Cybercrime Behaviour in the Context of Youth Development

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Abstract

The positive growth of youth is vital in the development of the particular country. Thus, it is crucial to acknowledge the factors that contribute to positive youth development. Using a bibliometric analysis approach, this study investigated the research contribution in the fields of positive youth development by finding the information related to the annual growth of publication, research areas, top 20 impactful journals, and highly cited articles and authors. This study aimed to present an extensive knowledge map of Malaysian youth development by accumulating a 10-year dataset from the Scopus database. Articles published between 2011 until 2021 were analysed using bibliometric approach. Searching the keyword "youth", 3354 articles were found. After refining with the keywords of "Malaysia Youth", 528 articles were then collected. In addition, this paper collected data from the Institute for Youth Research Malaysia, a leading centre in researching youth and their development in Malaysia. It is proven that health (stress-free, worry-free), social relations (relationship with parents), and safety (security while using the internet) had a significant relationship in cybercrime behaviour among Malaysian youth. Furthermore, this study discussed the contributions and significance of youth studies in the latest research studies together with the future direction.

Introduction:

The pandemic epoch affected by the COVID-19 starts a new norm in life among humans. It changes the way we handle our life, and affects the economy, the social life, the health, the education, as well as the development of the people across the world (OECD, 2020). Consequently, the youth generation is among the most vulnerable and affected in this epoch, especially in terms of well-being and mental health. Youths are facing a disruption in education, isolation from their friends and loved ones, and hundreds of thousands are now struggling to find a job. The World Health Organization (WHO) describes youth as the 15–24-year age group (United Nations, 2022). Malaysian Youth Policy defines youth as those in between 15 and 30 years (Arfa Yunus & Esther Landau, 2019; Youth Policy Labs, 2014). The age of youth is important to the government to minimise the generation inequality, accelerate youth development, and reduce risk behaviour in youth groups.

Youth is impacting the economies, governments, and communities all around the world, yet far too many are not achieving their full potential. Malaysian Youth Index (IBM) is based on the development of the younger generation and its relation to change which occurs at the national, regional, and international levels (IYRES, 2015). Therefore, the Institute for Youth Research Malaysia (IYRES) is responsible for collecting any information regarding youth in Malaysia and providing a national research center (IYRES, 2020). In today's world, there are more young people than ever before. Surprisingly little is known about the state of youth development nowadays. Even though the importance of young people's well-being is well understood, measuring it remains a challenge.

More researchers are creating survey studies to follow and understand the issue they are interested in, and then conducting more in-depth research. However, due to the pressure of numerous research publications, finding specific research topic is needed to ensure relevant study. Systematic literature review analysis and bibliometric statistical analysis are two types of survey papers. Bibliometric statistical analysis, as opposed to systematic literature review analysis, focuses on specific study topics, discusses possible research in specific sectors, identifies developing trends, and gives extensive information on the most effective studies (Firdaus, Razak, et al., 2019; Huong Thi Ngoc Ho & Luong, 2022; Mat et al., 2021). All these analyses are quantitative analysis of all information and they come with mathematical and statistical methods. As a result, the goal of this study is to give a comprehensive bibliometric and network collaboration analysis of positive youth development research practices in Malaysia over the last 10 years.

To provide a comprehensive picture of Malaysian youth's great accomplishments and gaps, IBM data was collected from 2015 to 2020, spanning twelve domains: safety and security, information and communication technology, citizen participation, health, economic opportunity, gender equality, and education. The index, which includes data from IBM sources and analysis of young people throughout the world, provides the results with a means of finding and insight prospects for critical youth development.

The rest of this study is organized as follows: Section 2 discusses the methodology of collecting data. Section 3 demonstrates the results. Section 4 provides the taxonomy for youth index development in Malaysia. Section 5 demonstrates the contribution and significance of the study for Malaysian youth development and Section 6 presents the conclusion.

Methodology:

This section discusses the methodology of collecting information, techniques, tools, and materials used to conduct this study. The aim of collecting information is to outline and analyse a specific topic to distinguish the most relevant studies, track the appropriate research areas, discover the emerging trends, and identify information for potential research in specific fields. Figure 1 presents the methodology of data analysis.
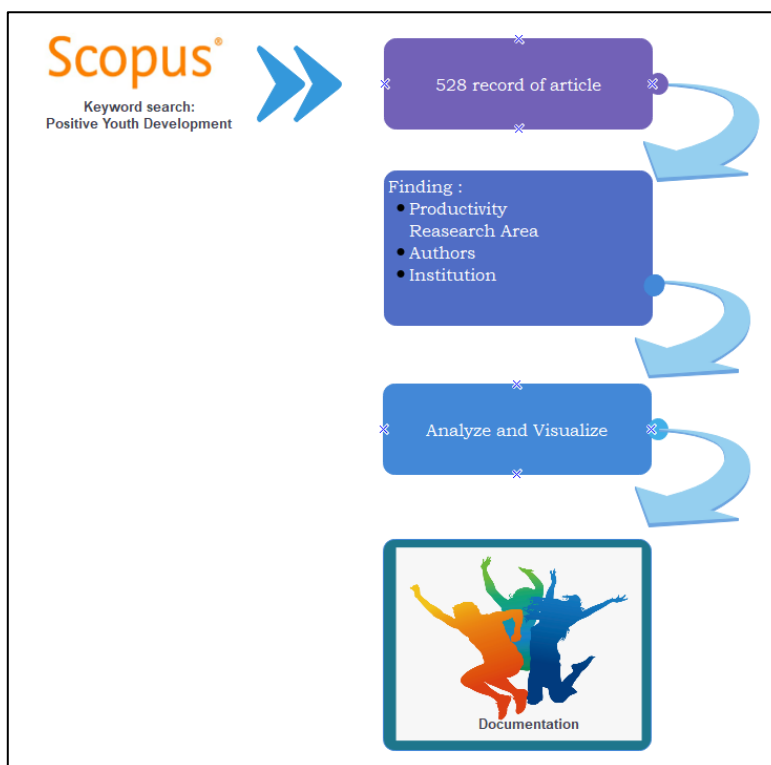
Figure 1. Methodology of data analysis

The methodology of this study comprised of four (4) processes: (1) data collection, (2) findings, (3) analysis, and (4) documentation. For the data collection, this study applied a bibliometric approach, covering the period of 2011 until 2021 by retrieving from the Scopus database. Even though several databases allow finding and retrieving indexed journal articles such as Web of Science (WoS), IEEE Xplore, Association for Computing Machinery (ACM), ScienceDirect and Springer (Bruner et al., 2021; Razak et al., 2016), this study used the Scopus database because it had the ability to search scientific research, identify emerging trends, enhance visibility and uncover the full breadth of cutting-edge research (Firdaus, Faizal, et al., 2019). The method of this study started with "youth" as the main keyword in the Scopus database. To carry out the comprehensive scientific research analysis, the keyword "youth" was queried with keyword "Malaysia'" as the main keyword only yielded a large amount of documents, some of which were outside the focus of this investigation. These keywords became our focus to identify high-quality research and to enable us to get broader insights into the current trend of positive youth development, specifically in Malaysia. This study was narrowed to the book sections, conference articles, journal articles, and books. As a result, this study was able to collect a total number of 528 journal articles that were published between 2011 until 2021. This study focused on 2011 onwards because several previous studies using the bibliometric approach used 10 years of data collection to visualize and analyse the emerging trends as shown in the findings section.

