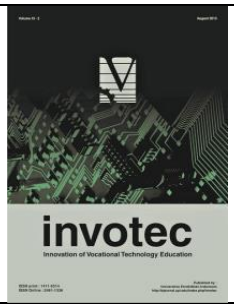
JURNAL UPI

Innovation of Vocational Technology Education

Available online at http://ejournal.upi.edu/index.php/invotec



Scientometric Analysis of Twenty Years of Research on School-to-Work Transition

Gempita Sari Oetomo, Ade Gaffar Abdullah*, Erik Haritman
Department of Electrical Engineering Education, Universitas Pendidikan Indonesia, Indonesia

ARTICLE INFO

Article history:
Received: 30 January 2023
Received in revised form: 18 February 2023
Accepted 28 February 2023
Available online: 28 February 2023

Keywords: school-to-work transition; scientometric; education

Authors email: ade_gaffar@upi.ac.id

ABSTRACT

The suitability of work in adolescents with education graduates is very important, to explore the role of learning and skill skills in the process of transitioning from education to the world of work with results that show more dominance in theoretical knowledge, communication, problem-solving, and learning abilities. The transition from education to the world of work is marked by conditions that are constantly changing and the stability of education is starting to diminish. This study analyzes the most relevant themes related to the transition from education to the world of work through scientometric analysis using the keywords “School-to-Work Transition”, “S2W” and “Transition” as input. The Scopus database is used because it is considered the largest and most trusted database for scientometric analysis. VOSviewer software was adopted as a scientometric analysis tool for network mapping based on author, country, source, keywords, and latest discoveries. The analysis conducted on March 1 2022, found a total of 726 documents in the period 2001 to 2021 of STWT research with filtered articles in English. The results of this study indicate that in the last twenty years the number of publications on STWT has grown significantly. Based on the findings of this analysis, studies on STWT in the last four years have focused on themes related to unemployed youth, education and training, early school leave, and the country of Italy. Along with the times and increasingly sophisticated technology, a researcher requires to have innovations that are useful for further research.

1. Introduction

School-to-Work Transition (STWT) is an important foundation in the transition from adolescence to adulthood with an age range of 15 to 24 years. Adolescent life begins when they leave education and enter the world of work for the first time (Buchmann, 2011). The transition from education to the world of work is characterized by conditions that are constantly changing and educational stability is starting to diminish (Kowtha, 2011). To cope with the demands of a constantly changing labor market, education graduates need to continuously update their knowledge, skills, and attitudes (Kuijpers & Meijers, 2012; Tynjälä, 2008). Judging from the conditions that are constantly changing, education graduates can choose many types of work, for example, Diploma graduates who enter the world of work have related skills during education that are suitable for work

(Grosemans et al., 2017; Leuven & Oosterbeek, 2011). Getting a job from adolescence to adulthood is marked by the achievement of goals in the transition from education to the world of work (Grosemans & De Cuyper, 2021). To make the transition from education to the world of work is not easy for example, the presence of inhibiting factors, namely in educational attainment with a lack of social and financial support (Göbel et al., 2021). Many graduates worldwide are struggling with the transition from education to the world of work, with very high youth unemployment rates over the last decade (van der Horst et al., 2021). Adolescents with a tertiary level of education need about 10 months to find a suitable place to satisfy a job, not because education graduates lack options, but also because often find educational graduates who fail to find work that matches their interests, personality, and skills (ILO). , 2015; ILO, 2014; Solberg et al., 2002).

The suitability of work in adolescents with education graduates is very important, to explore the role of learning and skill skills in the process of transitioning from education to the world of work with results that show more dominance in theoretical knowledge, communication, problem-solving, and learning abilities. There are four types of elements that are constructive for transitional suitability, namely vertical, horizontal, competence, and people in the environment (Grosemans et al., 2017). Based on these elements, individual suitability, demand, and supply of labor and competence which is one element with a constructive nature are some of the external factors that affect the employee recruitment process (Amoako et al., 2019). Career competence refers to knowledge and skills for career development. The early choice of job type can have an impact on career outcomes in the long run (Grosemans & De Cuyper, 2021). Resources in career competence are seen from certain skill factors for example, the difference between men and women (Glewwe et al., 2017). The strong difference between men and women in employment is seen in women with higher education mostly having a higher risk of long-term losses, while men with higher education can offset losses by achieving higher achievements as well as by developing themselves. more serious in their skills in the world of work (Brzinsky-Fay & Solga, 2016).

In Europe, the transition from education to the world of work is much more successful for indigenous youth than for groups of youth who have certain different characteristics. In 2011, the youth unemployment rate of residents who did not participate in intergovernmental organizations in European countries was 29% higher than the percentage of indigenous people who succeeded in this transition from education to the world of work. While in Belgium analyzing the percentage figures reached 32% and 18%, resulting in a difference of fourteen percentage points, which is reported as one of the largest in the Organization of Economic Co-operation and Development (OECD) (Baert & Cockx, 2013). While with the times there may be ideas that are exaggerated, both academic researchers and other researchers. However, researchers seem to agree that the educational transition to the world of work is defined as the end of compulsory education and as the achievement of a permanent job or part-time job (Hayward, 2010).

Based on previous research on the topic of STWT research, there are still things that need to be improved, so this study will provide important information about STWT in twenty years based on scientometric analysis and distinguish it from previous research. Researchers know that globally there are still no published articles discussing the topic of STWT using the scientometric method. For this reason, this study aims to determine the development of STWT based on the 2001-2021 range based on the Scopus database and visualize network mapping and what objects are often discussed in this topic. The results of this study are expected to obtain information about STWT based on developments from year to year during the 2001-2021 range and find out the latest findings in STWT topic publications. Based on the description of the background, in this study, it is necessary to provide a clear solution to the problem under study, so the formulation of the problem is made, namely:

RQ1: How is the development of STWT in the period 2001-2021 based on the Scopus database?

RQ2: How does the network map the co-authorship analysis by a country unit of analysis and authors on the STWT study?

RQ3: How is the network map on citation analysis based on the unit of analysis of the authors and sources on the STWT topic?

RQ4: How is the network map on co-citation analysis based on the author's unit of analysis and sources on the STWT topic?

RQ5: How to map the network between keywords in the co-occurrence analysis of STWT topics?
RQ6: How is the state of the art based on co-occurrence analysis on STWT research?

2. Method

This study uses analysis with quantitative methods and descriptive approaches. In this study, it is necessary to pay attention to several stages to assist in the implementation of research and to be able to answer questions that have been formulated. The following are the stages that need to be considered in the research procedure.

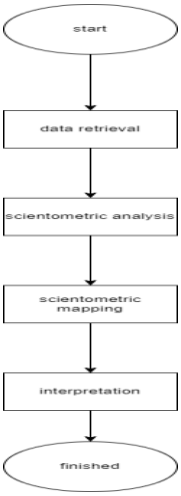


Figure 1Flowchart of research procedures

The data collection process in this study accessed the Scopus database. The Scopus database is an internationally effective bibliography of scientific literature created by Elsevier in November 2004 and has been conducting citation analysis since 1996 and provides insight into research around the world (Sánchez et al., 2017) by inputting keywords and the results of the data input. in the form of Microsoft Excel. This type of research on Scopus data is in the form of articles with a range of 2001-2021 and only articles that use English. Scientometric analysis research was used to review the results of previous studies on the topic of STWT. The analysis carried out is publication trend analysis, co-authorship analysis, co-occurrence analysis, citation analysis, and co-citation analysis. This data analysis uses the VOSviewer software as a free tool that offers all the functionality needed to visualize and research related scientometric mapping. (Golizadeh et al., 2020) . The data collection process to achieve the appropriate results. The following is the research flow shown in the flowchart below:

