-residential construction was the largest employer within the sector, employing 321,620 workers. This sub-sector includes private corporate buildings as well as shopping centres, commercial areas and various other private and public projects. The sheer scale of many of these projects makes it unsurprising that the sub-sector requires more workers overall.

Figure 6.1: GDP Performance of the Construction Sector, 2010–2014



Source: Department of Statistics, Malaysia

The sector as a whole encompasses all construction activities within the industry, including the preparation of land and the construction, alteration, embellishment and repair of buildings, structures and other properties. Construction is a high-investment sector, making it a significant economic driver with multiple stakeholders at various stages of the value chain.

The bulk of project spending is distributed between residential, non-residential and civil engineering. Malaysia's construction sector also has an overseas presence, with a reported RM8.3 million in overseas projects completed in 2013. This figure is predominantly a result of construction work within ASEAN countries, though overseas projects can be found as far as the Middle-East. The sector is closely tied to other sectors of the economy, with a backward-linkages index of 1.10 and a forward-linkages index of 0.79.

PRODUCTIVITY PERFORMANCE

The construction sector experienced remarkable productivity growth across the board in 2014, rising 9.4% to hit 13.2% from the 3.8% growth recorded in 2013. In terms of productivity per hour worked, 2014 showed a figure of RM11.92 per hour per employee, higher than the RM10.53 recorded in 2013.

The residential construction sub-sector was the greatest contributor to the sector's productivity performance in 2014, with productivity growing by 17.9% to RM34,147 per employee, generating an added value of RM9.6 million (Figure 6.3). The residential sub-sector registered the highest growth for both capital productivity and capital intensity at 9.3% and 7.9% respectively (Figure 6.4). The government's growth in community projects such as *Rumah Mesra Rakyat*, *Rumah Mampu Milik* and *Rumah Impian Rakyat* contributed to the increase in both output and demand, pushing the sub-sector to greater levels of productivity.

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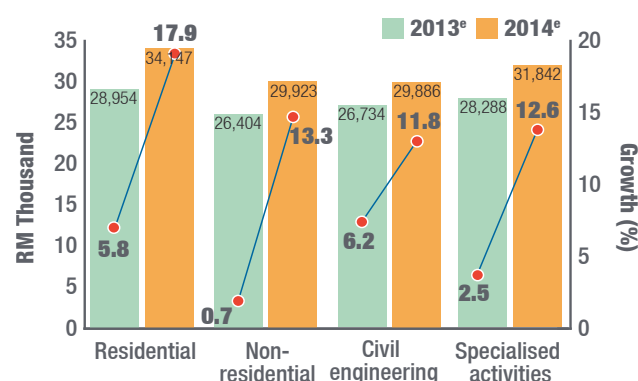
Non-residential and specialised construction activities also registered double-digit productivity growth at 13.3% and 12.6% respectively. The high growth was attributed to an increase in construction activities, such as commercial building construction, building new schools and upgrading facilities in universities and hospitals. For specialised construction activities, the high growth rate was a result of work done primarily upon completion of structures, such as tiling, painting, plumbing and wiring. Meanwhile, the civil engineering sub-sector recorded the lowest productivity growth at 11.8%, a direct result of the

Figure 6.2: Productivity of the Construction Sector, 2010–2014



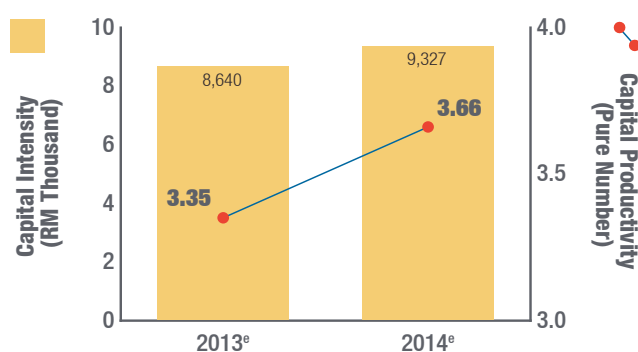
Computed from: Department of Statistics, Malaysia

Figure 6.3: Productivity of the Construction Sub-Sectors, 2013–2014



Computed from: Department of Statistics, Malaysia
Note: e - estimated

Figure 6.4: Capital Productivity and Capital Intensity of the Residential Building Sub-Sector, 2013–2014



Computed from: Department of Statistics, Malaysia
Note: e - estimated

finalisation of several mega projects such as KLIA2 and the Second Penang Bridge (Figure 6.3).

The residential sub-sector also showed the highest labour cost competitiveness, with productivity growth of 17.9% outpacing labour costs per employee of 7.3% while unit labour costs declined by 7.4% (Figure 6.5). This shows that the sub-sector has managed to add greater value to the economy relative to wage growth, while the cost of hiring workers is dropping. This was followed by non-residential sub-sectors, with a productivity growth of 13.3% - two times higher than the labour cost per employee growth of 6.7% at RM19,649, while unit labour cost declined by 4.9%. The highest remuneration was observed in the residential sub-sector at RM20,496 per annum, followed by civil engineering at RM20,426 per annum.

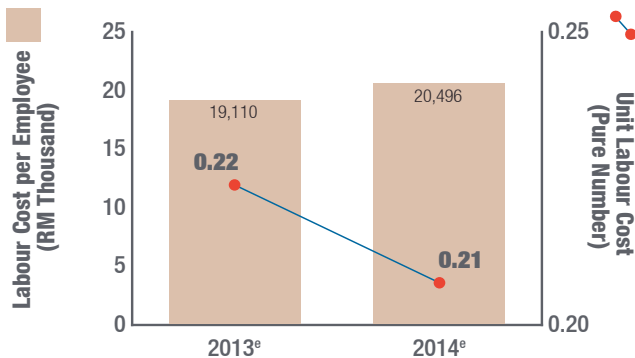
Developers continued to invest capital, indicating keen interest in modernisation and confidence in the growth of the sector, particularly within the residential sub-sector. With capital invested being greater in proportion to number of workers than the year before, and with workers being more productive than ever in relation to capital input, the residential sub-sector seems to be successfully transitioning into a value-added system.

CHALLENGES AND RECOMMENDATIONS

A Growing Industry

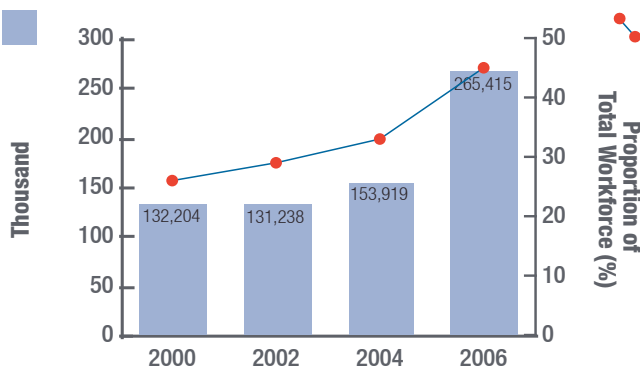
The construction sector is a labour-intensive industry that relies heavily on human capital. Although there are many productivity enhancers within the construction industry worldwide, Malaysia does not yet utilise most of these time-saving systems as the implementation of these methods comes at a prohibitive cost; obtaining higher-grade technology requires significant capital investment, while workers skilled at using these systems are in short supply in Malaysia and are therefore expensive to hire when available. The sector faces a distinct lack of scaffolding experts and professional engineers, including the certified IBS (Industrialised Building Systems)

Figure 6.5: Labour Cost Competitiveness of the Residential Building Sub-Sector, 2013–2014



Computed from: Department of Statistics, Malaysia
Note: e - estimated

Figure 6.6: Total Number of Foreign Workers in the Construction Sector, 2000–2006



Source: "Immigration in Malaysia: Assessment of its Economic Effects, and a Review of the Policy and System", the World Bank in Collaboration With ILMIA— Ministry of Human Resources of Malaysia, 2013.

designers necessary for the successful implementation of these building methods.

Capitalising on High-Skilled Foreign Labour

Foreign labour can boost productivity in the country's construction sector, provided that emphasis is placed on high-skilled workers as opposed to unskilled manpower.

Malaysia is one of the world's largest importers of foreign labour. Foreign workers are currently the construction sector's preferred source of labour, as the industry to date has remained structured around low-cost, low-skill manpower (Figure 6.6). Investment into long-term

skill development is hindered by current management mentalities and the cyclical nature of construction booms. Furthermore, the sector has a reputation for paying low wages despite difficult working conditions and the limited upward career movement. As a result, even low-skilled Malaysians with little work experience prefer not to work within the sector.

Foreign labour can boost productivity in the country's construction sector, provided that emphasis is placed on high-skilled workers as opposed to unskilled manpower.

Malaysian contractors still favour a low-cost business framework. This is why construction companies tend to hire unskilled foreign labourers willing to work in intensive, difficult conditions for low pay. Workers are required to pass the Foreign Personnel Skills Recognition (PKPA) competency test administered by the CIDB in order to stay within the country. As many labourers fail this test, turnover is high as the maximum stay period for unaccredited workers is five years.

The accreditation of workers is a costly, lengthy affair, so most companies simply choose to hire new workers instead of retaining their current workforce. Workers with skills learnt on the job are replaced by new workers without experience; these new workers must then go through the same slow process of learning on the job. The result of this is a sector abundant with low-skill labourers. Low-cost labour also depresses the paygrades for skilled construction workers in Malaysia, making the sector unattractive to locals. The few Malaysians that do train to become builders invariably choose to work overseas in places like Taiwan and Japan rather than seek employment locally. This lack of widespread skilled talent makes construction methods such as IBS harder to implement.

The fault is not entirely that of the construction companies. With the sector traditionally competing to

offer the lowest prices in the market to secure prominent deals, many companies gain a minimal profit margin. The result of this is a lack of funds for further investment into the hiring of skilled workers or the purchase and installation of better technologies and systems.

As the world looks beyond low-cost labour and moves on towards favouring quality labour systems, it is hoped that a similar change will be effected in Malaysia's construction sector.

Ensuring the Supply of Building Materials

More needs to be done to ensure the supply and security of building materials for both established industry players and new competitors.

Building materials typically comprise between 30 to 50 percent of construction costs before the addition of logistics and transportation costs; steel and concrete alone account for 15 percent of this figure. With Government megaprojects taking priority over private sector projects, large projects such as the Klang Valley MRT or the Electrified Double Track Project (EDTP) in Ipoh, Padang Besar, can often result in acute shortages of these two crucial materials; the result of this is an overnight rise in construction costs. The production of high-grade cement is also made more difficult as state restrictions impede the transportation of sand across state borders.

The prices of both cement and steel also fluctuate according to global market demand. In 2014, there was significant excess capacity in the global steel sector, causing steel prices within Malaysia to fall by approximately 2.2% between January and November 2014. However, prices for ordinary Portland cement during the same period rose by 4.9% as the country's major infrastructure projects continued to swallow up available supply. In order to counter such price fluctuations, developers have taken to locking-in long-term price agreements with their preferred suppliers.

Spurring the Adoption of Advanced Building Methods

In Japan, Finland and other developed countries, building methods such as prefabrication, IBS and automation have marked the transition of the construction industry from being labour-intensive to technology-intensive. The reason for this transition is simple; advanced building methods reduce costs, offer workers better pay and save lives. Using conventional building methods it takes roughly 400 people to build a typical 30-storey building. Armed with IBS and automation systems, however, the same building could be built by a crew of 70 workers in a shorter time-frame, all of whom would receive better pay and work conditions.