Many scholars undertook bibliometric analyses using a variety of software applications and tools. The most famous tools were VOSviewer (Leiden University, 2021), Microsoft Excel, Gephi and R tools using bibliometric packages. VOSviewer, Microsoft Excel, Gephi and R have similar functions and capability to provide analysis and present the data (Paul et al., 2019).

VOSviewer is a programme that allows one to build and visualise bibliometric networks. Journal articles, countries, and authors are examples of bibliometric networks that are constructed based on co-citation, bibliographic coupling, and authorship. However, VOSviewer does not have capabilities for visualizing in detail like R. R is a well-recognized software environment for statistical computing and data visualization. This study applied R to construct the positive youth development bibliometric analysis. Several studies have applied this bibliometric tool for their specific research fields. The advantage of this tool is it is able to perform bibliometric analysis, build data matrices, and synthesize past research findings in specific fields of positive youth development in Malaysia. Synthesizing past research is very important to provide evidence-based insights especially in advancing a line of research positive youth development.

Reults:

This section explains the discoveries of the studies of youth in Malaysia. This study analysed 528 journal articles between 2011 until 2021. The findings that were identified as eligible were summarized into four (4) groups: annual growth of publication, top 20 impacting journals, highly cited articles, and authors.

Summary of information

This section provides a summary of data collection including basic statistics. It is critical to demonstrate a thorough view of the material to comprehend an outline of the topic of youth research. Table 1 presents the summary of data collection from 528 articles published in the period between 2011 until 2021. This data collection was extracted from 309 sources, including various journals, books, and conferences. Besides that, the most important thing was the number of authors. The result showed 1482 authors who were actively doing research in the youth field. This information was able to provide the most outstanding researcher in publication and pioneer research in the youth field in Malaysia; and to help the Government of Malaysia to ensure the positive youth development in Malaysia can be achieved with the best result as supported by the latest research approach and new funding for future development. The number of articles was 428 and single-authored documents were 65. It is worthy to note the significant gap between the number of article and the single-authored documents because it indicates the least research that have been done in the field of youth in Malaysia.

Table 1. Summary of data collection

Data Collection	Type	Record
Main information about data	Timespan	2011:2021
	Sources (journals, books, etc.)	309
	Documents	528
	Average years from publication	4.44
	Average citations per documents	5.148
	Average citations per year per doc	0.782
	References	1

Document types	Article	426
	Article in press	2
	Book	10
	Book chapter	27
	Conference paper	40
	Conference review	2
	Data paper	1
	Editorial	3
	Erratum	1
	Review	16
Document contents	Keywords plus (id)	1402
	Author's Keywords (DE)	1516
Authors	Authors	1482
	Author appearances	2029
	Authors of single-authored documents	65
Author's collaboration	Single-authored documents	76
	Documents per author	0.356
	Authors per document	2.81
	Co-Authors per documents	3.84
	Collaboration index	3.13

The annual growth of publication

This part covers the various topics that pertain to Malaysian youth. As shown in Figure 2, the annual growth rate of publication was 2.72%. It indicated that productivity of research was at the weakest years of productivity for publication. Productivity was the value of what was produced per author or per publication. This weakest growth of productivity may be caused by low interest in the youth topic or by the COVID-19 pandemic. However, there is a potential to improve annual productivity growth. In addition, this field has the potential to become trendy by interpreting positive youth development during COVID-19 pandemic. This is because, every country in the world is having similar problems and trying their best to protect their youth from being affected by the pandemic. In 2020, there was a noticeable spike of productivity, indicating the trend of positive youth development in Malaysia with 83 articles. The noticeable spike attention to the encounters and concerns in the field of positive youth development in Malaysia in academia and the community is reflected in the number of publications.
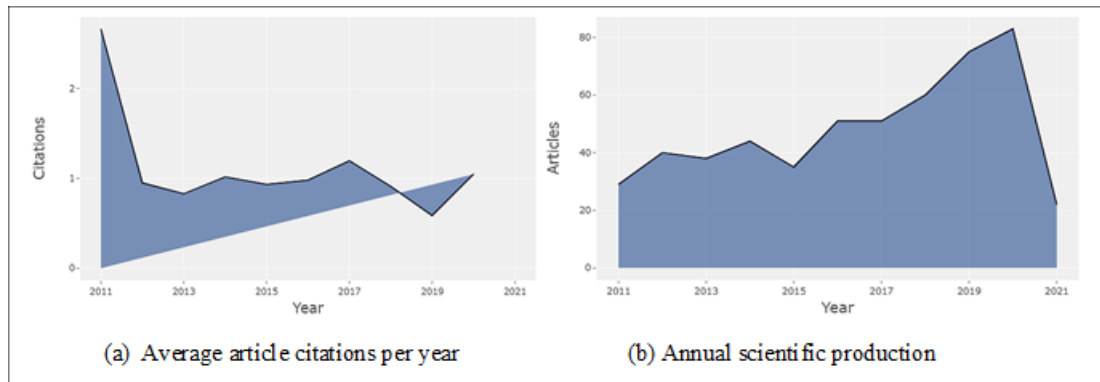
Figure 2. The annual growth of publication

The top 20 impactful journal

This section discusses the most interesting journals that publish the researches of positive youth development in Malaysia. A journal is a publication consisting of scientific paper authored by experts and researchers in a specific field of study exclusively for academic or scientific purpose. The type of journal is a very important and critical part in publishing articles as it presents the most prominent journal in a specific field and is visible to publication citations. The most impactful journals are demonstrated in Table 2 with the publisher's name, CiteScore and number of records published articles related to the field of youth in Malaysia.