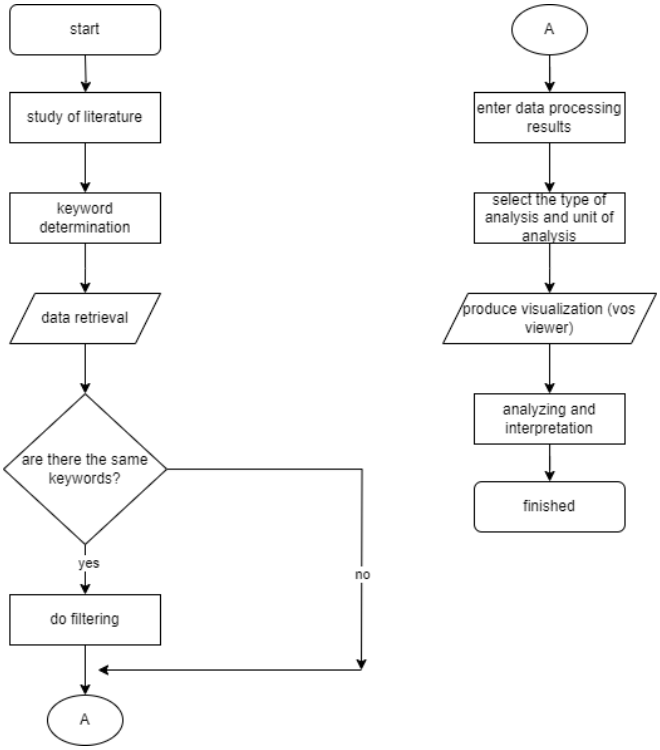


Figure 2. Flowchart of the data collection process

Based on the research flow in Figure 2, the literature study is the initial stage carried out to facilitate researchers to the next stage by looking for journals or articles and then making a journal review that is by the STWT research topic category seen from the journal or article in outline, namely the title, purpose, methods, and important discoveries. After conducting a literature study and getting a discussion that by the topic of the journal or article that has been reviewed, the next step is to determine keywords. The keywords that match the purpose are (TITLE-ABS-KEY ("School-to-Work" OR "S2W") AND TITLE-ABS-KEY (transition* OR transformation* OR changeover)). Then, data mining is taken from the Scopus database with the keywords that have been set in the previous stage. In the data mining process, data filtering was also carried out, by filtering based on the type of journal and article publication, the 2001-2021 range, and the publication of articles that only used English. Data that has been filtered can be exported in CSV form with a total of 726 data obtained as of March 1, 2022. After downloading the data in CSV form then the data is inputted into the OpenRefine web-based application to process keywords with the same meaning. If after processing the keywords there are still the same word meanings, then filtering is needed again by doing a manual thesaurus using notepad and then the data results are exported in CSV form again and then inputted into the VOSviewer software. When the data has been inputted, to see the results of the research mapping visualization, there is a type of analysis chosen to achieve the goals that have been made, namely co-authorship with the country analysis unit and the author; citation and with the unit of analysis of the authors and sources; co-citation with author and source analysis unit and type of co-occurrence analysis with author keyword analysis unit. The visualization that was successfully generated by VOSviewer was then analyzed using the scientometric analysis method based on the research topic "Scientometric Analysis of Twenty Years of Research on School-to-Work Transition ".

3. Results and Discussion

3.1. Results

In this section, the author describes the results of the data that has been taken from the Scopus database. The results that have been obtained provide aspects based on the formulation of the problem in the previous discussion.

3.1.1. Publication Trend Analysis

The development of the following publication trends is based on the Scopus database with a range of 2001-2021 on the topic of STWT. As seen in the graph, Figure 3 shows the increase and decrease in the number of publications which are divided into two periods, the first period is the productivity of publications in 2003 with the number of publications 12 which is the lowest number of publications, then the number of publications increased again in 2005 with the number of publications 21. Period the second is in 2014 which experienced an increase in the number of publications again with the number of publications 56, then experienced a decrease in the number of publications again but not too significantly. 2021 is the productivity with the highest number of publications, namely 68 publications. In particular, the publication of this research is always growing every year with the number of publications during the last twenty years 726 publications. Judging from the development of publications based on the cumulative number, it develops relatively consistently every year. In the early 2000s, the topic of STWT began to be studied by many authors on training for youth before entering the transition from school to the world of work. For example, previous studies discussed career adaptability training to improve activities related to planning, decision making, exploration, and problem-solving.

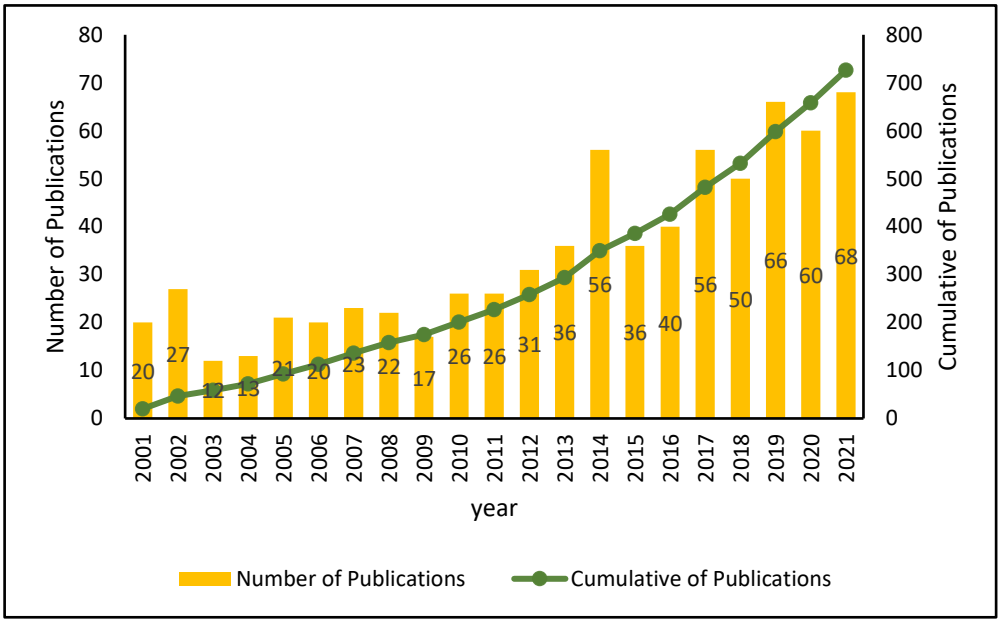


Figure 3. Publication trend development chart

Based on data on the number of publication trends each year, it can be seen that there was a very drastic decline in 2003. This is because in 2003 there was one researcher who discussed the labor market for youth in Organization of Economic Co-operation and Development (OECD) countries. , one of which the study stated that youth who left school in 2003 would be employed in part-time work in 2004, this part-time job is a desirable development among youth (Quintini et al., 2021) . Correspondingly, some researchers find that internships perform better than part-time jobs, as internships result in a significant reduction in the early-career unemployment rate (Koen et al., 2012) . With the research that discusses this, one of the effects of the publication of this topic is due to discoveries that need to be analyzed further so that the number of publications has decreased. On the other hand, in 2005 the number of publications began to increase again, this is because in 2005 all 30 OECD countries experienced high unemployment rates in youth compared to adults. Of the 30 countries, only 2 OECD countries did not experience this, namely Denmark and Germany. Based on this analysis, many researchers from OECD countries or other countries conducted research on high unemployment rates in youth compared to adults (Breen, 2005) .

As seen in the graph Figure 3, there was an increase in publications again with a fairly high increase in publications in 2014 reaching 56 publications, in contrast to the number of publications in the previous year which was only 36 publications this was due to a survey conducted by one of the organizations on the topic of STWT which took place in 2013 in 20 regions of developing

countries. The organization conducted two surveys with a different number of countries, namely 28 regions in developing countries, in the second survey, took place in 2014-2015 (Bakker et al., 2014) . This affected the increase from 2013 to 2014 and decreased in 2015. However, after the survey, publications discussing the STWT topic seen on the graph experienced a significant increase, while the graph decreased but not drastically until 2021.

3.1.2. Co-Authorship Analysis

3.1.2.1. Analysis of Co–Authorship Unit Countries

In this study, it is seen based on Figure 4 which list of 20 countries on the co-authorship visualization map with the country analysis unit. This database is quoted based on the 2001-2021 range with 85 countries on STWT topics, publication productivity based on the database inputted to VOSviewer gets the top 20 countries with a minimum of eight documents and a minimum of 54 citations after the researcher filters on the desired data threshold. Empirically, the United States is the most contributing country with 190 publications, it can be seen in the network map in Figure 5 that the United States has the largest node followed by Germany (87 publications), the United Kingdom (74 publications), and Canada (46 publications) in terms of countries, Europe and North America are the most productive in conducting this research. Meanwhile, based on citation data, the United States not only excels in publications, but also excels in obtaining citations with 4674 citations followed by Germany (2262 citations), Great Britain (1757 citations), and the Netherlands (976). Based on the citation data, each country that has a small number of publications does not influence the researchers to cite from these publications. In this case, for example, the Netherlands has 976 citations, but the Netherlands only has 27 publications.