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Despite the efforts of the Construction Industry Development Board (CIDB), only a few companies have embraced these methods in Malaysia. Admittedly, the technology, expertise and materials required for the successful adoption of IBS are significantly different from conventional labour-intensive building processes. Nonetheless, the benefits that come with a successful transition are well worth the effort.

With an IBS project, building components are prefabricated in bulk at specialised IBS component manufacturing plants then transported to building sites to be assembled and installed. IBS manufacturers can therefore seek economies of scale and quality improvements that are not possible with on-site fabrication methods – efficiency gains that will positively affect customers in the long run. However,

IBS component production systems require very high-quality materials; this means that IBS component manufacturers must have access to a steady supply of high-grade cement (Grade 30-35) and other materials such as sand and granite aggregate – both of which are in short supply in Malaysia. Another challenge is the fact that the steel moulds used for fabricating components are expensive to manufacture.

Without regulations to enforce standardised building designs such as those that exist in Singapore and Japan, IBS component manufacturers in Malaysia risk spending copious amounts of money creating mould designs that no one wants. By stepping up to standardise building designs, local authorities will encourage businesses to set up shop to supply IBS components. Some skill sets such as plastering and bricklaying would not be required anymore, and buildings would require little to no additional concrete supplies. With guaranteed demand, mass production becomes not only possible, but necessary. This widespread usage would translate into lower costs for everyone, helping to make IBS more affordable for all involved.

Currently, Malaysia's construction industry is experimenting with partial IBS projects that utilise party walls in multi-residential buildings. Partial IBS projects are more challenging than conventional projects because they require investment in BIM expertise and technology to ensure that the conduits for wiring and plumbing that already exist in the conventional building align correctly with the conduits in the prefabricated party walls. If these conduits do not align, new holes would have to be drilled – a much harder feat, as prefabricated components are made from a higher-grade cement and are therefore harder to drill through.

Another challenge to IBS adoption is the high cost of transporting IBS components from manufacturing plants to building sites. Several of these plants already exist in Johor, catering to Singaporean client. This means employers are far more likely to find workers with experience in IBS in the Johor region compared to other Malaysian states. It also makes IBS-led projects more viable in Johor than elsewhere in the country; at present, the costs of transporting IBS components from Johor to

the Klang Valley or Penang would easily wipe out any potential savings gained from adopting IBS. The use of IBS also requires specialised hoisting equipment hard to find in Malaysia.

The country's most important infrastructure projects already use more steel and pre-cast structures, only requiring foreign workers due to the lack of sufficient local talent. If the Government can stimulate sufficient demand for IBS and other advanced building techniques elsewhere in Malaysia, it will become more feasible to establish more IBS plants throughout the country. The Government has already done all it can to encourage the voluntary adoption of IBS but has stopped short of making it compulsory. The fear is that making IBS compulsory would result in a sudden shortage of high-grade materials throughout the country, pushing up construction costs to exorbitant levels in the short term. This obstacle can be overcome, however, by introducing stockpiling strategies to ease supply shortages, ensuring prices remain stable.

The Road to a More Productive Construction Sector

Policymakers and industry players can work together to help drive changes in the construction sector, with both short- and long-term plans. The long-term goals of the construction sector are best addressed at the policy level, and the recommendations suggested are made with the understanding that they will take years to implement. Short-term recommendations, however, can be implemented within businesses or on-going projects for immediate effect, as they do not involve any regulatory approval and only require organisations with a firm commitment to change.

Policymakers and industry players can work together to help drive changes in the construction sector, with both short- and long-term plans.

SINGAPORE'S BIM JOURNEY

Building Information Management (BIM) is a project delivery method that utilises 3D building models instead of 2D plans to enable better decision-making and identify potential design, construction, or operational issues. In 2010, the Building and Construction Authority (BCA) introduced the BIM Roadmap to guide Singapore's construction industry towards higher productivity and better integration. The Roadmap serves up a platter of strategies and initiatives to help construction firms resolve their BIM adoption challenges.

Firms currently face a lack of demand for BIM. To solve this issue, BCA collaborated with government procurement entities (GPEs) to request the use of BIM in their projects from 2012. BCA worked with the GPEs and industry partners to prepare for the new requirements. In addition, BCA established the Centre for Construction IT to promote BIM and provide guidance for businesses and professionals in the industry. BCA conducted seminars, workshops and conferences to further promote the benefits of BIM.

Building professionals are still entrenched in old 2D drafting practices, so BCA developed a set of submission templates and guidelines to streamline the regulatory submission process, as well as project collaboration guidelines and an object library standard.

To build up BIM expertise and overcome the steep learning curve, BCA launched short courses and the Specialist Diploma in BIM at BCA Academy and also engaged tertiary institutions to provide BIM training. Businesses starting their first BIM project implementation and regulatory submission can enjoy "chaperone" services from BCA to provide assistance.

The industry lacks a ready pool of skilled BIM manpower. To incentivise BIM adopters, BCA introduced the BIM Fund, which is a part of the Construction and Capability Fund for BIM adoption, to cover the costs of training, consultancy services and the purchase of hardware and software.

In the short term, property developers and construction companies must work together to overcome the challenges of quality and labour shortages. Although property developers have little to no influence over the hiring and labour management policies within the

contracting companies they engage for their projects, they can nonetheless exert some influence over these construction companies and encourage them to make changes to their internal training processes and quality control practices. Some of the steps that property developers may take include:

- Engaging third-party professionals to conduct regular, stringent site inspections. These third-party assessments should evaluate projects in progress according to recognised quality control standards and determine build quality both internally and externally. This will spur construction companies to use high-skilled labour instead of low-skilled labour as they will want to ensure tasks are executed correctly the first time.
- Procuring higher quality materials and requiring sub-contractor workers to be trained in their correct application and use. This provides an incentive to construction companies to invest in long-term skill development for their workforce and offer higher value-added construction methods and systems to clients.
- Using standardised building or automation systems. Standardisation can reduce margins of error due to unskilled workmanship, while automation significantly improves on-site safety and reduces costs.
- Requiring that contractors use only certified workers on critical jobs. Building components such as wiring, plumbing, ventilation and air-conditioning should be installed by properly trained personnel whose certifications are widely recognised within the industry. In the long run, increasing the employment of certified skilled workers will raise the industry's productivity and enhance its overall competitiveness.

To complement these measures carried out by property developers, construction companies can implement structured apprenticeship programmes within their

organisations to ensure that their employees receive adequate training and experience so that they can become skilled tradesmen sooner rather than later. Structured apprenticeship programmes will:

- Facilitate the adoption of internal certification programmes in the absence of formal external certification. Such internal certification programmes provide customers and employers with assurance about the quality of workers that will be used on a project.
- Ensure that all new workers are seconded by at least one experienced worker. This will raise overall product quality and provide the construction company with a larger pool of skilled workers in a shorter period of time.
- Ensure that knowledge and skills are retained within the company. Even if the company loses its more experienced workers when their work permits expire, these junior apprentices will be ready to fill their shoes.
- Expand abroad. Larger GLCs and construction firms should invest into new markets within the region so as to not stifle the domestic market and to allow other entrepreneurs to emerge. This will also provide companies with much-needed international experience, allowing them to compete more effectively globally.

While these short-term measures may bring noticeable results in a very short period of time, the Government and industry regulators must tackle the challenge for long-term restructuring. Many companies in the sector have not yet shifted away from old management mentalities inherited from their predecessors. Government policy should be aimed at promoting permanent changes in the industry's management practices, to bring about a shift from short-term profitability to long-term investments in technology and talent.

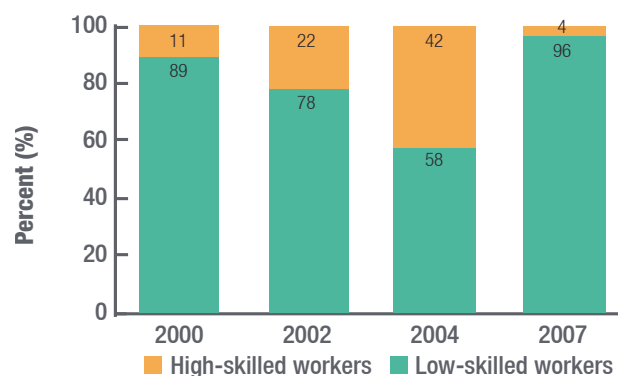
Making IBS a necessary ingredient for larger projects is a good start as it will also help reduce the need

for foreign workers in the construction sector and improve productivity. At present, IBS is already widely used in government projects. The government has made it compulsory for private projects to utilise IBS components to a minimum of 50% by 2015, as stated in the IBS Roadmap, 2011-2015. More needs to be done by agencies to increase IBS adoption in building development projects. For instance, IBS could be made compulsory in a wider range of private projects, including housing.

Further suggestions for policymakers include:

- Implementing a structured programme to attract skilled foreign labour to Malaysia. Currently, the proportion of high-skilled labour in Malaysia is falling (Figure 6.7) as skilled workers prefer to seek opportunities in other foreign labour-importing nations such as Hong Kong, Korea and the Middle East. A structured programme that is implemented in cooperation with Malaysia's foreign counterparts in these countries may be able to bring in higher-skilled workers and raise the industry's work standards.
- Engaging the cooperation of CIDB, SIRIM and SIRIM QAS to design a national certification programme for the construction sector. So far, only safety training for occupational safety and health is mandatory (CIDB's Green Card scheme). A more comprehensive programme would cover all the major disciplines within construction, from bricklaying to glaziers, wiring and plumbing. The Government should then work towards making it compulsory for all foreign workers to pass an assessment according to this national certification standard before they are allowed to start work, similar to Singapore's successful CONQUAS (Construction Quality Assessment) system.
- Spearheading a mutual recognition programme for national certification schemes across ASEAN + 3. The national certification programmes of Malaysia, Singapore and other countries in ASEAN (where available) should ultimately be

Figure 6.7: Proportion of High-Skill vs. Low-Skill Foreign Workers in the Construction Sector, 2000–2007



Source: "Immigration in Malaysia: Assessment of its Economic Effects, and a Review of the Policy and System", the World Bank in Collaboration With ILMIA—Ministry of Human Resources of Malaysia, 2013. Computed from data from the Department of Statistics, Malaysia.

recognised across ASEAN + 3 (Japan, Korea and China) in the same way that training certificates from institutions such as the American Welding Society are recognised worldwide. This will increase employer confidence in the quality of workers they procure through recruitment agencies while allowing immigration authorities across ASEAN + 3 to correctly classify unskilled and skilled workers. Those who possess such certificates should be offered more favourable work permits in addition to higher wages.

- Amending existing building regulations to shift the responsibilities of building planning to builders rather than local authorities. As local authorities are not formally trained as architects or civil engineers, they should only be involved in recording building plans as opposed to providing building approval. Instead, architects, designers and civil engineers should be held accountable for the buildings they construct and allowed to police each other through a peer review process.
- Imposing stricter regulations to reduce the number of foreign workers in the industry. This will force companies to seek efficiencies in advanced construction technologies such as

IBS, which will in turn spur the supply of training programmes in advanced building methods. The vast majority of trainees that undergo these programmes will be Malaysians, and with such a high demand for their services awaiting them, they will be assured of a high-income employment opportunity upon graduation.

- Increasing policy support for the creation of institutions to certify technical skills. This will make it possible to convince more Malaysian talents to train and up-skill in order to enter the construction industry as skilled workers. Compulsory quality assessment requirements based on regionally-recognised national certifications will further support the construction industry's transformation. In the long term, Malaysia's construction industry will eventually find itself using fewer foreign workers to achieve the same amount of work due to the higher skills of the workforce. This will allow them to offer higher wages for better talent, at which point project owners will be able to insist that sub-contractors only use certified workers. This can be implemented in stages starting with smaller private projects and eventually moving on to larger public projects.