Table 2. List of impactful journals

Journal	Publisher	CiteScore	No. of Record
Pertanika Journal of Social Sciences and Humanities	Universiti Putra Malaysia	0.6	23
Jurnal Komunikasi: Malaysian Journal of Communication	Universiti Kebangsaan Malaysia	1.4	20
Asian Social Science	Canadian Center of Science and Education	n/a	14
Social Sciences (Pakistan)	Multidisciplinary Digital Publishing Institute (MDPI)	2.3	12
International Journal of Recent Technology and Engineering	Blue Eyes Intelligence Engineering and Sciences Publication	n/a	9
Advanced Science Letters	American Scientific Publishers	n/a	7
Kajian Malaysia	Universiti Sains Malaysia	0.9	6
International Journal of Adolescence and Youth	Taylor & Francis	3.6	5
Journal of Engineering and Applied Sciences	Medwell	n/a	5
AIP Conference Proceedings	Conference Proceeding	0.4	4

International Journal of Environmental Research and Public Health	Frontiers Media S.A.	3.4	4
Journal of Technical Education and Training	Penerbit UTHM	1.3	4
Journal of Youth Studies	Taylor & Francis	3.4	4
Mediterranean Journal of Social Sciences	MCSER-Mediterranean Center of Social and Educational Research	n/a	4
PLoS One	Public Library of Science	5.3	4
Search (Malaysia)	Taylor's University College	0.7	4
World Applied Sciences Journal	International Digital Organization for Scientific Information (IDOSI)	n/a	4
Asia-Pacific Social Science Review	De la Salle University	0.7	3
Asia Pacific Journal of Marketing and Logistics	Emerald	4.5	3

From the top lists of journal publishers of positive youth development in Malaysia, four were (4) from universities in Malaysia. Pertanika Journal of Social Sciences and Humanities (UPM, 2022) is the top journal chosen by researchers to publish their article, followed by Jurnal Komunikasi: Malaysian Journal of Communication from Universiti Kebangsaan Malaysia with 23 and 20 records, respectively. Aside from that, five (5) journals were excluded from the Scopus index for various reasons. As a result, choosing an appropriate journal is a vital challenge as there are thousands of journals available. The most important factor that researchers must consider is the journal's indexation status. This is due to the fact that Scopus constantly evaluates journals submitted for indexation by publishers. However, publishing in high impact factor journals, researchers are able to get a lot of scientific experiences through the publishing process and are more visible to readers. Figure 3 demonstrates the mapping between affiliation, published journal and keywords. The link indicates the relationship between each other.
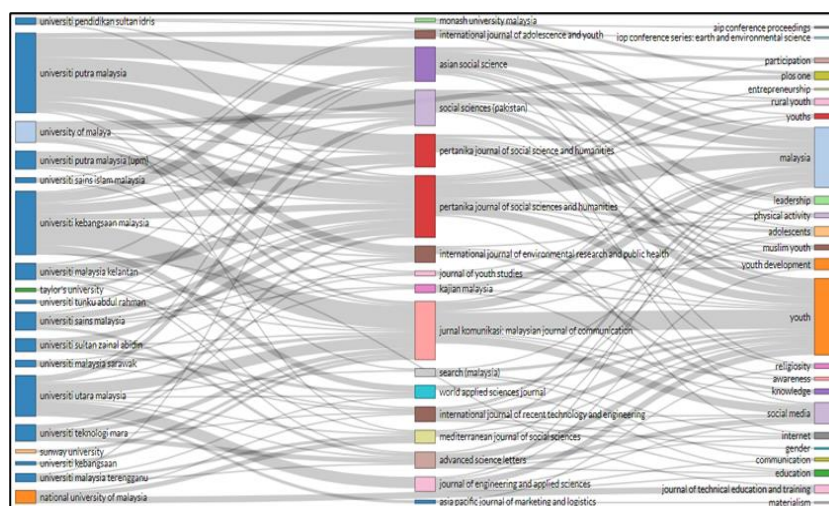

Figure 3. Three field plot crosses with affiliation, journal, and keywords

Highly cited articles

This part explains the highly cited articles in the field of youth in Malaysia as demonstrated in Table 3, presenting a record of 20 highly cited articles with information including title of article, year, journal and number of citations. The highest cited article was published ten years ago, indicating that the longer the article in the database, the more citations it would receive. "Health warning messages on tobacco products: A review" published in the Journal of Tobacco Control was the highest cited article with 591 number of citations. The article described the impact of tobacco on health. Specifically, the study sought to review the impact of tobacco on youth and adults, including potential adverse behaviour. The latest article published in 2018 entitled "Parents vs peers' influence on teenagers' Internet addiction and risky online activities" received 22 number of citations. Furthermore, the titles of the articles varied, indicating that the research field in youth intersected with other fields of study and received a lot of attention from researchers in other fields.

Table 3. Highly cited article

Reference	Title	Year	Journal	No. of Citation
(Hammond, 2011)	Health warning messages on tobacco products: A review	2011	Tobacco Control	591
(Wilson et al., 2013)	Crescent marketing, Muslim geographies and brand Islam: Reflections from the JIMA Senior Advisory Board	2013	Journal of Islamic Marketing	122
(Jaafar et al., 2015)	Perception of young local residents toward sustainable conservation programmes: A case study of the Lenggong World Cultural Heritage Site	2015	Tourism Management	66
(Hamat et al., 2012)	The use of social networking sites among Malaysian university students	2012	International Education Studies	64
(Olugbola, 2017)	Exploring entrepreneurial readiness of youth and startup success components:	2017	Journal of Innovation and Knowledge	61

	Entrepreneurship training as a moderator			
(Wong et al., 2012)	Shopping motives, store attributes and shopping enjoyment among Malaysian youth	2012	Journal of Retailing and Consumer Services	42
(Zeldin et al., 2014)	Conceptualizing and Measuring Youth–Adult Partnership in Community Programs: A Cross National Study	2014	American Journal of Community Psychology	40
(Olugbola, 2017)	Exploring the relationship between urbanized Malaysian youth and their mobile phones: A quantitative approach	2012	Telematics and Informatics	40
(Gopalakrishnan et al., 2012)	Prevalence of overweight / obesity among the medical students, Malaysia	2012	Medical Journal of Malaysia	38
(Lian et al., 2016)	Physical activity and its correlates among adults in Malaysia: A cross-sectional descriptive study	2016	PLoS ONE	30
(Kaur et al., 2014)	Prevalence and correlates of depression among adolescents in Malaysia.	2014	Asia-Pacific journal of public health / Asia-Pacific Academic Consortium for Public Health	30
(Ahmad et al., 2012)	The understanding of environmental citizenship among Malaysian youths: A study on perception and participation	2012	Asian Social Science	29
(Krauss et al., 2014)	Youth–Adult Partnership: Exploring Contributions to Empowerment, Agency and Community	2014	Journal of Youth and Adolescence	27