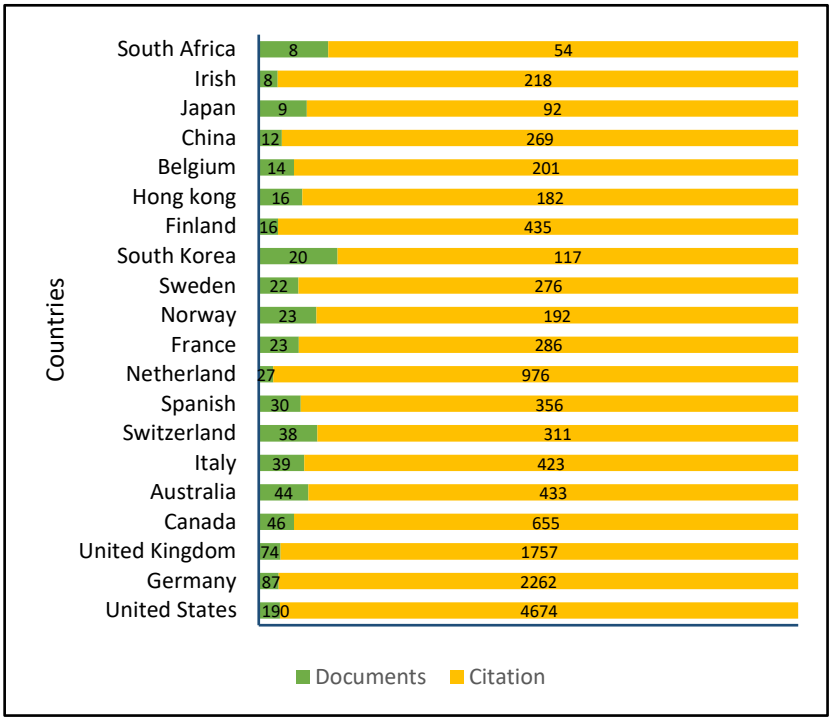


Figure 4. Distribution of the 20 most active countries based on co-authorship analysis

Based on the previous explanation, the researcher discusses the productivity of publications in a country, 20 top countries research this topic. It can be seen in Figure 5 that there are several interconnected lines, these lines are formed when two countries or regions have a cooperative relationship. The thickness of each line indicates the close cooperation relationship and the frequent cooperation between countries or regions. Regarding this, it can be seen in Figure 5 that the United States, Germany, and the United Kingdom have the largest nodes and have line thickness, the three countries have a strong cooperation network as well as other countries which are shown to be almost

all interconnected. However, for countries that are far from the network such as South Africa, this means that the country is less productive in conducting this research so that the shape of the line in the network is less clear.

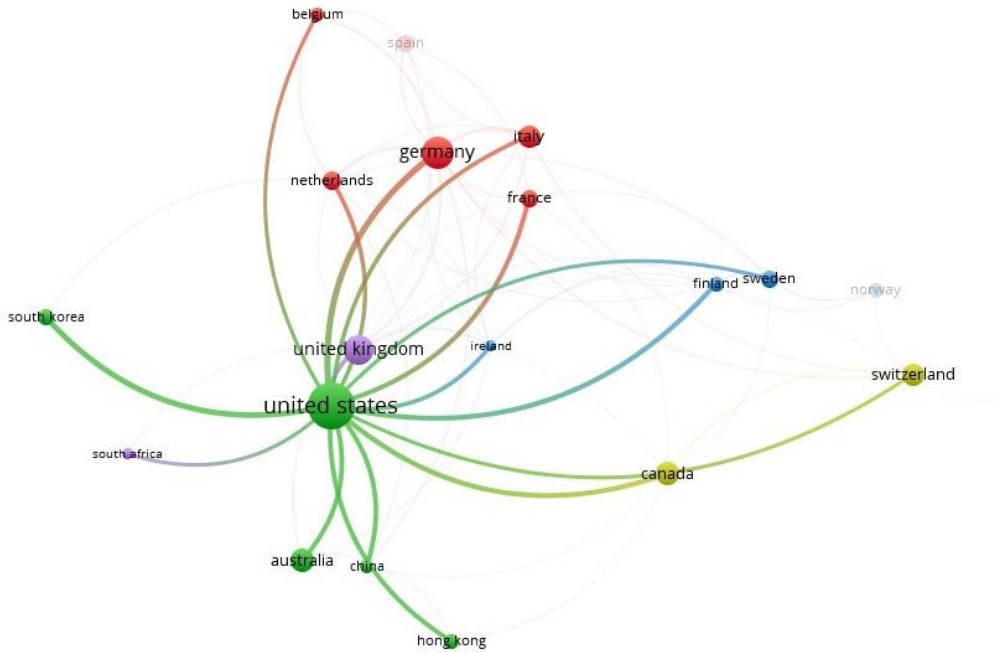


Figure 5. Network map by most productive Countries

The productivity of the United States of America is not only seen in the number of publications it produces, but also maintains close cooperation with many countries, such as the Netherlands, Belgium, Australia, France, Germany, and the United Kingdom. Japan, Norway, and Spain. Empirically, the United States is the largest article-producing country in the world with the largest number of articles.

3.1.3. Citation Analysis

3.1.3.1. Citation Unit Countries Analysis

Citation analysis is considered to have a citation relationship when documents from two countries are cited simultaneously by the second and third countries, the total number of citations indicates the quality of each article. Countries that are cited more are more influential than countries with which the article is published the most. The visualization map of country citations can be seen in Figure 8, in the process of mapping Figure 8 the minimum number of documents for a country is set at 8 documents and without a minimum citation. Based on the settings that have been set, the threshold achieved is the top 20 countries out of 85 countries. The size of the circle in Figure 8 shows the number of documents cited together, the larger the circle, the more documents are cited. It can be seen in the diagram in Figure 7 that countries that have a lot of citations, namely the United States (with 4674 citations) the two countries with the most citations are also obtained by Germany (with 2262 citations) and the United Kingdom (with 1757 citations). Of the top 20 countries, South Africa has the lowest number of citations (with 54 citations).

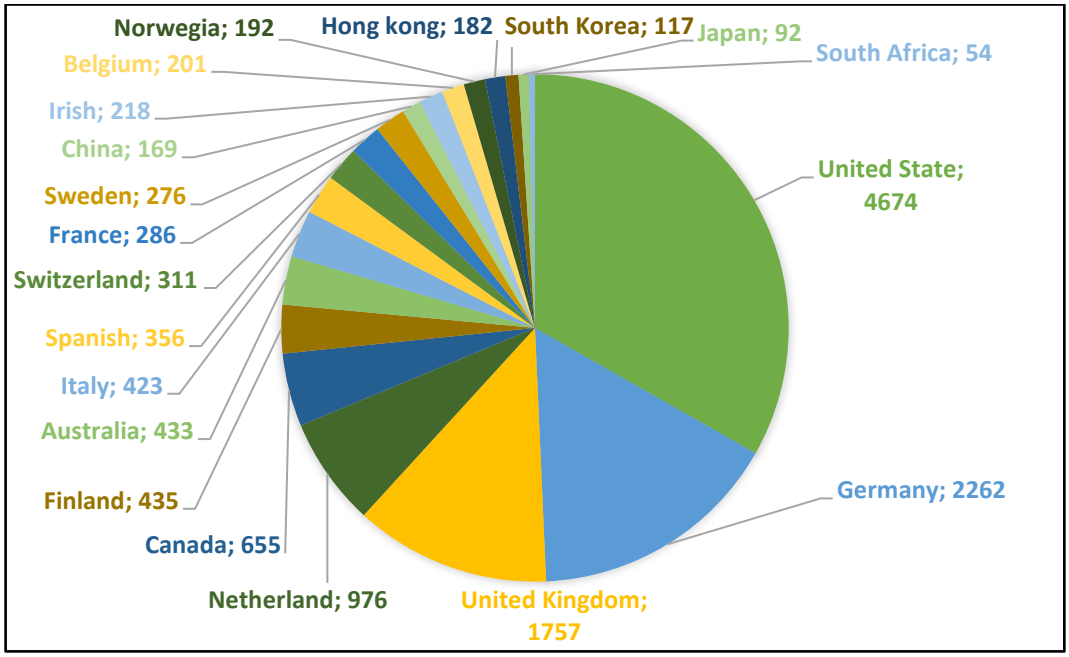
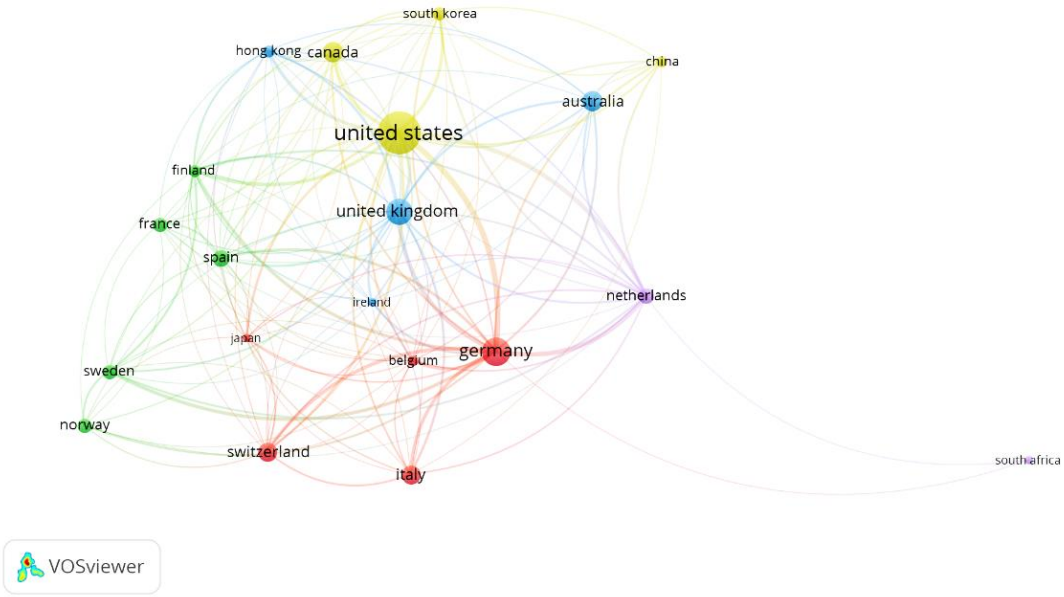