The construction industry will also benefit from better affordability and access to construction materials, which will lower barriers to entry for new contractors. To this end, the following measures are recommended:

- Encouraging the establishment of new local plants for the production of timber flooring and porcelain ware. There are currently only two suppliers of timber flooring within Peninsular Malaysia, and only small-scale manufacturers of tiles and other porcelain ware. Malaysia should invest in the requisite technology and processes required to mass-produce such products to reduce the country's dependence on imported goods.

- Streamlining the regulatory process for transporting construction materials across state lines within Malaysia. At present, state authorities govern the resources within each state, and moving sand and other materials from one state to another involves several bureaucratic hurdles.
- Establishing a strategic national stockpile of critical building materials such as sand, granite, cement and steel. This helps ensure that the industry has access to an ample supply of critical materials at all times. The stockpile will also help cushion the industry against price shocks and geopolitical tensions.

Boosting this sector's productivity will demand courage from both business owners and policymakers.

Construction companies now face profit margins that have shrunk to as little as 5%, a result of the spiralling price of land, a crowded marketplace and endless cost-cutting practices. Malaysia has gained the dubious honour of having one of the lowest cost construction sectors in the world, but this has also resulted in poor quality buildings and an over-dependence on cheap foreign labour. To avoid stagnation, companies must invest in new technologies, building methods and higher-skilled workers. The sector's greatest challenge will be to drive the widespread adoption of these building systems in order to create enough lucrative job vacancies to attract Malaysians back into the construction workforce.

Meanwhile, the Government will need to address the rakyat's poor perception of the sector. Young Malaysians must be encouraged to view the sector as one that offers challenging but bright career prospects, particularly within areas that involve knowledge and expertise in advanced building technologies such as IBS, BIM and others.

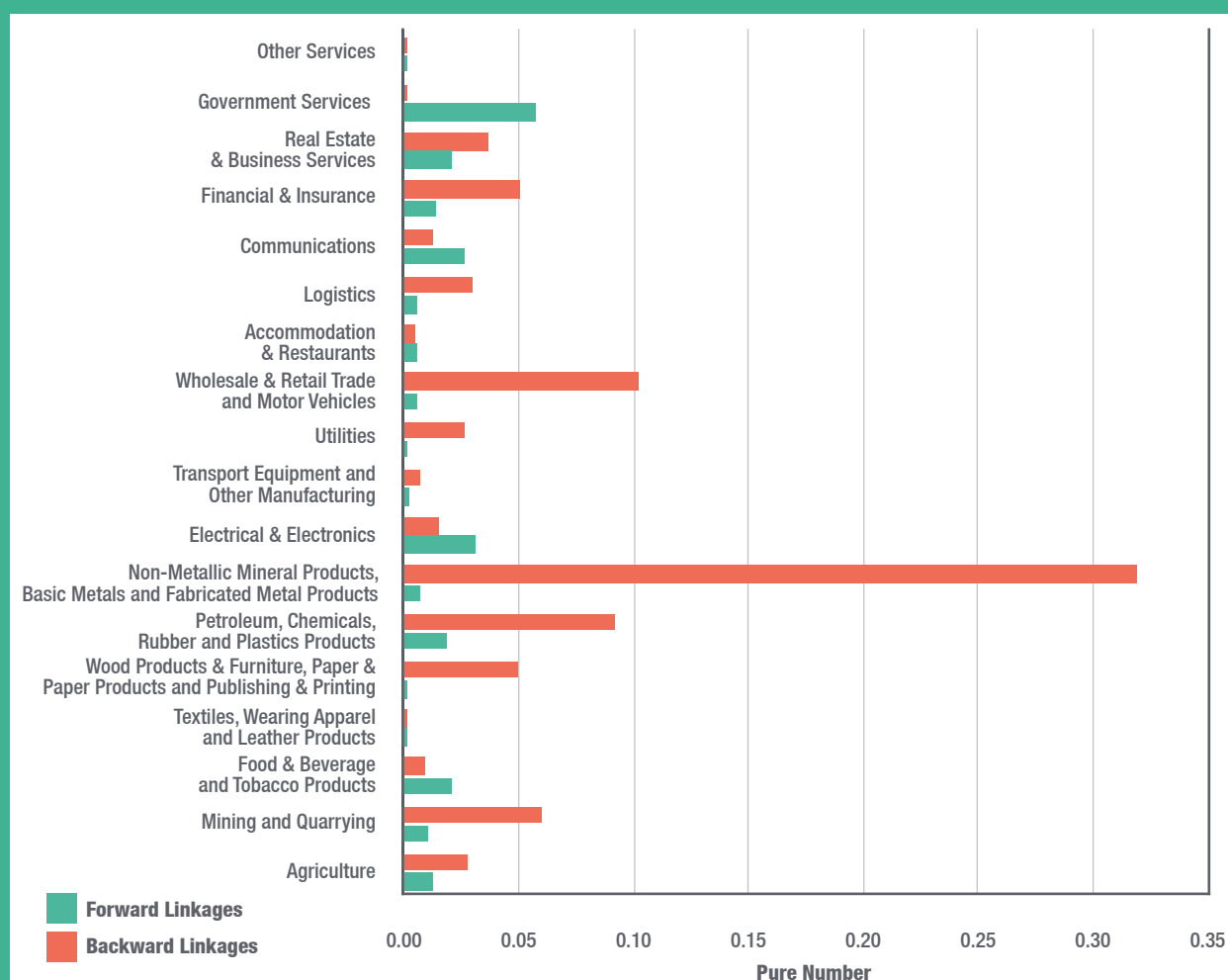
In the endless journey to greater nationwide productivity, it is up to the Government and the industry to work hand-in-hand and make the necessary changes to move the industry forwards.

BACKWARD AND FORWARD LINKAGES OF THE CONSTRUCTION SECTOR

The construction sector's backward-linkages are most prominently linked to the mining and manufacturing industries due to the on-going need for non-metallic mineral products, basic metals, fabricated metal products and construction-related equipment. The forward-linkages of the sector are diverse. However, there is a notably strong tie

to the government services industry. The bulk of expenditure was channelled towards the construction and upgrading of transportation infrastructure such as the MRT. Other projects include agriculture development as well as the construction of new schools and the upgrading of facilities in higher learning institutions.

Backward and Forward Linkages of the Construction Sector



Computed from: Input-Output Table 2010, Department of Statistics, Malaysia





Challenging the **PRODUCTIVITY FRONTIER**

In this section:

- A proposal for nationwide productivity movement
- Recommendation for Government
 - Accelerate Good Regulatory Practice (GRP)
- Recommendations for Industry
 - Strengthen the Roles of Industry Associations and Unions
 - Establish Productivity Centres
 - Develop Productivity Champions
- Recommendation for Enterprise
 - Create excellent organisations using the Business Excellence (BE) Framework

Raising productivity is critical to improving the quality of life for Malaysians. The country needs to identify and capitalise upon opportunities for real performance growth at the national, industry and enterprise levels and catch up with the leading economies at the high productivity frontier.

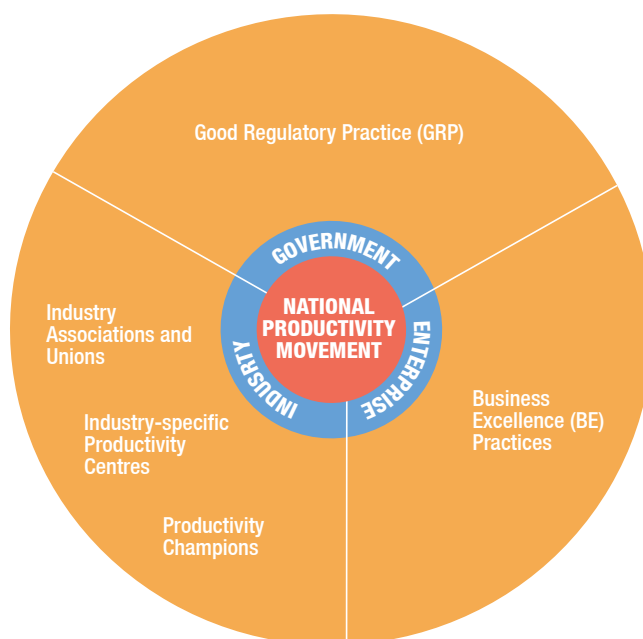
Malaysia's future productivity growth will rely heavily on its ability to leverage the compound effects of incremental gains labour productivity rather than an expanding workforce. This will reduce the country's ability to grow GDP by simply increasing employment, and will instead challenge industries to produce more with less. Malaysia needs nationwide productivity movement for mindset change to foster a culture of productivity into the DNA of all Malaysians. These efforts need to be holistic, integrated and supported by all government, industry and enterprise (Figure 7.1).

NATIONWIDE PRODUCTIVITY MOVEMENT

Challenging the productivity frontier will require all Malaysians to endure significant changes, not just in terms of business processes and organisational structures, but also in terms of their individual performance metrics. Emergency cost-cutting and retrenchment measures offer limited short-term gains that are eventually eroded. Instead, the key to raising national productivity is to inculcate a culture of productivity excellence amongst businesses, workers and public sector employees.

Making this move will require a shift in the way Malaysian businesses and employees conduct their business and work. These can only be achieved through a comprehensive, multi-pronged nationwide productivity movement and supported by government

Figure 7.1: Holistic Approach in Boosting Productivity



good governance practices. It would be a combined effort of multiple ministries, agencies, associations, industries and companies to transform the rakyat's mindset to accelerate country's capacity for innovation and productivity. A study of international best practices show that Singapore offers a successful example of a government-led national productivity movement while Japan and Canada are prime examples national productivity movements led by the private sector.

Malaysia's productivity campaign will also be led by insights and best practices learned from other

productivity campaigns, such as “Way to Go, Singapore!” and institutions from around the world such as “GO Productivity” (Canada).

Malaysia’s National productivity movement has to be supported by the Government through accelerating Good Regulatory Practice (GRP). Industry will play its part by strengthening the role of industry associations and unions, establishing productivity centres and developing productivity champions, especially within target industries. At the enterprise level, the focus will be on creating excellent organisations with the Business Excellence Framework (BEF). To realise this national agenda, several recommendations have been proposed as below.

WAY TO GO, SINGAPORE!

Way to Go, Singapore! is a national outreach campaign to rally Singaporeans to embrace productivity. Through the campaign, employers, workers and the public are shown that everyone can play a role in raising productivity. Although it is a public outreach campaign under the auspices of National Productivity Council (NPC), the initiative is also an example of tripartite cooperation among the government agencies, industries and labour unions.

GET PRODUCTIVE, CANADA!

GO Productivity is a private, not-for-profit organisation formerly known as Productivity Alberta, a government agency. It grew into institution that helps businesses nationwide maximise resources and be more efficient by identifying and address gaps in productivity.

RECOMMENDATION FOR GOVERNMENT

Accelerate Good Regulatory Practice

The implementation of good regulatory practice is essential to ensure the quality and effective delivery of public policy and to have a business-friendly and people-centric organisation. It focuses on good governance, rigorous impact assessment, sufficient consultation and minimal restrictiveness. Successful implementation of GRP will lead to increased trade and investment, job

creation and sustained economic growth. The National Policy on the Development and Implementation of Regulations (NPDIR) supports the modernisation of the national regulatory regime and should be extensively implemented by all regulators at the federal and state levels. The GRP concept and RIA methodology needs to be accelerated at ministries that have not yet implemented it.