	Connections in Malaysian Youth Programs			
(Kõlves & de Leo, 2017)	Suicide methods in children and adolescents	2017	European Child and Adolescent Psychiatry	25
(Zeldin et al., 2015)	Youth–Adult Partnership and Youth Civic Development: Cross-National Analyses for Scholars and Field Professionals	2017	Youth and Society	24
(Nga et al., 2011)	The influence of image consciousness, materialism and compulsive spending on credit card usage intentions among youth	2011	Young Consumers	24
(Soh et al., 2018)	Parents vs peers' influence on teenagers' Internet addiction and risky online activities	2018	Telematics and Informatics	22
(Peltzer et al., 2017)	Suicidal behaviors and associated factors among university students in six countries in the Association of Southeast Asian Nations (ASEAN)	2017	Asian Journal of Psychiatry	22
(Foo et al., 2014)	Religious Commitment, Attitudes Toward Suicide, and Suicidal Behaviors Among College Students of Different Ethnic and Religious Groups in Malaysia	2014	Journal of Religion and Health	21

Authors:

Most productive authors

This part highlights the several authors' contributions to the publication of articles in related fields. Finding the most productive authors is significant to highlight the most active contributors who publish researches on the positive youth development in Malaysia. Besides

that, it is used to evaluate the impact of the academic publications of an author or institution. The article calculate metric assigned a score to each publication author on whether they were the primary author or a co-author. Article fractionalization emulates the involvement of authors regardless of whether an article is published as a single author or as a co-author. H-index is the most recognized author metric as it calculates based on popular topics, top viewer, and most shared article. It also indicates author productivity or output where it can be found at the author profile. G-index is used to measure the global citation performance of a set of articles. It is more weighted to highly cited articles and greater h-index.

Table 4. Most productive authors

Authors	Articles	Articles Fractionalized	h_index	g_index
Krauss SE	17	4.72	9	13
Hamzah A	14	2.77	3	6
Shaffril HAM	14	3.46	3	4
Ahmad N	11	2.47	3	4
Dahalan D	11	1.71	4	6
Ismail IA	11	1.82	5	7
Samah BA	11	2.20	3	4
Rahim SA	10	2.97	4	8
Idris F	9	1.54	3	5
Suandi T	9	1.61	4	6
Abdullah H	8	1.38	3	7
Ahmad A	7	1.23	2	3
Bolong J	7	1.59	4	6
Ekpe I	7	3.00	3	4
Hassan MS	7	1.62	1	1
Omar SZ	7	1.68	3	5
Zeldin S	7	1.58	5	7
Albury NJ	6	6.00	3	5
Ibrahim N	6	1.23	2	6
Kok JK	6	3.00	4	6

Table 4 highlights the top 20 most productive authors. Eight (8) authors produced the most publications in positive youth development in Malaysia, yielding more than 10 articles within 10 years. The most outstanding author was Krauss SE, who published 17 articles, followed by Hamzah A and Shaffril HAM with 14 articles each. Note that Krauss SE from Universiti Putra Malaysia had the top h-index and g-index which were above 9. Figure 4 demonstrates the most productive authors' research activities. The figure indicates that the research field on youth in Malaysia has been active in recent years. Although Albury NJ from Leiden University had published articles in 2021, he began the research activities in 2017. On the other hand, Krause SE, Hassan MS and Ismail IA contributed knowledge in research activities in the past ten years.

It is worth noting that if other researchers wish to gain a better understanding of the current research topics trend, paying a closer attention to these authors is an excellent way to start learning about the field of positive youth development in Malaysia. In order to improve visibility of articles and become a noticeable researcher in specific fields, suitable keywords must be considered and this will be discussed in the next section.
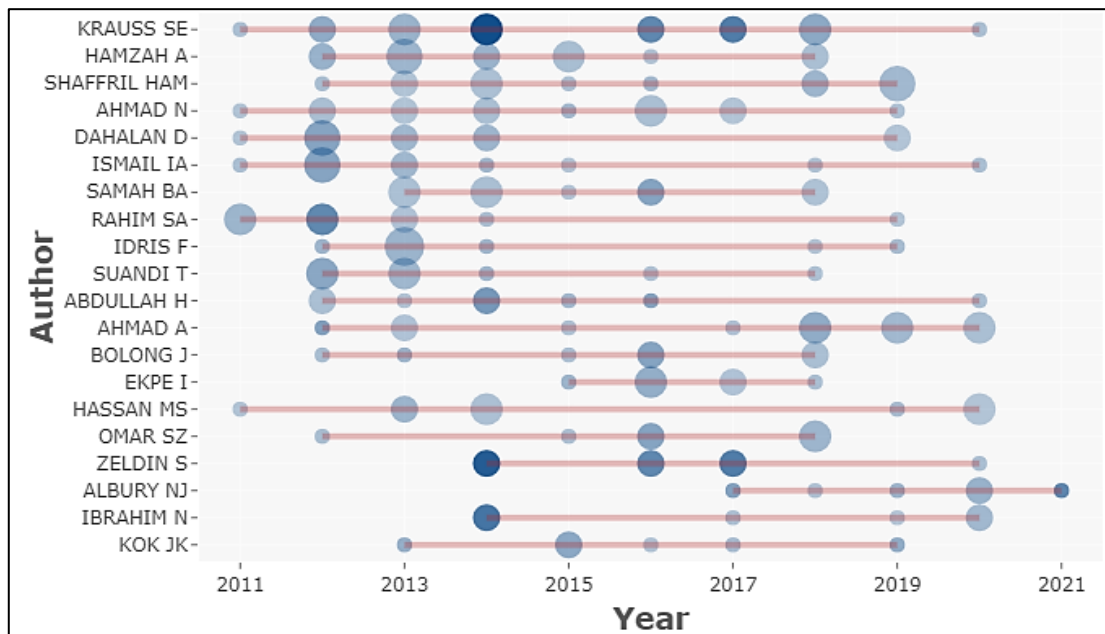

Figure 4. Research activities of most productive authors over time

Author's keywords

Analysing the author keywords is important to identify the research trend and determine research gaps in the field of positive youth development in Malaysia. Table 5 lists most occurring keywords used by researchers in their publications to increase their article visibility. The frequently utilized keyword is "Malaysia", which showed 160 times, followed by female and male which appeared 108 times. It is worth noting that there was no main keyword among the top 20 to present the keywords with greater prominence. This study used word clouds as depicted in Figure 5 to visualize the most occurring keyword by highlighting in a way that other researchers could easily understand.