Figure 6. Distribution of the 20 most productive countries based on citation analysis seen by the number of citations

It can be seen in Figure 8 that the relationship between countries based on quotes from the top 20 countries contains five clusters. The first cluster has 5 countries (Belgium, Germany, Italy, Japan, and Switzerland), the second cluster has 5 countries (Finland, France, Norway, Spain, and Sweden), and the third cluster has 4 countries (Australia, Hong Kong, Ireland, and the United Kingdom) the fourth cluster contains 4 countries (Canada, China, South Korea, and the United States) and the fifth cluster contains 2 countries (the Netherlands and South Africa) all of these countries are interconnected citing a publication and the United States of America is the center of each country in citing, but there is one country that has no relationship with the United States, namely South Africa. South Africa has relations with the Netherlands and Germany. Based on this country citation analysis, the United States is the country most cited by other countries in publications, so the United States can be considered as the reference country in the study.

3.1.3.2. Citation Unit Authors Analysis

Author citation analysis is a publication that cites one another to identify the strength of the relationship between one author and another. As shown in Figure 10, there is a visualization map of citations based on authors with a minimum number of 4 author documents and a minimum of 47 citations, based on these settings, we get a threshold of 20 authors out of 1474 authors. It can be seen in Figure 9 that 3 authors have the highest number of citations, namely Wolbers MHJ (359 citations), Mortimer JT (343 citations), and Blustein DI (337 citations), while the authors who have the least number of citations are Paretti M. and Lee SM with 47 citations. . In this analysis there are 9 clusters of authors, 3 of which have no relationship with other authors, namely Carter EW, Lee SM, and Paretti M. The other 2 clusters that have a relationship but with the same cluster are the author's cluster (Kogan I., Lundahl L., and Wolbers MHJ) and clusters with different colors (Pastor F. and Baert S.).



Gambar 7. Peta jaringan kolaborasi kutipan antar Negara

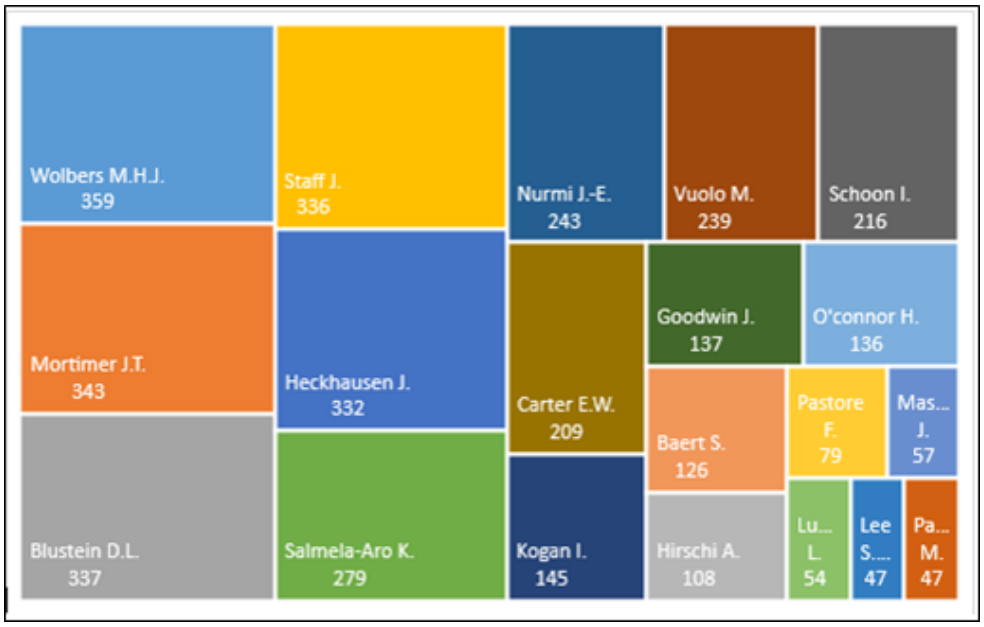


Figure 8. TreeMap 20 of the most prolific authors based on citation analysis seen by some citations

In this author's visualization network, based on the top 20 authors, not all of them have a relationship with each other, only 12 authors have a strong relationship as shown in Figure 10, while the other 8 authors do not have such a strong relationship as described in the previous paragraph. In Figure 10 there are 4 clusters, these clusters are interconnected with each other. The red cluster is associated with 4 authors (Heckhausen J., Hirschi A., Nurmi JE, and Salmela-aro K.), the green cluster is associated with 3 authors (Goodwin J., O'Connor H. and Schoon I.), the blue cluster also has a relationship with 3 authors (Mortimer JT., Staff J., and Vuolo M.) and the yellow cluster only has a relationship with 2 authors (Blustein DL and Masdonati J.). Analysis of this author's citations shows that while the authors in the publication are still developing with each network still scattered in many other networks outside the main cluster. This shows that research on the topic of STWT still

has many opportunities for new research or development and for new authors it is not necessary to rely on authors who have been widely cited.

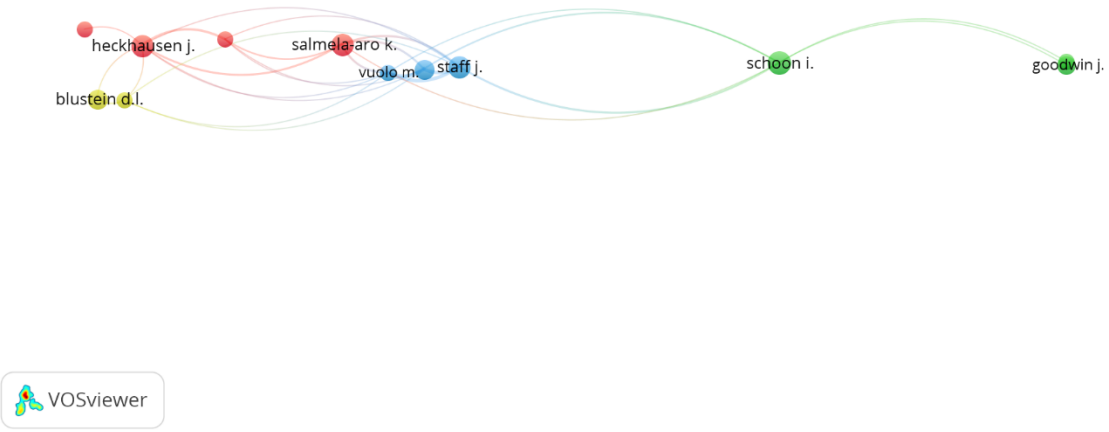


Figure 9. Map of the network of citation collaborations between closely related authors

3.1.3.3. Citation Unit Source Analysis

As shown in Figure 11, there are 357 sources of articles on VOSviewer on the topic of STWT for the years 2001-2021. To get the top 20 sources, the sources are set with a minimum of 6 publications and a minimum of 41 citations. The journal's relationship with the citation relationship is seen based on the distance and line thickness of each journal on the visualization map. Journal of Education and Work (30 publications), Journal of Vocational Behavior (29 publications), Journal of Youth Studies, and Journal of Vocational Rehabilitation which have the same number of publications (24 publications). These journals are the most productive journals during the years 2001-2021 with the top 20 journal sources. While the other journals have some publications of not less than 6 publications. Figure 11 presents a list of the 20 most cited publication sources with 1683 citations from the top 29 publications belonging to the Journal of Vocational Behavior. In this analysis, the publications with the highest citations published in 2010 are seen based on the network map in Figure 12 with the yellow circle. Then from 2008 to 2018, generally the publication of the cited sources of articles was centered on the Journal of Vocational Behavior.