A mechanism should be created by a regulatory oversight body for evaluation review in measuring regulatory performance. In order to ensure the quality of regulation, regulatory performance should be evaluated and

THE ESSENCE OF GOOD REGULATION

Good regulation requires good content and process. It also requires regulation to be responsive to the private sector. Regulators and government officials need to have clear regulatory objectives and to understand the characteristics of good regulation, but the business community is uniquely placed to identify when and how things go wrong..

The ideal regulatory intervention should be pro-competitive, commensurate with objectives, and non-discriminatory. Such regulatory interventions should be devised using processes that involve consultation (with all stakeholders and affected parties), coordination (within government), and evaluation (ex- ante and ex post).

CONTENT

Pro-competitive
Commensurate
Non-discriminatory

PROCESS

Consultation
Coordination
Evaluation

RESPONSIVE REGULATION

Responsive regulation stresses that consultative processes are not only critical in the design phase through formal processes such as Regulatory Impact Analysis (RIA). Rather, these processes are also critical on an on-going basis to ensure compliance with regulation and to learn when current interventions are not working or have outlived their usefulness.

Source: Intal, Jr. P., Y. Fukunaga, F. Kimura, P. Han, P. Dee, D. Narjoko (2014), ‘Responsive ASEAN’, in ASEAN Rising: ASEAN and AEC Beyond 2015, Jakarta: ERIA, pp.321-346.

PRINCIPLES FOR REGULATORY QUALITY AND PERFORMANCE

Regulatory policy provides the country with clear guidelines for designing reforms to make the country more productive and competitive. There are four principles and commitments in the country's approach towards achieving this objective:

Principle 1: Government intervention is justified and regulation is the best approach towards addressing defined problems with clearly established objectives.

Principle 2: Stakeholders are effectively consulted and have an opportunity to participate in the regulatory development process.

Principle 3: Impact analyses are conducted to demonstrate that the benefits of proposed regulations outweigh their costs to the rakyat, government and businesses.

Principle 4: Adverse impacts on the capacity of the economy to generate wealth and employment are minimised and no unnecessary regulatory burden is imposed on any party.

reviewed after 3 to 5 years of its implementation. The framework on evaluation review should look at how effectively inputs have been used, how efficient is the process of reviewing the policy, what are the outcomes and impact produced in the implementation in order to ensure the quality of regulation.

In the context of the AEC, the implementation of GRP at regional levels to strengthen regulatory coherence is important to ensure institutional connectivity. In order to adopt similar or complementary practices and principles on institutional behaviour in meeting regulatory objectives across region, it is imperative that GRP be made a priority on the ASEAN agenda as a major deliverable for year 2015.

REGULATORY OVERSIGHT BODY

The Council of Australian Government (COAG) established a cross jurisdictional task force to advise on the development of a new regulatory and competition reform agenda. The Taskforce's report will inform the development of the National Compact on Regulatory and Competition Reform (the "Compact") between governments (Australian, state and territory) and business associations. The task force is to undertake a high-level review of the 16 areas of reform identified by COAG.

RECOMMENDATIONS FOR INDUSTRY

Strengthen the Role of industry associations and Unions

Malaysia's industry associations and unions are in a very good position to take on a more active role in driving productivity growth. Although many of the country's industry associations operate more like pressure groups right now, they could become a significant benefit to the national productivity movement if they refocused their energies on helping members raise their productivity through training, learning and networking. The larger and more well-established associations can help the Government design strategies to enhance productivity within their industries. Unions also play a key role in building a culture of individual excellence, changing employees' attitudes towards productivity initiatives and encouraging employees to work with employers rather than against them.

Establish Productivity Centres

Sector-level productivity centres that focus their energies on the specific priorities within their respective industries

IRON KOREA

The success of the Korea Machine Tool Manufacturers' Association (KOMMA) in advancing Korean machine tool enterprises serves as an illustration of what can be accomplished by a proactive and committed industry association.

KOMMA has targeted to make Korea one of the world's top four machine tool industry nations with annual production of USD18 billion, including USD5 billion from overseas production, by 2020. To support the goals of its Global Vision 2020, KOMMA's activities include promoting market opportunities through exhibitions as well as overseas trade missions; engaging in international cooperation and collaboration; building and operating networks for information exchange and policy development; initiatives for upgrading technical competitiveness of members, including seminars on trends and prospects for machine tools and robots; and publicity and publication projects related to the machine tool industry.

can have a big impact in boosting productivity. As an example, Singapore has 16 productivity centres dedicated to championing productivity across a wide range of industries such as hospitality, food, retail and manufacturing.

Establishing similar productivity centres in Malaysian industries will not require a new institution or Government mandate. Rather, these centres can be set up under the purview of existing trade bodies and industry associations and become their productivity champions. The sole aim of these productivity champions would be to identify opportunities for boosting productivity within their respective industries and to help industry players take advantage of them. These centres will also be able to contribute valuable and more meaningful input to the national productivity movement and thus influence policy-making in a much broader sense. Over time, these activities will give the Government more insight into the needs of each industry and allow it to formulate more effective policies to boost growth.

PRODUCTIVITY CENTRE FOR HOTELIERS IN SINGAPORE

The Hotel Productivity Centre (HPC) is a dedicated competency unit set up within Singapore Productivity Centre (SPC) to provide dedicated productivity assistance to the hotel industry. It offers a comprehensive range of services and solutions customised to the needs and challenges faced by hotels to raise productivity effectively with a lean workforce.

Develop Productivity Champions

There is no one-size-fits-all remedy for improving Malaysia's productivity growth. Only industry insiders can properly assess the dynamics and needs within their respective industries and, with the help of productivity experts, make recommendations for strengthening their respective productivity ecosystems. The top-down approach to boosting national productivity must go hand-in-hand with a bottom-up analysis of individual industries.

WSQ CERTIFIED PRODUCTIVITY AND INNOVATION MANAGER (CPI MANAGER)

The Singapore Workforce Development Agency (WDA) and Singapore Manufacturing Federation (SMF) jointly developed the Workforce Skills Qualifications (WSQ) Certified Productivity and Innovation Manager for professionals, manager, consultants and project teams. The programme trains and develops Productivity Champions or change agents within companies to implement productivity and business innovation tools and initiative at the enterprise level.

RECOMMENDATIONS FOR ENTERPRISES

Create Excellent Organisations

Efforts to raise awareness of productivity by the Government, industry associations and unions will ultimately depend on how enterprise and workers themselves respond to these initiatives. Creating excellent organisations requires a concerted effort to instil a culture of excellence in the workforce, develop talents and to institute the ability to adapt to changing technologies to offer innovative solutions to customers.

The Malaysia Business Excellence Framework (MBEF) is a holistic standard design to assist Malaysian organisations achieve excellence. This tool offers organisations the opportunity to strengthen their management practices, systems and capabilities while improving overall organisational productivity. The framework allows businesses to sustain competitiveness through the adoption of best practices in leadership, planning, information, managing customers, people, processes and business results.

Best Practices in Managing People

Invest in Meeting Talent Needs

Talented employees are the best advantage any organisation can have, as they drive know-how and innovation in organisations. Talent Management focuses on attracting, developing and retaining the most skilled and experienced organisational talent in order to help

a company remain ahead of its competitors. Talent Management also challenges a company to find ways to retain its best talent in the face of high employee mobility and foreign competition.

STEADFAST IN DRIVING PRODUCTIVITY IMPROVEMENTS

Maybank’s initiatives towards higher employee engagement and increasing emphasis on building a culture of productivity with implementation of key productivity uplift initiatives have resulted in productivity trending positively year–on–year. Group–wide improvement in productivity was 1.2% higher in 2014 compared to 2013. Cost to income ratio also improved at 48.9% in 2014.

Maybank’s GO Ahead Employee Value Proposition encapsulates its humanising mission to retain and attract talents. Employees are encouraged to take ownership of their development by upgrading their skills, taking on expanded responsibilities, cross rotational roles and international assignments. Staff experiencing international roles and/or assignments increased from less than 20 to over 100 now at any point of time. Its robust talent management programme harnesses the intellectual capital of its diverse workforce to give the company a competitive edge, resulting in an increase from 54 to over 800 now featuring in succession pipeline pools. This framework increases the readiness of the talent and leadership pool as well as guides career development within the Group. Across the different levels, employees are nurtured through global best–in–class learning and development programmes.

As a result, for 2014, Maybank’s succession realisation for mission critical positions exceeded its target of 60% realisation with an achievement of 70%. Regrettable loss was 14% in 2014 compared to 17% in 2013 and over 40% in 2008. Key retention rate improved from under 40% in 2008 to 86% in 2014. International mobility increased to over 130 talents in 2014 compared to just 51 talents in 2012.

Best Practices on Leadership

Visionary Leaders

Leaders are a key differentiator when it comes to pursuing growth in the face of a slowing global economy. Strong leaders can inspire workforces and improve organisational agility by focusing the organisation on

its customers and inculcating a spirit of innovation and entrepreneurship among employees.

LEADERSHIP BY EXAMPLE

The leaders at Robert Bosch Malaysia are strongly committed to promoting and embracing the company’s philosophy, vision, mission and core values. They initiated various change management and improvement programs to align employee behavior to the desired values. One example of such change program is the Change for Excellence & Speed initiative, which promotes excellence in leadership, quality and cost. The holistic change management program has resulted in a positive impact on RBMA’s productivity and sales turnover.

Productivity has been above reasonable targets since 2012 while sales turnover has increased by 35%.

Best Practices in Process Improvement

Creating Value Through LEAN

Being a lean enterprise means eliminating non- value added activities along the value stream towards an efficient system of production that eliminates waste, reduces delays and costs and improves quality and productivity at the same time.

MAXIMISE VALUE ELIMINATE WASTE

BUJ Technology Enterprise Sdn Bhd specialises in waste collection services. With the implementation of lean management, the company has managed to eliminate waste and increase operational efficiency. The impact of the project has improved their lead time, work processes, removed non– value added activities and reduced the cost of services.

IMPACT OF ADOPTING LEAN PROCESS MANAGEMENT AT BUJ TECHNOLOGY		
DIRECT COST SAVINGS	INDIRECT COST SAVINGS	BUSINESS DEVELOPMENT
Collection Projects: RM52,450 Cleaning Projects: RM22,877 Workshop Projects: 23,000	RM362,980 from penalties avoided Average rate of fines slashed from 10% in 2012 to 0.01% in 2014	Collection Projects: up 23.7% Cleaning Projects: up 2.54% Workshop Projects: 31.75%

Best Practices in Customer-Focused Delivery

Creating Service Excellence

Service Excellence is essentially about crafting an exceptional service experience for customers so as to achieve a sustainable competitive advantage over competitors. The gap arising from employees or organisations' inability to deliver the intended service experience creates the need to address the issue on instituting Service Excellence when designing the service delivery.

CREATING THE "WOW" EFFECT

One company that excels at customer services is Sunway Integrated Properties (SIP). It shares information through online portals dedicated to the needs of its customers and suppliers. The company practices the KANO Model at various stages of its sales cycle to upkeep the services via designing customer-centric initiatives and paying great attention to details in creating the "WOW" effect.

The Kano model comprises of Must Have, Performance and Delighters. Must Have are the attributes customers view as basic. Performance are the customers' wants; their needs are expressed, and the customer satisfaction is proportional to the level of performance of what is implemented, while Delighters are about customers' unconscious needs or current unknown demand.

Under the company's Service Excellence Programme, SIP aims to create memorable touch points through the delivery of quality products and services that are complemented by the company-wide 3 WELL's (Welcome, Well Discipline, Well Groomed) policy.