Table 5. Top 20 author-keywords occurrences

Keywords	Occurrences	Keywords	Occurrences
Malaysia	160	Child	33
Female	108	Cross-Sectional Study	32
Male	108	Juvenile	28
Adolescent	101	Major Clinical Study	27
Human	84	Controlled Study	21
Adult	69	Smoking	21

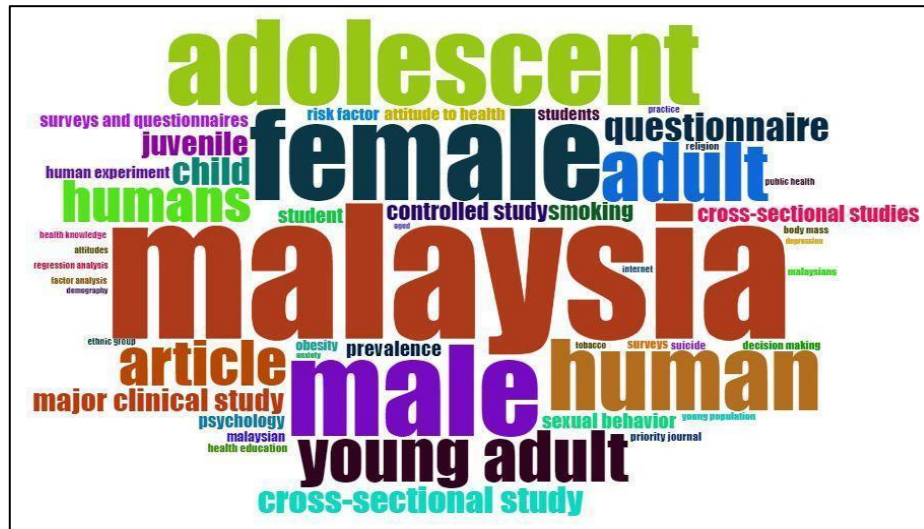| Young Adult | 60 | Cross-Sectional Studies | 20 |
Article	54	Prevalence	18
Humans	50	Sexual Behavior	18
Questionnaire	34	Student	18

Figure 5. Word cloud visualization

Meanwhile, there are alternatives to present prominent research, such as looking for topic trends. It is critical to organise the global information and make it accessible and useful to everyone. This information is critical to help the researchers find the most trending topic related to positive youth development in Malaysia. Figure 6 shows the topic trend in youth. The trend showed data for popular keywords, and eliminated repeated searches from similar researchers over a short period of time. It also showed interests in a particular topic from around Malaysia.
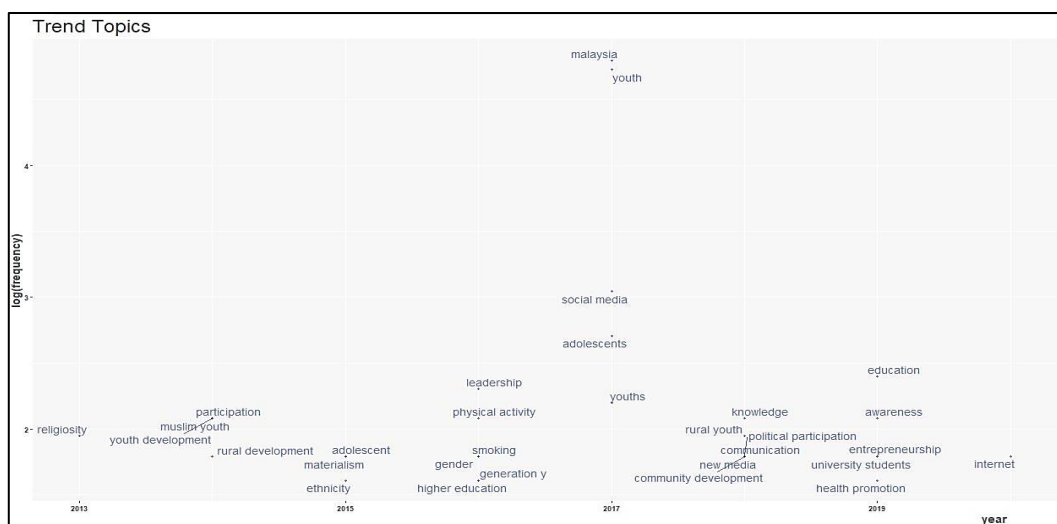

Figure 6. Trend topics

Cybercrime perspective in the Malaysia Youth Index:

IBM is very important to Malaysia because it: a) Forms an instrument or benchmarks to monitor the well-being and development of Malaysian youth; b) Identifies patterns, including style of thought and style of living among Malaysian youth; c) Drives stakeholders to be more sensitive with the change in the measured indicator; and lastly d) Shows reference for the development of innovative future programs focusing on Malaysian youth development. Specifically, the IBM was constituted with twelve (12) domains as demonstrated in Figure 7. All domains were measured based on the determined 58 indicators. The score produced by IBM was regarded as the measure of quality level and the well-being of Malaysian youth. The IBM was administered by IYRES and conducted once a year except for the year 2018.
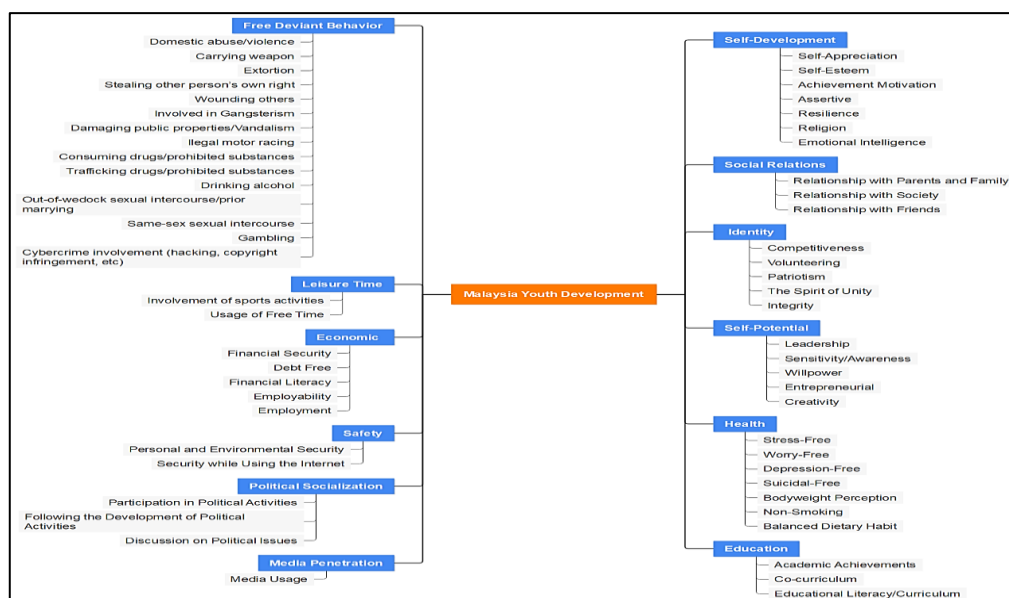