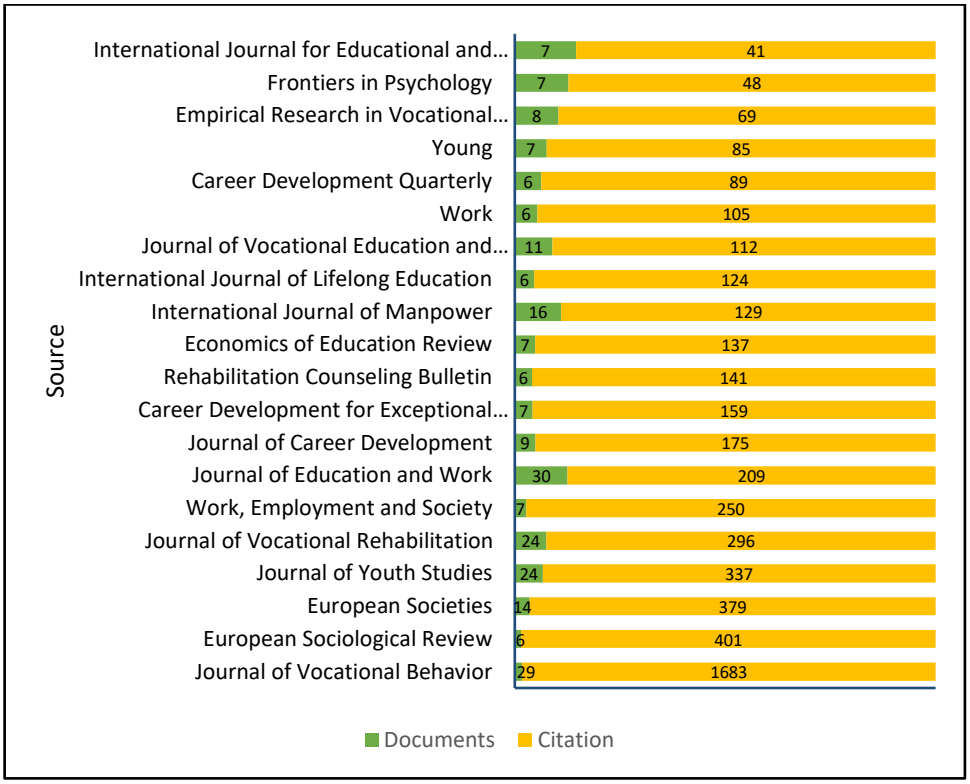


Figure 10. Distribution of the 20 most productive sources based on Citation analysis

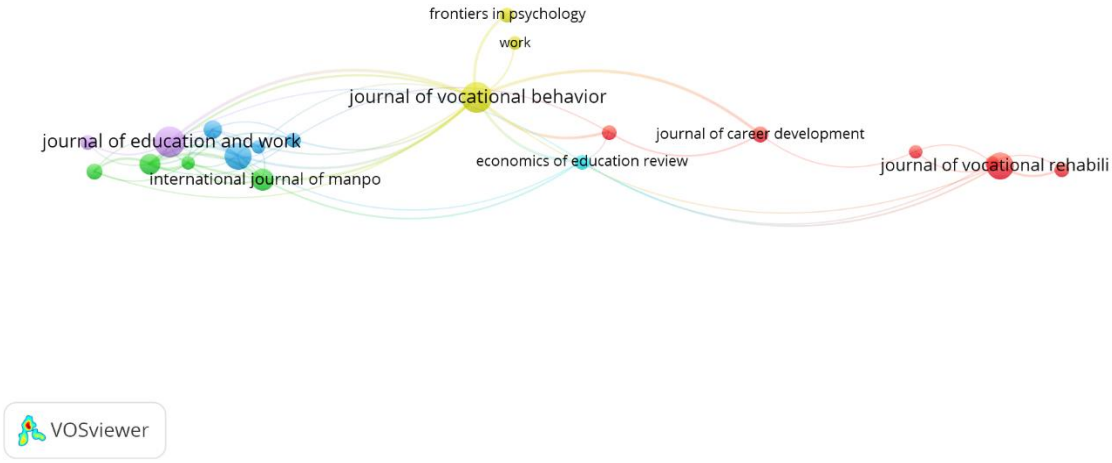


Figure 11. Collaboration Network Map between Sources

3.1.4. Co-Citation Analysis

3.1.4.1. Co-Citation Unit Authors Analysis

This analysis is defined as having co-cited when two authors' publications are co-cited by another author or another author cites the same two publications. This indicates how often they are quoted together. In this topic there are 29,239 authors cited in one study, authors were asked to be cited at least 85 times to get 20 authors who met the threshold. The relationship between author citations can be seen in Figure 14 with the list of authors in Figure 13. The top three most cited by other research based on the database are Muller, W. (168 citations), Furlong, A. (147 citations), and Savickas, ML (130 citations). quote). The three authors are prominent authors on the topic of School-to-Work Transition, thus influencing other authors in future research. As shown in Figure 14 authors

such as Muller, W. (1191 link strength), Gangl, M. (872 link strength), and Raffe, D. (848 link strength) are in the left area of the map with the strongest and most connected links. with other authors.

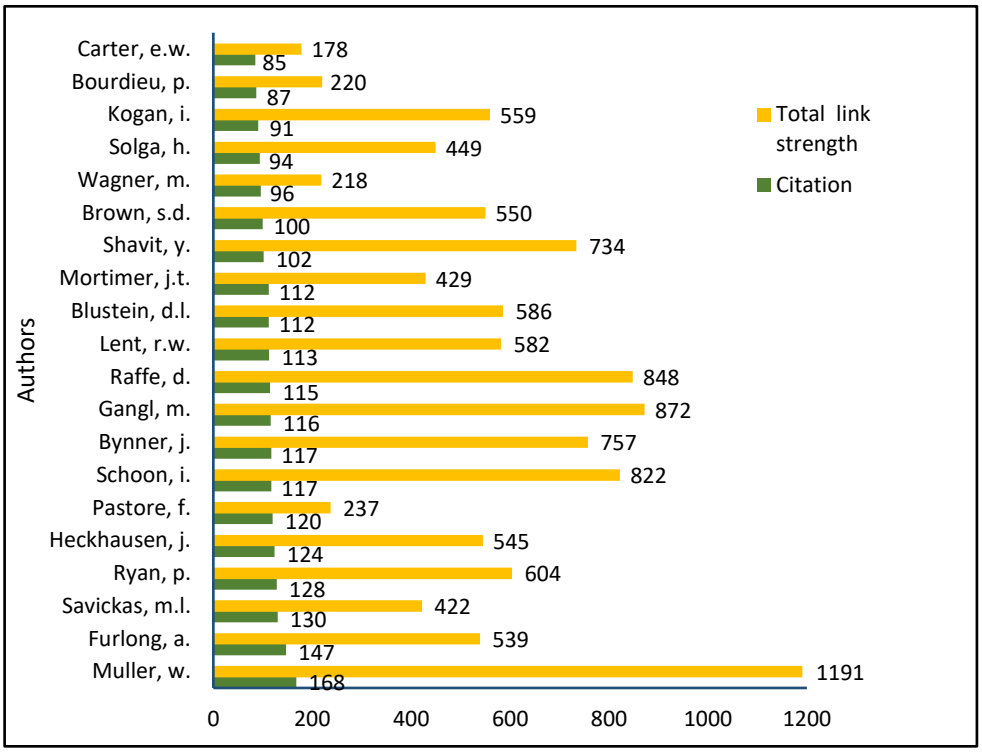


Figure 12. Distribution of the 20 most prolific authors based on Co-citation analysis

A map showing the relationship between co-citation analysis and the author's unit of analysis is visualized in Figure 14 which is divided into four clusters. The first cluster is shown in and red consists of 8 authors. Based on the total strength of links and citations, the most significant authors in this cluster are Gangl M., Kogan I., Muller W., Pastore F., Raffe D., Ryan P., Shavit Y., and Solga H. The second cluster shown in green, this cluster consists of 6 authors namely Bourdieu P., Bynner J., Furlong A., Heckhausen J., Mortimer JT, and Schoon I. The third cluster is shown in blue, this cluster consists of 4 authors namely Blustein D., Brown SD, Lent RW, and Savickas ML in this cluster the highest total link strength is the author Blustein DL (586 link strength). In the last cluster, the fourth cluster is shown in yellow, this cluster consists of 2 authors namely Carter E and Wagner M. Author Carter EW is relatively weakly connected to the network of other authors so that it has the lowest total link strength (178 link strength). Based on this joint citation analysis, shows that there is a dominant author cluster in STWT research. Although some linkages between authors are currently lacking, future research from these authors may become a centerpiece or necessary citation as the topic of this research continues to evolve.