Best Practices in Sharing Information

Leveraging on information

Companies that focus on providing superior customer service need to provide clients with 24-hour global access to their information. The challenge for organisations is to make this information available in customer-friendly formats regardless of where the data is housed. The information also needs to be accessible on

any type of device, including wireless mobile computing devices.

New opportunities for business emerge rapidly in today's complex business environment, thus challenging a company's ability to respond successfully and quickly. A company's IT infrastructure must be flexible, scalable and ready for its future needs.

INFORMATION IS POWER

Mega Fortris (MFM) has a good system for sourcing, storing, sharing and disseminating data, with all information password-protected and all employee activities monitored by Microsoft System Centre 2012. The IT department is a Gold certified partner for ISV Competency based on the certification's seven competency tests. The department's in-house software, MegaFasTrack, is used to select and process relevant information for the decision-making process. Each department has access to key data comprising business information, financial information, operations information and staff information, covering both internal and external aspects.

Department managers and leaders make use of findings and market-relevant information from training sessions, conferences and exhibitions. The information is also shared across 24 offices and distributors through the Mega Fortris Group Annual Conferences.

SHARING IS CARING

KPJ Ipoh Specialist Hospital successfully developed an in-house electronic Bed Management System (BMS) which has since been adopted by all other hospitals in the KPJ group. It came about from the feedback of customers and contribution of ideas from the staff. This system manages admission and discharge processes at the wards, thus reducing waiting time for clients. It also enables the doctors, nurses and other caregivers to get online status updates on beds and patients on a real time basis.

With the introduction of the Bed Management System and Standard People Practice, customer satisfaction scores at KPJ Ipoh improved in 2013, while the number of complaints dropped by 20%. The success of the BMS software shows the hospital's commitment in creating and sustaining a knowledge-sharing culture.



APPENDICES

In this chapter:

- What is productivity?
- Measuring productivity
 - Partial factor productivity measure
 - Decomposition of labour productivity growth
 - Total Factor Productivity (TFP) measure
 - Productivity indicators
- Productivity data revision
- Productivity statistics by manufacturing sub-sector
- Contribution by services sub-sector
- Productivity statistics by services sub-sector
- Incentives to boost productivity 2014/2015
- Acronyms and abbreviations
- Contact MPC

WHAT IS PRODUCTIVITY?

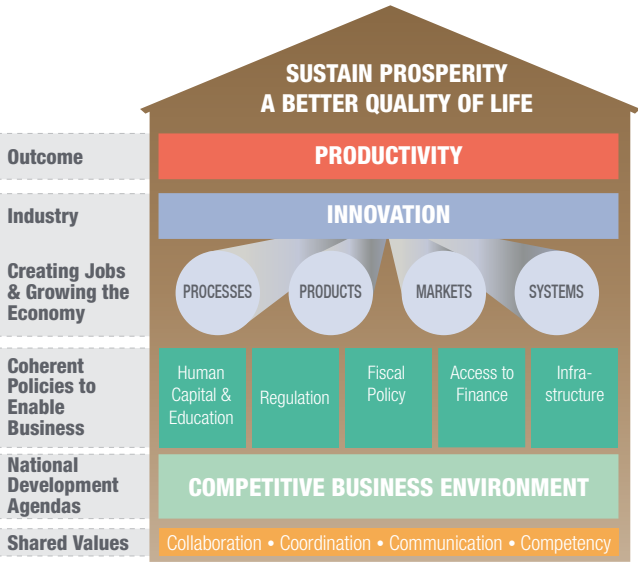
The Productivity Framework is based on shared Malaysian values that drive national development agendas such as the Economic Transformation Programme, the Government Transformation Plan and the Malaysia Plans. These initiatives form the policy and regulatory foundations of business in terms of human capital and education, regulation, fiscal policy, access to finance and infrastructure.

Policies and initiatives are required to strengthen the foundations of human capital and education, regulation, fiscal policy, access to finance and infrastructure to enhance the country’s competitive business environment. This competitive environment is important to create more added value for enterprises, increase employment opportunities, attract investment and talent and create more revenue. It is crucial that the foundation itself encourage businesses to continuously improve their products, processes and systems as these will lead to greater markets through innovation.

Most innovation is incremental and involves a continuous process of applying new techniques, skills or technologies to the business and keeping what works. In this way, production costs are reduced incrementally over time, while product and service quality is improved in response to changing market needs. The innovation is then diffused throughout the industry as competitors copy the practices of these high productivity companies, thereby contributing to economy-wide improvements in productivity. The net result is a real gain in productivity growth.

Innovation and its diffusion is therefore a fundamental aspect of accelerating productivity growth. Successful innovation depends upon the support of sound government policies and regulations as the foundation of productivity. With these elements in place and working in

PRODUCTIVITY FRAMEWORK



HOW WILL HIGHER PRODUCTIVITY BENEFIT THE COUNTRY?

-  Expands capital investment, upgrades technical capabilities of businesses and improves industry competitiveness
-  Enhances the country's competitiveness, expands its export base and attracts more foreign investment
-  Increases savings and lowers prices of goods and services
-  Ensures a higher standard of living by reducing the effects of inflation, creating more employment opportunities and eliminating social conflict as goods and services become more affordable
-  Develops personal skills and capabilities and leads to higher overall wages and salaries, improved working conditions, better job security and an improved sense of well-being

tandem with each other, Malaysia will be able to sustain its prosperity and provide a better quality of life for all its citizens.

APPENDIX A.1: MEASURING PRODUCTIVITY

Terminology and Definition

Productivity is the relationship between the amount of output produced and the amount of input used to produce the output. Higher productivity means achieving more with the same or lesser amount of input resources. An increase in productivity will lead to benefits such as higher standard of living, enhanced competitiveness and better quality of life.

Methods to Measure Productivity

Productivity may be measured in two ways: the ratio of output to one input only, or the ratio of output to more than one input. The method involving only one input is called the partial factor productivity measure, while the method involving more than one factor input is called the multi-factor productivity measure or total factor productivity (TFP) measure. Both output and inputs are commonly expressed in monetary terms.

APPENDIX A.1.1: PARTIAL FACTOR PRODUCTIVITY MEASURE

The partial factor productivity measure is the ratio of output to one type of input. Measures of output include gross domestic product (GDP), added value and monetary value of production, while measures of inputs include total employed persons, total man-hours worked, capital or fixed assets, labour cost, energy and bought-in materials and services. Examples of partial productivity measures are labour productivity (the ratio of output to labour input) and capital productivity (the ratio of output to capital input).

Variables	Description
Added Value	Added value measures the wealth generated by the collective efforts of those who work in an enterprise (the employees) and the capital providers (investors and shareholders). Added value is different from sales revenue or value of production because it does not include the wealth created by the suppliers to the enterprise. There are two ways to calculate added value: i) Addition Method This is called the wealth distribution method. Added Value = Labour Cost + Interest + Tax + Depreciation + Profit It is called wealth distribution because the added value created is used to pay those who have contributed to its creation in terms of wages and salaries (labour cost) for the employees, interest for capital providers, taxes to the Government, depreciation for capital equipment usage and profits to the owners.

APPENDIX A.1: MEASURING PRODUCTIVITY (con't)

Variables	Description
ii) Subtraction Method This is called the wealth creation method. $\text{Added Value} = \text{Total Output} \text{ less } \text{Bought-In Materials and Services (BIMS)}$ In order to produce goods or services, a company has to purchase the necessary raw materials and other inputs. The difference between the total value of output and total cost of inputs i.e. all inputs and services bought from another company is called added value.	
Total Output	Ex-factory value (Sales - Opening Stocks: finished goods + Closing Stocks: finished goods - Carriage outwards - Commission to selling agents - Tax on products) + Income from industrial services rendered + Value of sales (from goods purchased for resale without further processing) + Value of other industrial work done + Income from other output + Professional fees received + Commission and brokerage earned + Capital expenditure for built / Self-produced + Closing Stocks: goods in process - Opening Stocks: goods in process + Closing Stocks: goods purchased for resale - Opening Stocks: goods purchased for resale
Bought-In Materials And Services (BIMS)	Cost of raw materials + Packing materials and containers + Materials used for repairs and maintenance + Factory requisites, and stationery and office supplies + Utility, fuels, lubricants and gas purchased + Cost of goods sold (purchased for resale without undergoing further processing) + Payments for processing work done by others on materials supplied by company and payments for current repairs and maintenance work done by others on company's fixed assets + Payments for non-industrial services
Employed Persons (Average for the Period)	All categories of employees, including working directors/proprietors/partners, unpaid family workers and part-time workers.
Labour Cost	Wages and salaries (including commissions, bonuses and benefits), remuneration paid to working directors/proprietors/partners, and EPF/SOCSO paid by employers.
Fixed Assets (Average for the Period)	All physical assets namely transport equipment, computers, machinery and equipment, and furniture and fittings.

APPENDIX A.1: MEASURING PRODUCTIVITY (*con't*)

APPENDIX A.1.2: DECOMPOSITION OF LABOUR PRODUCTIVITY GROWTH

The Solow-Swan model (Solow 1956, Swan 1956) is the starting point for most theoretical analyses of economic growth. Its main conclusion is that the accumulation of physical capital and labour cannot drive sustained, long run growth in output per person, and that this is instead driven by the rate of technological change (productivity growth). The model assumes that the production function takes the form:

$$Y = f(A, K, L)$$

Where A represents technology, and K and L represent capital and labour, respectively. A is chosen as an input to the model, rather than being determined within it, and can be interpreted in terms of the stock of knowledge or innovation, disembodied education and skills, the strength of property rights, the quality of infrastructure and cultural attitudes to entrepreneurship and work. New growth theories build on the Solow-Swan concepts so that technological growth, human capital, and institutions are determined within the model (Solow 2005). Microeconomic theory has additional insights regarding a country's position on its production possibilities frontier, which represents the most efficient means of producing a range of goods and services. These concepts suggest ways by which a country can improve its economic growth.

Firstly, a country can move to a more optimal position on its domestic production possibilities frontier by changing the combination of products it produces for a given set of inputs. Secondly, a country can 'catch up' to the global production possibility frontier, by adopting more efficient processes and technologies that have been developed elsewhere. Finally, a country that is producing optimally on the global production possibilities frontier can push that frontier outward, through innovation.

TFP indicates the efficiency with which inputs are being used in the production process, and includes pure technological change, A , along with changes in returns to scale. Labour productivity (LP) measures the level of output per unit of labour input (such as employee and hours worked). The relationship between labour productivity growth and TFP growth is:

$$LP\ growth = TFP\ growth + a\ contribution\ from\ growth\ in\ capital\ deepening$$

In practice, measured productivity performance is influenced by all the factors that affect the level of production and the use of labour and capital. This includes competition, business cycles, trade, financial markets, regulation, technological change, weather, population growth and ageing, education, infrastructure, geography and structural change. Some of these factors are within the influence of government policy and reform to varying degrees, while others are not.

APPENDIX A.1: MEASURING PRODUCTIVITY (con't)

APPENDIX A.1.3: TOTAL FACTOR PRODUCTIVITY (TFP) MEASURE

The Total Factor Productivity (TFP) measure is the ratio of total output to the sum of all input factors. It measures the efficiency of the utilisation of all inputs to produce output.

Formerly, the growth accounting technique was utilised to measure TFP, where inputs were limited to labour and capital. But the influence of knowledge-based economic factors in today's globalised economy has necessitated a new approach in measuring TFP known as KLEMS. The KLEMS methodology utilises more broadly defined input factors in which intermediate inputs such as energy and bought-in materials and services are included in the measurement. Both labour and capital input factors are now decomposed into more detailed segments to enable more detailed analysis in terms of labour quality and quantity for labour input, while capital input is now decomposed into ICT and non-ICT capital.