Figure 7. Malaysia Youth Development Index

Therefore, the outcome from IBM is significant to: a) Monitor the level of youth well-being and life quality; b) Create empirical data concerning Malaysian youth; c) Drive input provision for the formation of national action plan for the Malaysian youth development; d) Monitor the integrated direction towards national youth development; and e) Provide input for the assessment of planned mechanism under the National Youth Policy (DBM).

Summarization of the Related Domain:

The creation of IBM in measuring Malaysian youth well-being and life quality is essential to identify the impact on national investment in the form of activities implementation, programs as well as policies that have been well prepared by the government and its related agencies. In addition, it allows the re-evaluation of the effectiveness of programs that have been implemented and also serves as the guidelines for future program implementations.

We conducted a positive youth development study and concentrated on five (5) domains related to cybercrime among Malaysian youth. These domains were extracted from IBM, and further explanation on each domain is provided in the following sections.

Free deviant behaviour

Deviant behaviour is defined as behaviour that deviates from a society's norms (IYRES, 2015; Kurtenbach et al., 2019). In this domain, the score indicates the freedom of Malaysian youth from getting involved in the activity that violates the norms of Malaysian society. Specifically, this domain is targeted to achieve higher scores as this will reflect the ability of Malaysian youth in avoiding deviant behaviour. There are 15 indicators in this domain, including domestic abuses/violence, carrying weapon, extortion, stealing other person's own right, wounding others, getting involved in cybercrime, gangsterism, vandalism, illegal motor racing, consuming drugs or prohibited substances, trafficking drugs or prohibited substances, drinking alcohol, out-of-wedlock sexual intercourse or prior to marriage, same-sex sexual intercourse, and gambling. In this study, the focus was given to the cybercrime indicator which included youth involvement in online crime activities such as hacking and copyright infringement. The average value for this domain after five years of IBM implementation was 93.76, which was categorised as very satisfactory.

Social relations

In the context of IBM, social relations are defined as the relationship between a person and other persons (IYRES, 2015). This domain contained three (3) indicators: relationship with parents and family, relationship with friends, and relationship with society. The average value for this domain after five years of IBM implementation was 75.98, which was categorised as satisfactory. Social relationships, particularly those with parents and family, are essential determinants of youth development and extensively studied in prior work (Orejudo et al., 2021; Wang et al., 2022).

Economic

The economic domain depicts Malaysian youth economic status. It was measured using five (5) indicators: financial security, debt-free status, financial literacy, employability, and employment (IYRES, 2015). The average value for this domain after five years of IBM implementation was 58.32, which was categorised as less satisfactory. All indicators under this domain were taken into the consideration of this study.

Health

To assess the health domain, seven (7) indicators were used: stress-free, worry-free, depression-free, suicidal-free, bodyweight perception, non-smoking, and balanced dietary habit. The indicators reflect youth freedom from diseases related to lifestyle, dietary, physical, and mental illness (IYRES, 2015). Balanced dietary habit indicator also indicates healthy eating practices among Malaysian youth and signifies an individual's health in general. Considering the significance of this domain, as well as the youth's psychological health level and responsiveness of today's youth, who is progressively aware of health issues and the importance of health to upcoming generations, this domain was considered in this study. The average value for this domain after five years of IBM implementation was 74.52, which was categorised as moderate. Previous studies also showed that positive youth development

outcome was associated with health, particularly mental health (Brands & van Doorn, 2022; Bruner et al., 2021; Marttila et al., 2021).

Safety

The safety domain explains the feelings of safety when the individual is together with their family, neighbour, community, and while browsing the Internet (IYRES, 2015). There were two (2) indicators measured in this domain: personal and environmental security and security while using the Internet. The latter was given more focus in this study as it reflected youth awareness in issues related to cybercrime. After five (5) years of IBM implementation, the safety domain attained a moderate score of 70.12 on average.

Trend Analysis of Domain Score:

The data for this study were gathered as part of a national project examining numerous components of the flow and development of Malaysia's youth generation, as well as their interactions to changes at the national, regional, and international levels. There were 47,805 respondents (51.87% male, female 48.13%) with age between 15 and 30 involved in this study in the year 2015, 2016, 2017, 2019 and 2020. The survey was conducted quantitatively using a questionnaire. During the survey, an enumerator was appointed to explain the questions and facilitate the respondents. The respondents originated from urban and rural areas around Malaysia and comprised of Malay (63.4%), Chinese (13.2%), Indian (7.5%) and others (15.9%). In terms of marital status, 19.0% respondents were married, 80.2% were unmarried and the others were divorced (0.8%). Additionally, 49.2% of respondents were youth working in various fields including government, private sector and self-employed. About 50.8% of youth involved in this study were unemployed. According to the statistics from the Department of Statistics Malaysia (Department of Statistics Malaysia, 2021), the joblessness rate in Malaysia for April 2021 declined to 4.6% which was the smallest rate since October 2020 with 742.7 thousand unemployed citizens. It is worth noting that the unemployment problem was already happening even before the COVID-19 pandemic. As compared to the mentioned statistics, the youth unemployment rate during the pandemic was 10.5% (IYRES, 2015;Mohammadi, 2020). The percentage was triple than the national rate of about 3% and was increasing closer to 14%. The unemployment problem among youth was still unresolved even though the Malaysian government has launched various programmes under the PENJANA (National Economic Recovery Plan) and PRIHATIN in 2021. Numerous reasons contributed to the unemployment problem including injury, illness, dismissal from work and social dispute.

The domain score was calculated based on the average value of its indicator. Based on the respondents' answers, Table 6 demonstrates the comparison between scores of each domain against years. It is worth noting that the score steadily increased in the free deviant behaviour domain and decreased in the social relations domain.