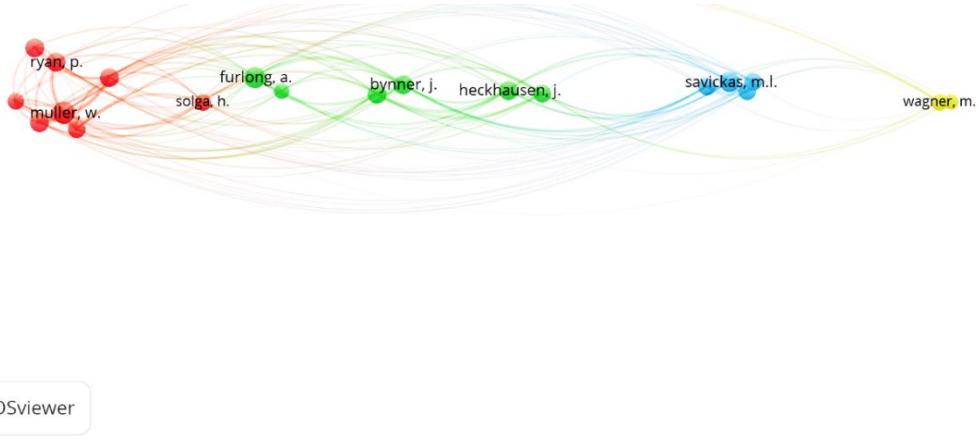


Figure 13. Map of collaboration network between authors of Co-citation analysis

3.1.4.2. Co-Citation Unit Source Analysis

In this analysis, the citation relationship with the source analysis unit is when a source cites two previous sources based on the number of sources that have a relationship in the source reference list. In this analysis, 98 citations have been applied to generate the highest source of link strength from shared citations. Of a total of 14,873 sources based on the database that has been inputted only 20 sources meet the threshold. It can be seen in Figure 15 which is the top 20 sources, that the Journal of Vocational Behavior (7728) is the source that has the highest link strength and citations (789 citations) followed by the Journal of Applied Psychology (3583) with (212 citations) and the Journal of Career assessment. (2055) with (117 citations). Based on this explanation, the source with the high number of citations did not determine that the source did a joint citation. In Figure 16 there are 20 circles and 170 lines in the network. The size of each circle is proportional to the amount of link strength received by the source. Thus, a large circle indicates the source that co-cited. The circles are distinguished by the colors shown in Figure 16, namely red, green, and blue.

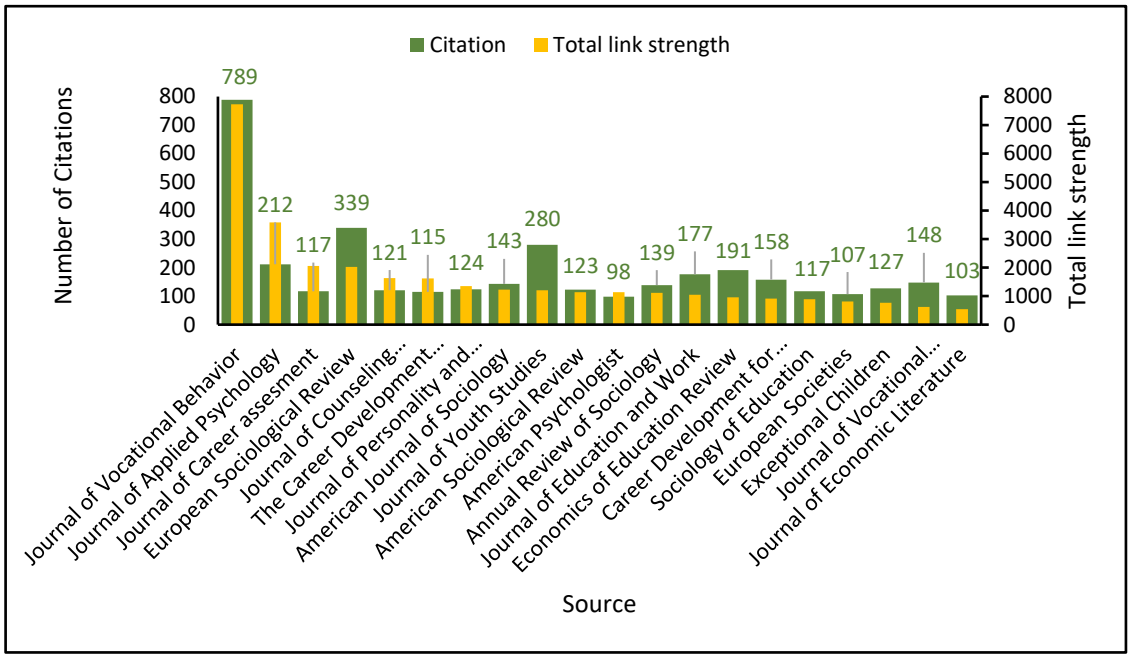


Figure 14. Distribution of the top 20 sources based on Co-citation analysis

Figure 16 shows 3 clusters with different colors, each cluster shows the source most relevant to the STWT research topic and analyzes that there is a strong relationship with other sources. Cluster one shown in red contains 10 sources, in this cluster, the European Sociological Review becomes the largest circle and has stronger links with other sources (2023 link strength). The second cluster shown in green contains 7 sources, in this cluster, the Journal of Vocational Behavior is the source that the center and has the strongest relationship among the top 20 sources with the highest total link strength (7728). The third cluster shown in blue contains 3 sources, in this cluster Career Development for Exceptional Individuals is the strongest source with total link strength (918). Each cluster has a relationship based on its field, for example, in the red cluster most of the sources researching this topic are in the fields of education and sociology and in the green cluster the most dominant are sources in the fields of psychology, vocational, and career. In this analysis, the wider range of STWT topics from publication sources has been analyzed as listed in Figure 15. The results of this analysis reveal what publication sources are cited together in STWT research.

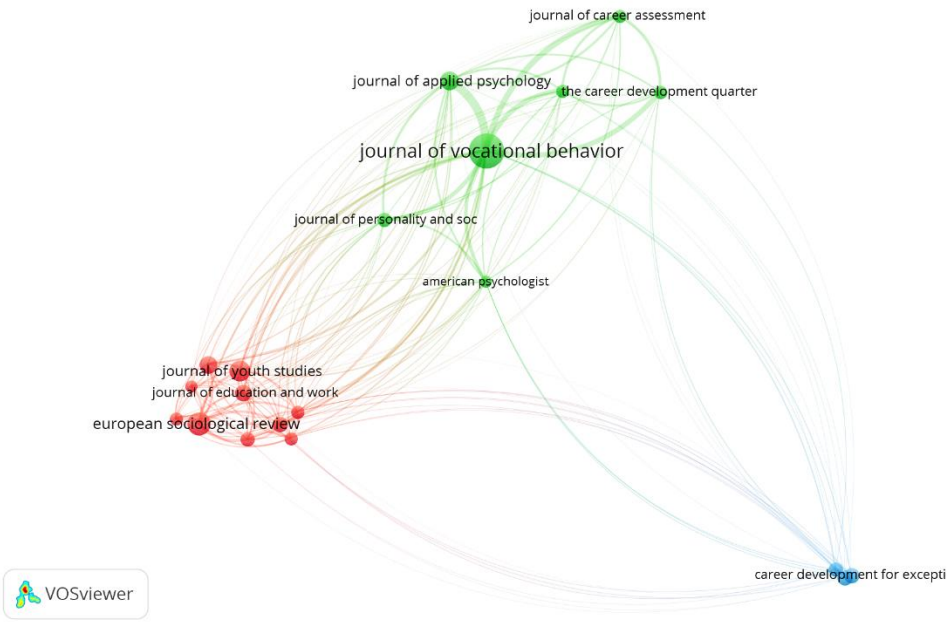
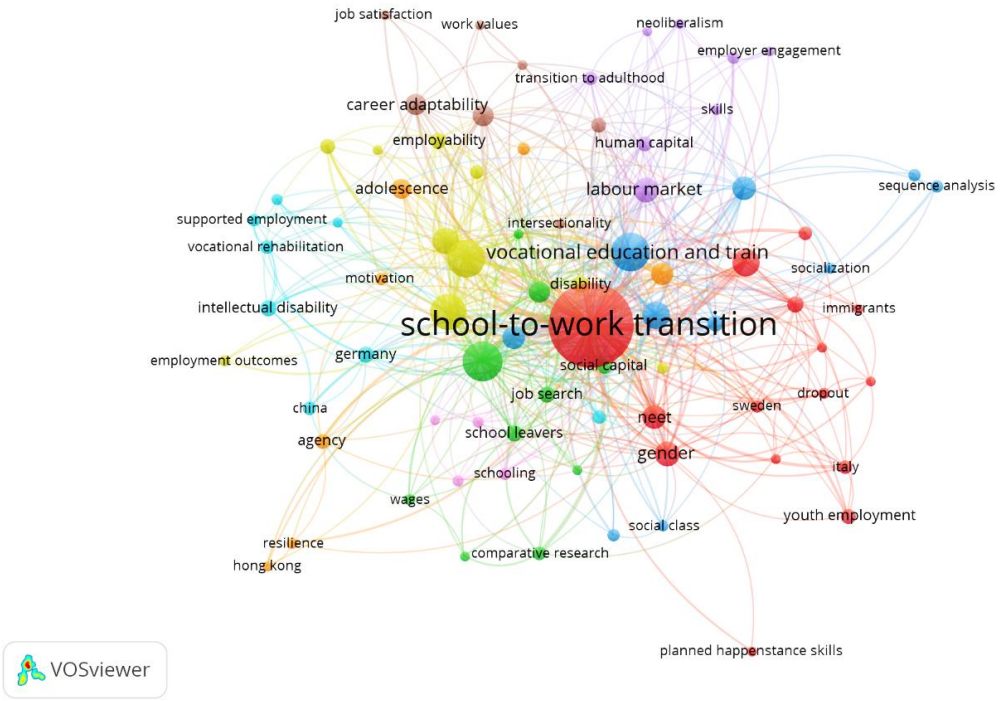