Model Specification in Deriving Sources of Long-Term Economic and Productivity Growth

The production functions are assumed to be separable in these inputs as the starting point:

$$Y_j = g_j(Y_{ij}) = f_j(K_j, L_j, X_j, T) \quad (1)$$

Where Y is output, K is an index of capital service flow, L is an index of labour service flows and X is an index of intermediate inputs, which consists of the intermediate inputs purchased from the other domestic industries and imported products. Under the assumptions of constant returns to scale and competitive markets, the value of output is equal to the value of all inputs as can be expressed as:

$$P_j^Y Y_j = P_j^K K_j + P_j^L L_j + P_j^X X_j \quad (2)$$

Where P_j^Y denotes the price of output, P_j^X denotes the price of intermediate inputs, P_j^K denotes the price of capital services and P_j^L denotes the price of labour services. Under the standard assumption of profit maximizing behavior, competitive markets, such that factors are paid their marginal product, and constant returns to scale, we can define TFP growth ($\Delta \ln t_j$) as follows:

$$\Delta \ln t_j = \Delta \ln Y_{jt} - \bar{v}_{jt}^X \Delta \ln X_{jt} - \bar{v}_{jt}^K \Delta \ln K_{jt} - \bar{v}_{jt}^L \Delta \ln L_{jt} \quad (3)$$

Growth of TFP is derived as the real growth of output minus a weighted growth of inputs where $\Delta X = X_t - X_{t-1}$ denotes the change between year $t-1$ and t , and $\bar{v}_{jt}$ with a bar denoting period averages and $\bar{v}$ is the two period average share of the input in the nominal value of output. The value share of each input is defined as follows:

$$v_{jt}^X = \frac{P_{jt}^X X_{jt}}{P_{jt}^Y Y_{jt}}; \quad v_{jt}^L = \frac{P_{jt}^L L_{jt}}{P_{jt}^Y Y_{jt}}; \quad v_{jt}^K = \frac{P_{jt}^K K_{jt}}{P_{jt}^Y Y_{jt}} \quad (4)$$

APPENDIX A.1: MEASURING PRODUCTIVITY (con't)

The assumption of constant returns to scale implies that $v_{jt}^X + v_{jt}^L + v_{jt}^K = 1$ and allows the observed input shares to be used in the estimation of TFP growth in equation (3). Rearranging (4) yields the standard growth accounting decomposition of output growth into the contribution of each input and TFP (denoted by A^Y):

$$\Delta \ln Y_{jt} = \bar{v}_{jt}^X \Delta \ln X_{jt} + \bar{v}_{jt}^K \Delta \ln K_{jt} + \bar{v}_{jt}^L \Delta \ln L_{jt} + \Delta \ln A_{jt}^Y \quad (5)$$

where the contribution of each input is defined as the product of the input's growth rate and its two period average revenue share.

In order to decompose growth at higher levels of aggregation, a more restrictive industry value-added function was defined, which gives the quantity of value added as a function of only capital, labor and time as

$$V_j = g_j(K_j, L_j, T) \quad (6)$$

Where V_j is the quantity of industry value added. Value added consists of capital and labour inputs, and the nominal value is:

$$P_j^V V_j = P_j^K K_j + P_j^L L_j \quad (7)$$

Where P^V is the price of value added. Under the same assumptions as above, industry value added growth can be decomposed into the contribution of capital, labour and TFP (A^V).

$$\Delta \ln V_{jt} = \bar{w}_{jt}^K \Delta \ln K_{jt} + \bar{w}_{jt}^L \Delta \ln L_{jt} + \Delta \ln A_{jt}^V \quad (8)$$

where $\bar{w}$ is the two period average share of the input in nominal value added. The value share of each input is defined as follows:

$$w_{jt}^L = (P_{jt}^V V_{jt})^{-1} P_{jt}^L L_{jt} ; \quad w_{jt}^K = (P_{jt}^V V_{jt})^{-1} P_{jt}^K K_{jt} \quad (9)$$

$$\Delta \ln V_{jt} = \frac{1}{\bar{v}_{jt}^V} \left\{ \Delta \ln Y_{jt} - (1 - \bar{v}_{jt}^V) \Delta \ln X_{jt} \right\} \quad (10)$$

Output and Intermediate Input Accounts

This methodology was introduced by Jorgenson, Gollop and Fraumeni (1987). We define the quantity of output in industry j as an aggregate of M distinct outputs using the Tornqvist index as:

$$\Delta \ln Y_{jt} = \sum_{i=1}^m \bar{v}_{ijt}^Y \Delta \ln Y_{ijt}$$

$\bar{v}_{jt}$ with a bar denoting period averages and $\bar{v}$ is the two period average share of product i in the nominal value of output. The value share of each product is defined as follows:

$$v_{ijt}^Y = (\sum_i p_{ijt}^Y Y_{ijt})^{-1} p_{ijt}^Y Y_{ijt}$$

With P_{ij}^Y = the basic price received by industry j for selling commodity i .

The intermediate input quantity index for industry j is defined analogously by:

$$\Delta \ln X_{jt} = \sum_i \bar{v}_{ijt}^X \Delta \ln X_{ijt}$$

where $v_{ijt}^X = (\sum_i p_{ijt}^X X_{ijt})^{-1} p_{ijt}^X X_{ijt}$ with p_{ij}^X = the price paid by industry j for using product i .

Labour Accounts

The aim of the labour account is to estimate total labour input so that it reflects the actual changes in the amount and quality of labour input over time. In short, in this method, the labour force is subdivided into types based on various characteristics, in this case age, gender and educational attainment. It is further assumed that the flow of labour services for each labour type is proportional to hours worked, and workers are paid their marginal productivities. Hence the corresponding index of labour services input L is a translog quantity index of individual types, indexed by l , and given by:

$$\Delta \ln L_t = \sum_l \bar{v}_{l,t} \Delta \ln H_{l,t}$$

where weights are given by the average shares of each type in the value of labour compensation $\bar{v}_{l,t} = \frac{1}{2} [v_{l,t} + v_{l,t-1}]$ and $v_{l,t} = (\sum_l p_{l,t}^L H_{l,t})^{-1} p_{l,t}^L H_{l,t}$ with $p_{l,t}^L$ the price of one hour work of labour type l .

Capital Accounts

For the measurement of capital services we need capital stock estimates for detailed assets and the shares of capital remuneration in total output value.

The most commonly employed approach in capital stock measurement is the Perpetual Inventory Method (PIM). In the PIM, capital stock (A) is defined as a weighted sum of past investments with weights given by the relative efficiencies of capital goods at different ages according to (industry subscripts are suppressed for convenience):

$$A_{k,t} = \sum_{\tau=0}^{\infty} \theta_{k,\tau} I_{k,t-\tau}$$

APPENDIX A.1: MEASURING PRODUCTIVITY (con't)

with $A_{k,t}$, the capital stock for a particular asset type k at time t , $\theta_{k,t}$ the efficiency of a capital good of age t relative to the efficiency of a new capital good and $I_{k,t-\tau}$, the investment in period $t-\tau$. Hence with a given constant rate of depreciation δ , different for each asset type, $\theta_t = (1-\delta)^t$ and it follows that the capital stock of a particular asset k at time t , $A_{k,t}$ is given by

$$A_{k,t} = \sum_{\tau=0}^{\infty} (1-\delta_k)^\tau I_{k,t-\tau} = (1-\delta_k) A_{k,t-1} + I_{k,t}$$

For the aggregation of capital services over the different asset types it is assumed that aggregate services are a translog function of the services of individual assets. It is further assumed that the flow of capital services for each asset type is proportional to its stock, independent of time. Hence the corresponding index of capital input K is a translog quantity index of individual assets in a particular industry given by:

$$\Delta \ln K_t = \sum_k \bar{v}_{k,t} \Delta \ln A_{k,t}$$

where weights are given by the average shares of each component in the value of capital compensation $\bar{v}_{k,t} = \frac{1}{2} [v_{k,t} + v_{k,t-1}]$ and $v_{k,t} = (\sum_k p_{kt}^K A_{kt})^{-1} p_{kt}^K A_{kt}$ with p_{kt}^K the price of capital services from asset type k .

In equilibrium, an investor is indifferent between two alternatives: buying a unit of capital at investment price p_{kt}^I , collecting a rental fee and then selling the depreciated asset for $(1-\delta_k)p_{k,t+1}^I$ in the next period, or earning a nominal rate of return, i_t on a different investment opportunity. The equilibrium condition can be rearranged, yielding the familiar cost-of-capital equation:

$$p_{k,t}^K = p_{k,t-1}^I i_t + \delta_k p_{k,t}^I - [p_{k,t}^I - p_{k,t-1}^I] \quad \text{or} \quad p_{k,t}^K = r_{k,t} p_{k,t-1}^I + \delta_k p_{k,t}^I$$

The nominal rate of return can be estimated as follows:

$$i_{j,t} = \frac{p_{j,t}^K K_{j,t} + \sum_k [p_{k,j,t}^I - p_{k,j,t-1}^I] A_{k,j,t} - \sum_k p_{k,j,t}^I \delta_k A_{k,j,t}}{\sum_k p_{k,j,t-1}^I A_{k,j,t}}$$

Where the first term $P_{j,t}^K K_{j,t}$ is the capital compensation in industry j , which under constant returns to scale can be derived as value added minus the compensation of labour.

APPENDIX A.2: PRODUCTIVITY INDICATORS

Labour Competitiveness

Competitiveness in terms of labour cost indicates the comparability of the industry in producing products or services at the lowest possible labour cost.

Ratio	Unit	What it Tells
i) Added Value Per Labour Cost $= \frac{\text{Added Value}}{\text{Labour Cost}}$	Pure Number	Indicates how competitive the enterprise is in terms of cost. A low ratio indicates high labour cost which does not commensurate with added value creation.
ii) Labour Cost Per Employee $= \frac{\text{Labour Cost}}{\text{No. of Employees}}$	Ringgit Malaysia (RM)	Measures the average remuneration per employee. A high ratio means high returns to individual workers and vice-versa.
iii) Unit Labour Cost $= \frac{\text{Labour Cost}}{\text{Total Output}}$	Pure Number	Indicates the proportion of labour cost to total output. A high ratio indicates high labour costs. This could be due to a labour shortage and lack of skilled labour, or indicative of a poor labour mix. It could also be due to high labour turnover.

Labour Productivity

Labour productivity is one way of gauging the productivity performance of an industry. The most commonly used indicator is Added Value per Employee.

Ratio	Unit	What it Tells
i) Added Value Per Employee $= \frac{\text{Added Value}}{\text{No. of Employees}}$	Ringgit Malaysia (RM)	Reflects the amount of wealth created by the company relative to the number of employees it has. It is influenced by: • Management efficiency • Work attitudes • Price effects • Demand for the company's products A high ratio indicates the favourable effects of labour factors in the wealth creation process. A low ratio means unfavourable working procedures such as: • High prices of bought-in materials and services (BIMS) • Time and/or material wastage • Inadequate salary or wage rates
ii) Total Output Per Employee $= \frac{\text{Total Output}}{\text{No. of Employees}}$	Ringgit Malaysia (RM)	The size of output generated by each employee of the enterprise.

APPENDIX A.2: PRODUCTIVITY INDICATORS (*con't*)

Capital Productivity

Capital productivity indicates the degree of utilisation of fixed assets and how efficient these assets are being utilised. It is defined as Added Value generated per Ringgit of Fixed Assets.