Table 6. Domain Score Comparisons According to Years

Domain/ Year	2015	2016	2017	2019	2020	Trend
Free deviant behavior	89.45	91.31	93.22	97.20	97.63	Increased
Social relations	78.18	78.06	74.94	74.45	74.27	Decreased
Economic	54.26	58.05	55.75	61.71	61.81	Fluctuate
Health	68.42	76.59	74.15	78.51	74.94	Fluctuate
Safety	70.82	71.13	68.27	72.20	68.17	Fluctuate

The other domains indicated a fluctuating trend in which the scores increased and decreased throughout the years. The highest score for the social relations domain was 78.18 which was at the satisfactory level. There were three (3) indicators in this domain: relationship with parents/family, relationships with the community and relationships with friends. The indicator that had the highest score value for this domain was the relationship with parents/family indicator, with a score value of 85.78 and being at a very satisfactory level. The relationship with friend indicator was at the satisfactory level with a score value of 78.15, and relationships with the community indicator was at the medium level with a score value of 72.13. The trends for each domain are presented in Figure 8.
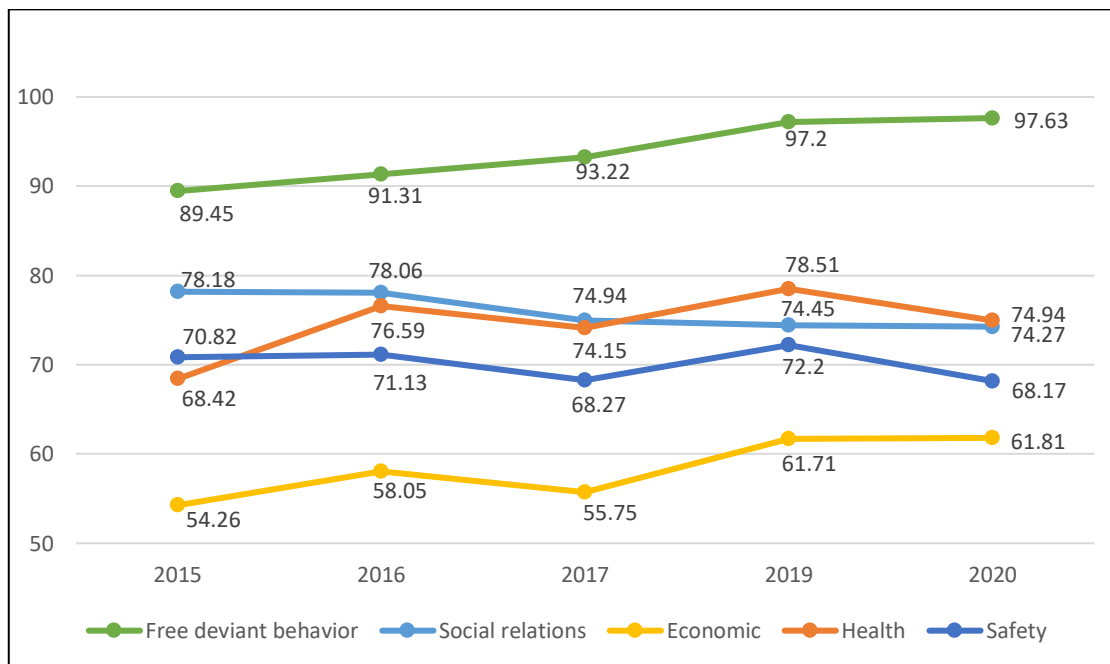

Figure 8. Domain score according to year

Analysis of Indicator Score:

Detailed scores for each indicator under the domain of free deviant behaviour, social relations, safety, economic and health are described in Table 7. As compared to the year 2015, there was an increase of 8.1 score in cybercrime involvement among Malaysian youth for the year 2020. The results indicated that the number of Malaysian youths involved in cybercrime activities such as hacking, and copyright infringement has increased as compared to 2015. In the social relations domain, the indicator of relationship with society has the lowest score. These circumstances might be related to the lack of association among youth and their community which later disjointed youth from the society circle. Additionally, the low score also reflected low youth involvement in communal works and youth inability to know their community members.

On the other hand, the security while using the Internet under the domain of safety has shown a significant score increment in the year 2020 as compared 2017. The score revealed the increase of awareness among Malaysian youth in practicing safe browsing and ethical sharing while connected to the Internet. In the economic domain, debt, financial security, and employment were still a major concern among Malaysian youth. The average score for these indicators was 53.35 which was below the satisfactory score for positive youth development study. In contrast, the indicators in the health domain were steadily above intermediate score level except for balanced dietary habits.

Table 7. Indicator score according to year

Domain	Indicator	Indicator Score				
		2015	2016	2017	2019	2020
Free deviant behavior	Cybercrime involvement	89.96	91.63	93.21	97.49	98.06
Social relations	Relationship with parents and family	84.26	85.78	83.52	83.24	82.62
	Relationships with friends	78.15	78.11	75.75	74.78	75.58
	Relationship with society	72.13	70.30	65.55	65.33	64.63
Safety	Security while using the internet	76.76	76.13	68.77	74.89	75.03

Economic	Financial literacy	71.76	75.70	68.05	71.29	73.04
	Financial security	48.67	49.26	49.57	57.48	63.34
	Debt free	49.85	68.59	64.24	59.23	56.76
	Employability	67.15	57.65	51.05	51.58	53.35
	Employment	39.29	39.03	45.72	56.68	52.57
Health	Stress free	69.67	72.00	70.77	73.91	72.96
	Worry free	76.18	78.76	78.39	78.85	79.54
	Depression free	79.90	82.93	83.42	83.52	82.97
	Suicidal free	97.86	97.52	96.85	97.15	97.22
	Bodyweight perception	60.47	69.08	68.82	76.37	56.89
	Non-Smoking	51.31	77.65	67.45	79.38	79.82
	Balanced dietary habits	43.52	58.23	53.37	60.37	55.24