Figure 15. Map of collaboration network between sources of Co-citation analysis

3.1.5. Keyword Analysis Co–Occurrence

In this study, to explore keywords related to the STWT topic based on the 2001-2021 range, the data was first filtered on the VOSviewer application. The database entered into the VOSviewer shows that there are 1680 keywords involved in this research. To get the threshold of 79 keywords then the minimum number of occurrences of keywords in the settings is 4 times. The size of the circle represents the number of articles in which each keyword appears and the color represents the cluster in which that keyword is based on the number of occurrences. In general, in the co-occurrence analysis of the author's keywords, namely the larger the circle size, the more often these keywords appear.

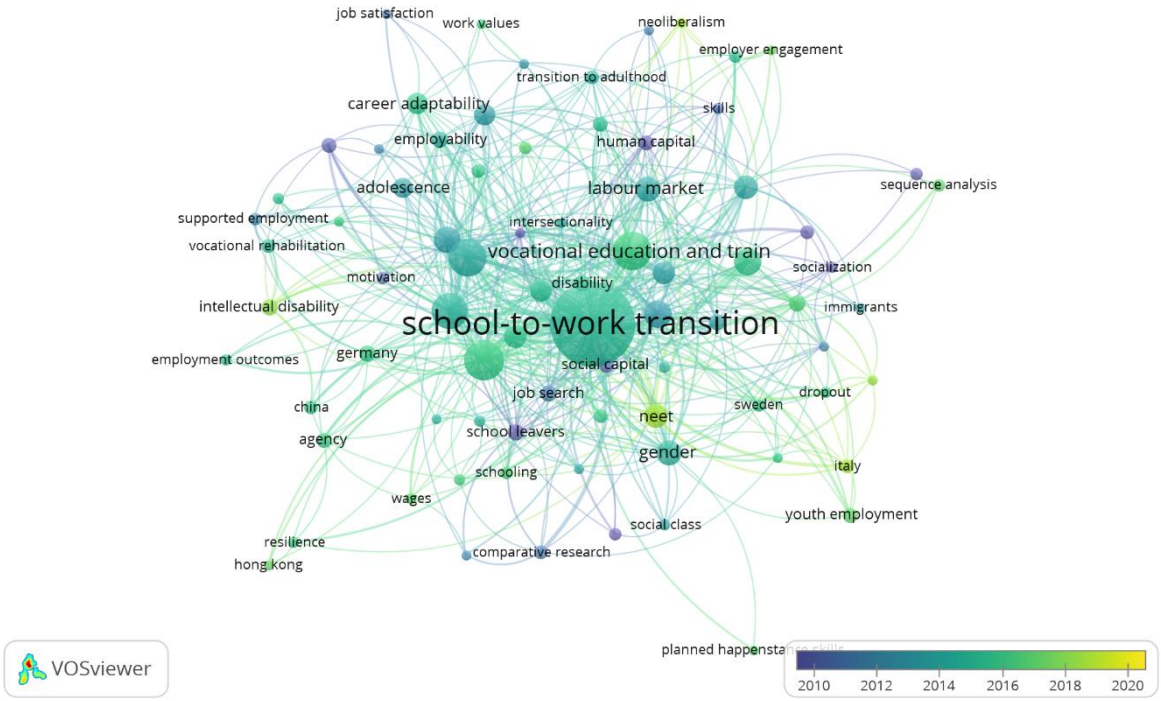


Gambar 16. Peta jaringan kata kunci

After conducting keyword analysis, 9 main clusters represent STWT topics. The visualization map in this analysis has the most keywords shown in red, green, and blue clusters. The keyword " School-to-Work Transition " has the strongest relationship shown in the first red cluster, in this cluster there are 15 keywords such as dropout, early school leaving, educational attainment, gender, immigrants, Italy, life course, NEET, planned happenstance skill, propensity score matching, social exclusion, Sweden, youth employment, youth unemployment. The second green cluster contains 10 keywords, the largest circle in this cluster is the keyword "youth" and there are 9 other keywords such as comparative research, job search, labor market entry, school leavers, social capital, training, transition economies, unemployment, wages. The third blue cluster contains 10 keywords, the largest circle in this cluster is the word "vocational education and training" and there are 9 other keywords such as apprenticeship, education, higher education, mentoring, sequence analysis, social class, socialization, work, youth transitions. Meanwhile, in the other central cluster, the fourth yellow cluster contains 10 keywords with the three largest circles in this cluster, namely the keywords employment, transition, and school-to-work. In the fifth purple cluster, there are 8 keywords with the three largest circles in this cluster, namely the labor market, human capital, and transition to adulthood keywords. In the sixth light blue cluster, there are 8 keywords with the three largest circles in this cluster, namely Germany, intellectual disability, and vocational rehabilitation. In the seventh orange cluster, there are 7 keywords with the three largest circles in this cluster, namely the keywords young adult, adolescence, and agency. In the eighth brown cluster, there are 7 keywords with the three largest circles in this cluster, namely the keywords career adaptability, career development,

and Switzerland. In the ninth pink cluster, there are 4 keywords with the three largest circles in this cluster, namely the keywords schooling, class, and inequality.

Figure 18 shows the change and stability of the keywords in this study, it can be seen that based on the average year, the keyword "School-to-Work Transition" dominates in the range from 2010 to 2016. Based on the co-occurrence network map, word changes are divided into 3 The period from 2010 to 2012 was seen based on the color transition from purple to green the most common keywords were school leavers, youth with disabilities, job search, and education. From 2014 to 2016, it was seen based on the color transition from turquoise green to light green, the most common being keywords that dominated work, transition, higher education, youth, and vocational education and training. Meanwhile, from 2018 to 2020, the keywords are early school leaving, intellectual disability, NEET, and Italy. From 2018 to 2020, it is seen based on the color transition from green to yellow which is the most common and the most recent keyword in STWT research publications. Keywords on this research topic will continue to appear as a combination of the latest topics and with technological developments that will continue to evolve.



Gambar 17. Peta overlay visualiasasi kata kunci

3.2. Discussion

Based on the explanation of the co-occurrence analysis, this section will discuss the most recent and appropriate publications grouped by cluster. The research topics analyzed were viewed based on research interests, the number of publications found when conducting literature, and viewed from the most relevant topics. In Figure 18 each color circle shows the occurrence of keywords that correspond to the year of publication. The bluish-purple circle indicates an old research topic, while the yellowish-green circle is the latest research topic in STWT research. The recent findings in this study are part of a very influential content article, so an analysis of the emergence of these findings can show significant developments in STWT research and is very interesting to understand the popularity over the last twenty years. In the STWT study, the latest findings were Not in Education, Employment, or Training (NEET), Italy, and early school leaving these findings were the most influential findings in 2018 and continued until 2021.

The definition of NEET was created for a group of youth under the age of 18 who are out of work and education or training but are not eligible for unemployment benefits. This has later been

expanded in terms of age which plays an important role for policymakers and researchers interested in youth inactivity beyond unemployment (Breen, 2005; Ryan., 2001) . NEET is a concept that analyzes youth in STWT research, this concept mostly occurs in European countries and Japan (Coles B Godfrey, 2010) . The NEET concept investigates the extent of individual characteristics of some youths between 15-29 years of age. Based on the percentage of NEET in the population (15-24 years) in European countries and Japan showed a significant difference (Caroleo et al., 2020) . Nearly 30% of all youth in Turkey are NEETs, while the Netherlands has the lowest rate of 7%. Despite the fact of social urgency, scientific attention to NEET is kept simple. As a result, theoretical understanding of NEET is still limited (Furlong, 2006; Quintini et al., 2021) . Judging by the facts, some books analyze this gap to investigate the patterns, determinants, and consequences of being a NEET and identifying individual predictors of NEET status in different countries, explore how individual and institutional characteristics and country policies interact and explain why young people are more likely to be NEETs in certain countries. To achieve this goal, this book in its research uses national databases from five countries (Levels et al., 2022) .