Ratio	Unit	What it Tells
Added Value Per Fixed Asset $= \frac{\text{Added Value}}{\text{Fixed Assets}}$	Pure Number	Indicates the degree of utilisation of tangible fixed assets. A high ratio indicates that assets are being efficiently utilised. A low ratio reflects poor asset utilisation.

Capital Intensity

Capital intensity measures the amount of fixed assets allocated to each employee. It is also known as Fixed Assets per Employee or simply capital-to-labour ratio. This ratio measures whether an industry is relatively capital-intensive or labour-intensive.

Ratio	Unit	What it Tells
Fixed Assets Per Employee $= \frac{\text{Fixed Assets}}{\text{No. of Employees}}$	Ringgit Malaysia (RM)	Indicates whether an enterprise adopts a capital-intensive or labour-intensive policy. A high ratio indicates high capital intensity. A low ratio indicates that the enterprise is dependent on labour-intensive methods or that there is low technological input.

APPENDIX B: PRODUCTIVITY DATA REVISION

This publication (Productivity Report 2014/2015) presents annual productivity performance for the years 2010 to 2014 whereby data for 2013 have been revised. The productivity growth for year 2013 was revised from 2.3% to 0.9% based on updated number of employees figure from the Department of Statistics, Malaysia (DOSM). In the previous year publication's (Productivity Report 2013/2014), number of employees was based on average employment for the period of January-June 2013.

APPENDIX C: PRODUCTIVITY STATISTICS BY MANUFACTURING SUB-SECTOR, 2014

Sub-Sector	Productivity		Labour Cost per Employee		Unit Labour Cost		Capital Productivity		Capital Intensity	
	RM	Growth (%)	RM	Growth (%)	Pure Number	Growth (%)	Pure Number	Growth (%)	RM	Growth (%)
Food Products	67,002	5.33	23,626	5.63	0.0399	0.87	1.4092	3.37	47,546	1.89
Beverages	73,667	-0.03	29,292	5.22	0.0600	4.89	1.3384	-0.44	55,043	0.42
Tobacco Products	142,579	-7.51	61,641	6.56	0.1254	12.33	1.0989	-6.26	129,749	-1.34
Textiles	57,548	4.87	29,594	5.63	0.1208	0.88	0.7185	3.26	80,095	1.57
Wearing Apparel	21,382	3.49	18,468	4.57	0.2365	1.36	3.0998	5.04	6,898	-1.47
Leather and Related Products	37,976	2.14	29,146	6.52	0.2184	4.01	3.9353	2.29	9,650	-0.15
Wood and Products of Wood and Cork, Except Furniture; Articles of Straw and Plaiting Materials	37,810	11.39	18,188	3.86	0.1071	-5.43	1.1017	5.66	34,320	5.43
Paper and Paper Products	41,003	-2.07	21,340	-8.93	0.1178	-5.60	0.7590	5.19	54,025	-6.90
Printing and Reproduction of Recorded Media	77,168	-1.75	26,970	-2.84	0.0700	-1.46	2.1252	2.73	36,310	-4.36
Refined Petroleum Products	4,187,592	4.26	104,146	6.19	0.0066	1.82	2.1310	2.54	1,965,094	1.68
Chemicals and Chemical Products	234,377	4.19	46,291	2.47	0.0483	-2.05	0.8428	2.16	278,109	1.99
Basic Pharmaceutical Products and Pharmaceutical Preparations	97,038	13.61	31,156	14.58	0.1049	1.29	2.3596	6.85	41,124	6.33
Rubber and Plastic Products	49,992	-5.24	26,314	-3.48	0.1066	1.63	1.2550	-2.47	39,834	-2.85
Other Non-Metallic Mineral Products	89,230	2.56	33,402	4.34	0.0957	2.35	0.6049	1.42	147,525	1.13
Basic Metals	88,648	-4.32	39,562	-5.76	0.0710	-1.76	0.9862	-5.01	89,886	0.73
Fabricated Metal Products, Except Machinery and Equipment	59,574	3.27	29,159	4.10	0.1141	1.36	2.0036	2.70	29,733	0.55
Computer, Electronic and Optical Products	123,455	11.69	34,609	1.67	0.0563	-8.30	2.3228	6.61	53,148	4.77
Electrical Equipment	67,634	8.05	31,031	6.21	0.0846	-1.37	2.5959	5.07	26,054	2.84
Machinery and Equipment n.e.c.	90,546	-0.98	41,794	2.78	0.1152	3.17	2.4287	-2.07	37,282	1.12
Motor Vehicles, Trailers and Semi-Trailers	89,845	4.68	27,365	0.10	0.0582	-3.73	2.1936	4.33	40,958	0.34
Other Transport Equipment	99,845	11.79	37,236	13.42	0.0716	2.18	3.0772	6.01	32,446	5.46
Furniture	35,469	1.35	20,040	2.60	0.1547	2.01	2.7922	0.26	12,703	1.09
Other Manufacturing	44,154	0.75	21,718	7.60	0.1151	6.26	2.5259	0.50	17,480	0.25
Repair and Installation of Machinery and Equipment	49,205	7.62	27,656	4.39	0.1452	-2.03	3.0165	3.06	16,312	4.42
Manufacturing	90,556	3.79	29,571	1.87	0.0657	-1.46	1.4842	2.98	61,607	0.48

APPENDIX D.1: CONTRIBUTIONS BY SERVICES SUB-SECTOR, 2014

Sub-Sector	GDP Contribution (%)				Employed Persons (%)			
	2011	2012	2013	2014 ^f	2011	2012	2013	2014 ^f
Utilities	2.5%	2.5%	2.5%	2.4%	1.0%	1.1%	1.1%	1.1%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	14.3%	14.2%	14.4%	14.8%	16.3%	16.6%	16.8%	16.8%
Transportation and Storage	3.7%	3.6%	3.6%	3.6%	4.9%	4.9%	4.7%	4.4%
Accommodation and Food and Beverage Service Activities	2.5%	2.5%	2.5%	2.5%	7.7%	7.5%	7.7%	8.2%
Information and Communication	3.7%	3.9%	4.1%	4.2%	1.7%	1.6%	1.4%	1.6%
Financial and Insurance/Takaful Activities	9.2%	9.4%	9.1%	8.8%	2.6%	2.5%	2.4%	2.4%
Real Estate and Business Services	5.4%	5.5%	5.7%	5.8%	6.8%	7.1%	7.1%	7.7%
Other Services	5.1%	5.0%	5.0%	5.0%	4.0%	3.7%	3.5%	3.2%
Services Total (Excluding Government Services)	46.5%	46.6%	46.9%	47.0%	45.0%	45.2%	44.7%	45.4%

Note: ^f - forecast

APPENDIX D.2: PRODUCTIVITY STATISTICS BY SERVICES SUB-SECTOR, 2014

Sub-Sector	Productivity Level (RM)				Productivity Growth (%)			
	2011	2012	2013	2014 ^f	2011	2012	2013	2014 ^f
Utilities	148,154	132,758	136,803	140,711	3.5	-10.4	3.0	2.9
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	50,990	50,399	51,104	54,265	1.0	-1.2	1.4	6.2
Transportation and Storage	43,075	43,838	46,051	50,683	-3.4	1.8	5.0	10.1
Accommodation and Food and Beverage Service Activities	18,584	19,292	19,210	18,631	-3.6	3.8	-0.4	-3.0
Information and Communication	128,044	139,087	167,334	166,326	-6.7	8.6	20.3	-0.6
Financial and Insurance/Takaful Activities	206,414	219,040	225,551	222,765	8.8	6.1	3.0	-1.2
Real Estate and Business Services	46,066	45,662	47,449	45,998	-11.5	-0.9	3.9	-3.1
Other Services	73,454	79,752	86,007	95,330	20.0	8.6	7.8	10.8
Services Total (Excluding Government Services)	59,832	60,905	62,492	63,897	-0.2	1.8	2.6	2.2

Note: ^f - forecast

APPENDIX E: INCENTIVES TO BOOST PRODUCTIVITY 2014/2015

Programme/Incentive	Description	Source
Services Sector Guarantee Scheme (SSGS) To allow Small and Medium Enterprises (SMEs) in the services sector to have access to working capital financing from financial institutions to spur economic growth.	Application for SSGS is available from 1 April 2015 until 31 December 2017 or upon approval of financing up to RM5 billion for SMEs in the services sector together with 70% Government guarantee.	Syarikat Jaminan Pembiayaan Perniagaan Berhad Wholly-owned by MOF http://www.sjpp.com.my/webv1/
Services Export Fund (SEF) To encourage Malaysian Professional Service Providers (MPSP) including SMEs to undertake export related activities to expand their services overseas and to gather market intelligence to assist Malaysian companies to secure overseas project Application should be submitted to MATRADE	- Reimburse 50% of approved eligible expenses incurred in the preparation and submission of bids for eligible project studies. - Reimburse 50% of eligible expenses incurred in the preparation and submission of bids and proposals, in the event the bidding and proposal is not successful in winning the bid, or the negotiated project. - Financing up to 100% of the cost of pre-feasibility and feasibility studies.	SME Corp http://www.smeinfo.com.my/index.php?option=com_content&view=article&id=690&Itemid=266&lang=en
Franchise Development Scheme To assist viable franchise businesses to secure the necessary financing through the provision of Guarantee cover for the loan granted by the participation financial institutions	- Maximum Loan Limit RM7.5 million - Credit Facilities Covered: - Term Loans - Overdrafts - Trade Financing - Any other credit facilities determined from time to time by the Corporation.	Credit Guarantee Corporation http://www.cgc.com.my/government-funded-schemes/
My Creative Ventures To spur Malaysia's creative industry via strategic and innovative funding in a form of equity or debt investments	The business offerings must fall within the creative industry as guided by the Dasar Industri Kreatif Negara by Ministry of Information, Communication and Culture, which includes, amongst others: - Visual Arts (e.g. Paintings & Sculptures) - Performing Arts (e.g. Theatre & Dancing) - Music (e.g. Recording Studios & Music Academy) - Literature (e.g. Book Publisher) - Content Creation (e.g. Cinematic and TV Content) - Fashion and Design (e.g. Couture & Fashion Academy) - Traditional and Cultural Arts (e.g. Songket & Crafts)	My Creative Ventures Sdn. Bhd. http://mycreative.com.my/index.php/what-is-mycreative-ventures

APPENDIX E: INCENTIVES TO BOOST PRODUCTIVITY 2014/2015 (con't)

Programme/Incentive	Description	Source
Capital Allowance to Increase Automation in Labour Intensive Industries To encourages shift from high labour intensive towards automation and innovation activities	Category 1 - High labour-intensive industries (such as rubber products, plastics, wood, furniture and textiles): An automation capital allowance of 200% will be provided on the first RM4 million expenditure incurred within the period from 2015 to 2017; and Category 2 - Other industries: An automation capital allowance of 200% will be provided on the first RM2 million expenditure incurred within the period from 2015 to 2020.	Malaysia Investment Development Authority (MIDA) http://www.mida.gov.my/home/2454/news/announcement-of-guidelines-for-the-new-tax-incentives-under-the-malaysian-2015-budget/
Incentive for Less Developed Areas To enhance the special incentive package available in the Economic Corridors to include more less developed areas.	100% income tax exemption up to 15 years of assessment (5+5+5) commencing from the first year of assessment statutory income is derived. or Income tax exemption of 100% of qualifying capital expenditure (Investment tax Allowance) which can be offset against 100% statutory income for 10 years.	
Incentive for Industrial Area Management To ensure industrial estates better managed	100% income tax exemption of statutory income for 5 years, commencing from the date the company commences its specified activities.	
Incentive for Establishment of Principal Hub To encourage foreign companies to leverage on Malaysia's position in ASEAN and Asia Pacific; and To encourage Malaysia companies to provide function of regional headquarters.	• Tier 3: Corporate Tax rate at 10% for 5+5 years • Tier 2: Corporate Tax rate at 5% for 5+5 years • Tier 1: Corporate Tax rate at 0% for 5+5 years ▶ Income tax exemption threshold received from inside and outside of Malaysia is based on the ratio of 30:70 respectively. ▶ No equity/ownership condition ▶ Foreign exchange administration flexibilities and expatriate positions. ▶ Custom duty for raw material, components or finished products brought into free zone licensed and bonded warehouses for production or repackaging, cargo consolidation and integration before distribution to its final consumers for goods-based companies.	