This study conducted a Pearson correlation test to define the statistical relationship between indicators from the domain of social relations, safety, economic and health against the cybercrime involvement indicator in the free deviant behaviour domain. As shown in Figure 9, four indicators, stress-free, worry-free, depression-free, and suicidal-free were strongly related

with cybercrime involvement. These indicators belonged to the health domain. It is also worth mentioning that the indicator of relationships with parents and family was also highly correlated with cybercrime involvement as compared to the other indicators. Apparently, all indicators under the economic domain had the lowest correlation with cybercrime involvement. Negative correlations were recorded for the employment and employability indicators.
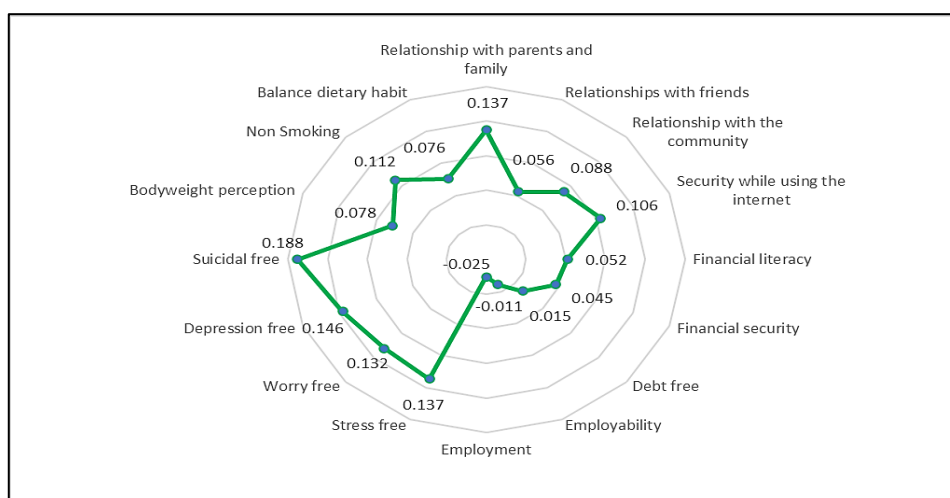

Figure 9. Indicators correlation with cybercrime involvement

Socio-psychological problems among youth, such as anxiety and stress dominated their way of communicating on the Internet (Hellsten et al., 2021; Lyzhin et al., 2021). In the physical world, social rejection and cultural barriers may cause stress, and result in low self-confidence and self-esteem among youth, exposing them to online manipulation and eventually forcing them to impose harm and distress. Even worse, they start to develop strong emotional ties with cyber criminals due to anonymity and less spatial restriction (Borwell et al., 2021; Zhamiyeva & Arenova, 2021). Additionally, the internet offers youths with broader opportunities for socialisation to supplement their activity rejection in the world.

The general theory of crime forms a concept that a crime is a consequence of low self-control (Chandra & Snowe, 2020; Louderback & Antonaccio, 2021). As youths who are anxious and stressed are desperate, they tend to act without analysing the consequences of their actions (Avedissian & Alayan, 2021; Courtney et al., 2020; Maghsoudi et al., 2020). Making things worse, the absence of parental supervision and parental mediation increased youth potential in committing the cybercrime (Altarturi et al., 2020; Hawdon, 2021; Singh & Kaur, 2020). This characteristic relates to the enthusiasm among youth to obtain privacy and to avoid any controls from their parents while browsing the Internet (Huang et al., 2021; Özaslan et al., 2021).

The assumption that unemployed youth is the largest contributor to the cybercrime activity should be rejected. In fact, youth involvement in cybercrime is largely determined by the domain of health and social relations regardless of their employment status. On the contrary, more focus should be given to curb youth involvement in cybercrime activity by improving youth relationships with society and advocating mental health support. Awareness campaigns through media and reinforcement of cybersecurity initiatives by the government and academia

are important to ensure youth safety on the Internet (Kamarudin et al., 2021; Lan et al., 2022). At the same time, the initiative should not limit youth activities online.

Contribution:

This study specifically contributed in the development of knowledge in the cybercrime area. Moreover, this study also discussed some guidance for practice in the well-being and characteristic of youth life.

Significance

This study specifically contributed to the development of network collaboration analysis of positive youth development in research practices at Malaysia in the last ten years. Based on the trend analysis on the youth research practices, this study highlighted the growth of interests in the area of the Internet. In relation to this trend, this study also expedited the discovery of new knowledge regarding cybercrime behaviour among Malaysian youths between the year 2015 until 2020. In this context, this study contributed to the state-of-the-art by discussing the connection amongst cybercrime involvement, and social relations, safety, economic and health. It is worth noting that in this study, health, and social relations played important roles in cybercrime involvement among youths.

Management

Strategies that are capable of addressing the challenges as mentioned in this study are required to curb cybercrime involvement among Malaysian youths. Specifically, this study emphasises the health domain of the positive youth development study and socio-psychological (Borwell et al., 2021; Jamaludin et al., 2021) characteristics, such as stress and depression in determining trends in cybercrime. A directed strategy that helps to deal with mental health problems among youths is required to increase their ability to assess risks while browsing online. The correlations between social relations, safety, economics and health domains as discussed in this study are important, serving as a guidance for the cybercrime-related program implementation and effective decision making on youth policy based on its severity.

Impactful program

As discussed in this study, existing awareness and educational programs related to cybercrime should be reviewed and more focus should be given to improve the youth well-being in two (2) main domains: health and social relations. Additionally, the reviewed programs should increase youth participation in communal works, and at the same time, address youth inclusion in the society. Such activities will increase their accountability and self-esteem, and eventually allow them to practice self-control (Steinsbekk et al., 2021).

Conclusion:

The positive youth development has gained notable attention in the world, especially during the COVID-19 pandemic. The positive youth development is significant in presenting the construct of youth development and positive growth for the country. Positive developmental outcome among youths is essential to see the factors that influence to positive youth

development. Using a bibliometric analysis approach, this study investigated the contribution of researchers in the fields of positive youth development by finding the information related to the annual growth of publication, top 20 impactful journals, highly cited articles, and authors. The data in this study have been collected from Scopus database and the findings are presented by tabulating information as a way to demonstrate current research trends. This study also discussed the findings by visualizing it to present the comparison.

In addition, this comprehensive analysis has covered several types of positive youth development, analysed the potential issues among youths, and determined the influence of cybercrime on youth behaviour. This study examined the relationships of cybercrimes with social relations, safety, economic, and health. The data have been collected from 47,805 youth respondents participating in a positive youth development study to look at the potential cybercrime behaviour. The findings indicated that cybercrime behaviour was associated with health, social relations, and safety. It is worth noting that health (stress-free, worry-free), social relations (relationship with parents), and safety (security while using the Internet) had a significant relationship with cybercrime behaviour among Malaysian youths.

Future research with different indicators of positive youth development is needed to increase the understanding of cybercrime behaviour, especially cyberbullying and victimization. The importance of each indicator in positive youth development should be acknowledged in different positive outcomes to shape the future of the youths. Lastly, the technology is evolving quickly and means of communication via social media have increased since the pandemic. Thus, cybercrime via social media (Facebook, Twitter, Instagram) should be included and collected in the future study. Nonetheless, the findings of this study are believed to contribute to researchers and interested bodies to identify the related current research trends and any potential research in positive youth development in Malaysia.

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