APPENDIX E: INCENTIVES TO BOOST PRODUCTIVITY 2014/2015 (con't)

Programme/Incentive	Description	Source
Business Accelerator Programme (BAP) To assist SMEs through an integrated approach with guidance, including strengthening their core business, building capacity and capability, and facilitating access to financing. To provide business and technical advisory services, aimed at enhancing their business potential. Enrichment & Enhancement Programme (E²) Micro Enterprises (MEs) to be assisted through an integrated approach with guidance, including strengthening their core business, building capacity and capability, and facilitating access to financing. Applicants will receive business and technical advisory services, aimed at enhancing their business potential.	Consists of four main components: • Diagnostics SME Competitiveness Rating for Enhancement (SCORE) Programme is used to rate and enhance competitiveness of SMEs based on their performance and capabilities. • Capacity Building ▶ Skill upgrading by offering short-term courses under the 40 training centres and Entrepreneurship Training ▶ Brand Awareness: on the importance of branding and packaging as well as training to SMEs across the country • Advisory Provide advisory services for start-up as well as established business by Business Counsellors and SME Expert Advisory Panel (SEAP) • Facilitating Access to Financing	SMECorp http://www.smecorp.gov.my/vn2/node/35 http://www.smecorp.gov.my/vn2/node/36
Soft Loan Scheme for Automation and Modernisation (SLSAM) of SMEs The fund for this Scheme is channelled by the Government of Malaysia via the Ministry of International Trade and Industry (MITI) to MIDF for the implementation of the Scheme.	The SLSAM assists manufacturing companies to: • modernise and automate manufacturing processes; • upgrade production capability and capacity; • minimise dependence on labour-intensive activities and foreign labour; • diversify into higher value-added activities; • rationalise and streamline operations including through mergers and acquisitions; • tooling acquisition, development and production; • productivity improvement; and • enhancing export performance	Malaysia Industrial Development Finance (MIDF) http://www.midf.com.my/index.php/development-finance-our-products-a-services/development-finance-soft-loan-scheme-for-automation-and-modernisation-slsam

APPENDIX E: INCENTIVES TO BOOST PRODUCTIVITY 2014/2015 (con't)

Programme/Incentive	Description	Source
Public-Private Research Network (PPRN) To promote innovation programme based on demand in increasing productivity and strengthens the economic development in Malaysia	The initiative is collaboration between the Ministry of Education (MOE), the Malaysian Technology Development Corporation (MTDC), SME Corp and private industries.	Malaysian Technology Development Corporation (MTDC) http://www.mtdc.com.my/file/MTDC%20News%20Jan-Oct%202014.pdf
Bumiputera Entrepreneurs Indian Entrepreneurs Financing Scheme Young Professional Women Entrepreneurs Development Programme Armed Forces Veteran Entrepreneur Development Programme To provide micro financing and support services towards entrepreneurial development.	- To provide easy business financing. - To provide business opportunities and entrepreneurial information. - To provide support services and guidance to entrepreneurs who participate in TEKUN's programmes. - To develop a progressive and dynamic TEKUN Entrepreneur community and business network. - To instil entrepreneurship culture among Malaysians. - To encourage savings lifestyle among TEKUN's entrepreneurs.	TEKUN Nasional http://www.tekun.gov.my/en/web/guest/15 http://www.smecorp.gov.my/vn2/node/1598
Technology Commercialisation Platform (PLATCOM) Programme	This programme provides necessary support from 'concept to commercialisation'. This will be done through the provision of access to technical assistance, market information, incubation facilities, testing facilities and other relevant services.	PLATCOM Ventures Sdn. Bhd. http://www.platcomventures.com/
Industry Academia Collaboration programme	Universities, Government entities and industries will collaborate to develop the curriculum for the internship programmes and industrial training.	TalentCorp Malaysia https://www.talentcorp.com.my/
Bumiputera Entrepreneurs Startup Scheme (SUPERB)	Provides grants of up to RM500, 000 to support innovative and creative business ideas. It is a fund to help startup companies with an allocation of RM100 million within 3 years. A total of RM30 million has been allocated for 2014.	Unit Peneraju Agenda Bumiputera (TERAJU) http://www.teraju.gov.my/skim-permulaan-usahawan-bumiputera/?lang=en
High Performing Bumiputera Companies (TERAS) Programme To identify high-potential Bumiputera companies and help these companies improve their business by providing business opportunities based on merit.	Provide funding under the Teras Fund is for working capital and asset purchases. These funds are provided TERAJU and a collaboration between financial institutions and fully managed by SME Bank, RHB Islamic, MIDF and Maybank Islamic	Unit Peneraju Agenda Bumiputera (TERAJU) http://www.teraju.gov.my/teras-fund/?lang=en

ACRONYMS AND ABBREVIATIONS

10MP	Tenth Malaysia Plan
7MP	Seventh Malaysia Plan
8MP	Eight Malaysia Plan
9MP	Ninth Malaysia Plan
ADTEC	Advance Technology Training Centre
AEC	ASEAN Economic Community
AFTA	ASEAN Free Trade Area
APCs	Annual Practicing Certificates
ASEAN	Association of Southeast Asian Nations
BBGP	Broadband to General Population
BCA	Building and Construction Authority
BEF	Business Excellence Framework
BIM	Building Information Modelling
BL	Backward Linkages
BMS	Bed Management System
BOS	Balance of System
C&C	Chemicals & Chemical Products
CCIT	Centre for Construction IT
CI	Capital intensity
CIDB	Construction Industry Development Board Malaysia
CoA	Certificate of Approval
CONQUAS	Construction Quality Assessment
CP	Capital Productivity
CPCF	Construction and Capability Fund
CPO	Crude Palm Oil
CREST	Collaborative Research in Engineering, Science and Technology
CS	Capital Stock
CT	Computerised Tomography
CT7	Container Terminal 7
D&D	Design & Development
DVT	Dual Vocational Training
E&E	Electrical and Electronics
EDB	Economic Development Board
EFB	Empty Fruit Bunch
EHS	Environmental, Health and Safety
EMS	Electronic Manufacturing Services
EPP	Entry Point Projects
ERL	Express Rail Link
ETP	Economic Transformation Programme
EU	European Union
FACE	Food and Agro Council for Export
FDI	Foreign Direct Investment

FFB	Fresh Fruit Bunch
FIT	Feed-In Tariff
FL	Forward Linkages
FTTR	Full Type Test Report
GAHP	Good Animal Husbandry Practices
GAP	Good Agriculture Practices
GCR	Global Competitiveness Report
GDP	Gross Domestic Product
GII	Global Innovation Index
GLC	Government-Linked Companies
GMI	German Malaysia Institute
GMN	Gedung Makanan Negara
GMP	Guaranteed Minimum Price
GNI	Gross National Income
GP	General Practitioner
GPE	Government Procurement Entities
GRP	Good Regulatory Practices
GST	Goods and Services Tax
HSBB	HighSpeed Broadband
HSCIC	Health and Social Care Information Centre
IADA	Integrated Agricultural Development Area
IBS	Industrialised Building System
IC	Integrated Circuit
ICT	Information Communication Technology
IHK	Industrie-und Handelskammer
IKeuNITA	Inkubator Keusahawanan Wanita
IKIT	Intensive Skill Training for Single Mothers
ILP	Institut Latihan Perindustrian
IMP3	Third Industrial Master Plan
IT	Information Technology
IZAQ	Integrated Zone for Aquaculture Model
JCI	Joint Commission International
JMTI	Japan-Malaysia Technical Institute
KADA	Kemubu Agricultural Development Authority
KICT	ICT Capital
KLEMS	K-Capital, L-Labour, E-Energy, M-Materials and S-Purchased services
KNICT	Non-ICT Capital
KPJ	Kumpulan Perubatan Johor
LC	Labour Composition
LED	Light Emitting Diode
LFPR	Labour Force Participation Rate

ACRONYMS AND ABBREVIATIONS (con't)

LP	Labour Productivity
LPI	Logistics Performance Index
LRT	Light Rapid Transit
M&E	Machinery and Equipment
MADA	Muda Agricultural Development Authority
MAI	Malaysia Automotive Institute
MARDI	Malaysian Agricultural Research and Development Institute
MATRADE	Malaysia External Trade Development Corporation
MDTC	Malaysia Technology Development Corporation
MEP	Paddy Mini Estates
MFM	Mega Fortis
MH	Total Man Hours Worked
MIDA	Malaysian Investment Development Authority
MIMOS	Malaysian Institute of Microelectronic Systems
MNC	Multinational Corporation
MOH	Ministry of Health
MPC	Malaysia Productivity Corporation
MPOB	Malaysian Palm Oil Board
MRI	Magnetic Resonance Imaging
MRO	Maintenance, Repair and Overhaul
MRT	Mass Rapid Transit
MSQH	Malaysia Society For Quality in Health
MTDC	Malaysian Technology Development Corporation
NEC	National Economic Council
NEM	New Economic Model
NHS	National Health Service
NKEA	National Key Economic Areas
NKRA	National Key Result Area
NPDIR	National Policy on the Development and Implementation of Regulations
NSW	National Single Window
OECD	Organisation for Economic Cooperation and Development
PBT	<i>Pihak Berkuasa Tempatan</i> or Local Authority
PCB	Printed Circuit Board
PK	Palm Kernel

PKFZ	Port Klang Free Zone
PKPA	Foreign Personnel Skills Recognition
PPP	Productivity per Person
PPP	Public Partnership Projects
PPRN	Public-Private Research Network
PRN	Public Research Network
PST	Professional, Scientific and Technical
PWD	Public Works Department
QLASSIC	Quality Assessment System in Construction
QOPSAS	Quality Oil Palm Seedlings Assistance Scheme
R&D	Research and Development
R&D&D	Research, Design and Development
RIA	Regulatory Impact Analysis
RM	Ringgit Malaysia
RMCD	Royal Malaysian Customs Department
ROI	Return on Investment
RURB	Reducing Unnecessary Regulatory Burden
SALT	Livestock Farm Accreditation Scheme
SHE	Safety, Health and Environment
SIRIM	Standards and Industrial Research Institute of Malaysia
SME	Small Medium Enterprise
SMIDEC	Small and Medium Industries Development Corporation
SSL	Self-Sufficiency Level
TEU	Twenty-Foot Equivalent Unit
TFP	Total Factor Productivity
TQM	Total Quality Management
TVET	Technical and Vocational Education and Training
UITM	Universiti Teknologi Mara
USD	United States Dollar
USM	Universiti Sains Malaysia
WCY	World Competitiveness Yearbook
WGI	Worldwide Governance Indicators
WHO	World Health Organisation
WTO	World Trade Organisation

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