The findings of the NEET concept from the study are that there are researchers who explain that little policy attention is needed to distinguish NEET youth who are more at risk and support the idea that NEET in its broadest sense is not a sociologically meaningful category (Furlong, 2006) . Although often seen as more vulnerable, persistently inactive, and less responsive to policy initiatives than unemployed youth, some researchers have found that not all NEETs are equally disadvantaged and most NEETs re-enter the education system or labor market within ten years. years (Bynner & Parsons, 2002) . Thus, only a small proportion of youth remain in NEET status in the long term. The study also found that less than 18% of youth had at least one month of NEET in the Netherlands, about 13% in France, about 12% in Germany, and about 20% in the UK. Whereas in Japan, this percentage is slightly higher, where more young people have NEET status within a month or more and are involved in a prolonged NEET pathway at 32% (Simmons et al., 2014) . However, in general, from this longitudinal perspective, some researchers argue that the concept of NEET is better understood as part of the school-to-work transition and as a brief and transient stage of life (Levels et al., 2022) .

In 2020 there was an article discussing the duration of the school-to-work transition in Italy, which aims to provide a more realistic measure of duration in Italy, in this study uses the Italian dataset from the EU-SILC survey (Luca et al., 2019) . The results obtained are that the duration of the transition from school to the world of work is much longer than previously believed. The median duration for people aged 18–34, after completing education was 3 years and a shorter duration of the school-to-work transition was found for those with higher education, they found employment 46 months earlier on average than those with higher education. compulsory education, although this duration may still be too long for college graduates, given the average time required to earn a bachelor's degree is between 7-8 years (Pastore et al., 2017; Pastore, 2020) .

In this study, NEET and Italy are findings that are still closely related to STWT research, several studies discuss NEET in Italy. First, there is a study that aims to understand how the experience of failing in the transition from school to work is and to explore the themes of the Italian blog written by NEET with the methods of data extraction, variable choice, and data analysis. In this sense, blogs are a virtual space for identity construction and representation and can also generate a sense of belonging and support (Care et al., 2010) . Online narrative mediates between the individual and the outside world and gives one meaning back to one's own experience (Gargiulo & Margherita, 2019) . The results of this study found that the lack of transition from school to work brings dangerous emotions, then in line with the NEET mental health literature, the narrative shows feelings of discomfort with psychological conditions, feelings of loneliness, impotence, anxiety and also anxiety and depression. In addition, NEET suffers from a mismatch between available education and employment pathways (Parola, 2020) . Second, a study analyzing the dropout consequences of higher education, compared youth who never enrolled in university after graduating from high school in Italy in terms of three initial labor market outcomes, namely probability of being a NEET, probability of getting a "bad" job and income. entry level (ISTAT, 2010) . Using data from a survey of high school graduates by the Istituto Nazionale Statistica (ISTAT) and investigating the effect of dropping out four years after graduation. Overall, the labor market outcomes of Italian university graduates were

negatively affected compared with secondary school graduates who chose not to enter university. Another finding is that dropouts will face a higher risk of becoming a NEET (Ghignoni et al., 2019) .

Early school leaving is defined as a youth who does not complete high school due to not enrolling or dropping out of school, this definition is often found in the category of a NEET (Contini et al., 2019; Furlong, 2006; Thomàs-vanrell et al., 2015) or a job not quality at low wages (Fenton, 2006; Gesthuizen et al., 2011; Solga, 2002; Vries & Wolbers, 2005) . In 2020 there is an article that discusses changes in the labor market for women with low education by comparing the experiences of four groups of births of early school graduates in Italy. This study uses a survey method conducted in 2009 with a population sample of 8,015 early school graduates born between 1954-1993. The results obtained in this study are that early school leaving can worsen the process of gender segregation and the cumulative loss process by reducing job opportunities for women whose work levels are already very low in Italy. (O'Higgins Niall et al., 2007) . Early school leaving can also worsen the employment process for women, whose employment rates are already very low in Italy. Delayed transition to the labor market or in the form of underemployment, is likely to be debilitating and create uncertainty around future steps of transition to adulthood, such as living independently, seeking full-time employment, and starting a family (Struffolino & Borgna, 2021) .

4. Conclusion

This study uses a descriptive quantitative approach to scientometric analysis with the topic of STWT for the period 2001-2021 using the VOSviewer application and the Scopus database. In this study, several types of analysis are discussed based on the formulation of the problem, namely the development of publication trends by year, country, the most productive authors and sources, and the most influential keywords in this research. The types of analysis discussed are co-authorship, citation, co-citation, and co-occurrence.

In general, the trend of publications on STWT research is still an interesting topic to discuss because seen from the development of publications from year to year there are still many researchers who discuss the topic, although in 2002-2003 and 2014-2015 there was a drastic decline, in 2002-2003 and 2014-2015 there was a drastic decline. -the following year until 2021 the average publication will increase. Based on the type of analysis used, the analysis of co-authorship collaboration between countries, three countries in Europe and North America are the most productive in conducting STWT research, these three countries have strong links with other countries while collaborations between authors do not have much relationship with other authors. This shows that the number of documents published in a country does not indicate a high level of the interrelationship between authors.

Citation analysis research is dominated by developed countries with the most citations in STWT research publications in this analysis, the authors or journal sources that have the highest number of publications do not guarantee that these publications will be widely cited by other researchers. The advantages of authors and journal sources are not seen from an author and journal source that has the highest number of publications but can be seen from the citations they get. Likewise, with co-citation analysis which gives results if two authors or two journal sources are quoted by the author or a third journal source, it can be said that the authors or journal sources are interrelated. The author or journal source that has the largest node is the author or journal source that has the strongest relationship compared to other journal authors or sources.

If viewed based on the results of co-occurrence research, it shows that in this STWT topic research the keywords that are often used are keywords related to the fields of education, training, and work. STWTs generally need to know these three areas before moving on to the permanent employment stage. The results of this analysis also show that with the times and increasingly sophisticated technological developments, the trend of keywords in each year must experience changes. Along with the times and increasingly sophisticated technology, a researcher requires to have innovations that are useful for further research. Based on the latest findings that have been discussed, the narrative generated on the findings of the NEET concept can make STWT research wider because, with the writings of youth who are not in work, education, and training, further

researchers need to pay attention. Starting with the field of education, gender and age are three things that greatly affect the future of youth.

STWT topics based on the results of this study need to be analyzed in the future along with the development of increasingly sophisticated technology through the VOSviewer software, research on this topic can be used as an evaluation for further research on the STWT topic on the Scopus database and this research is also very relevant to the field of engineering studies. This is because the transition from school to the world of work is most prominent, namely in schools with vocational or vocational graduates who have the basic ability to continue into the world of work early.

References

Bakker, B. F. M., Van Rooijen, J., & Van Toor, L. (2014). The System of social statistical datasets of Statistics Netherlands: An integral approach to the production of register-based social statistics. *Statistical Journal of the IAOS*, *30*(4), 411–424. https://doi.org/10.3233/SJI-140803

Breen, R. (2005). Explaining cross-national variation in youth unemployment: Market and institutional factors. *European Sociological Review*, *21*(2), 125–134. https://doi.org/10.1093/esr/jci008

Bynner, J., & Parsons, S. (2002). Social exclusion and the transition from school to work: The case of young people not in education, employment, or training (NEET). *Journal of Vocational Behavior*, *60*(2), 289–309. https://doi.org/10.1006/jvbe.2001.1868

Care, I., Mellin, E. A., Bronstein, L., Anderson-butcher, D., Amorose, A. J., Ball, A., & Green, J. (2010). *Measuring interprofessional team collaboration in expanded school mental health : Model refinement and scale development*. *24*(September), 514–523. https://doi.org/10.3109/13561821003624622

Caroleo, F. E., Rocca, A., Mazzocchi, P., & Quintano, C. (2020). Being NEET in Europe Before and After the Economic Crisis: An Analysis of the Micro and Macro Determinants. In *Social Indicators Research* (Vol. 149, Issue 3). Springer Netherlands. https://doi.org/10.1007/s11205-020-02270-6

Coles B Godfrey, C. (2010). Estimating the life-time cost of NEET: 16-18 year olds not in Education, Employment or Training Research Undertaken for the Audit Commission. *Department of Social Policy and Social Work and Department of Health SciencesDepartment of Health Sciences*, 16–18.

Contini, D., Filandri, M., & Pacelli, L. (2019). *Persistency in the NEET state : a longitudinal analysis Persistency in the NEET state : a longitudinal analysis*. *6261*. https://doi.org/10.1080/13676261.2018.1562161

Fenton, S. (2006). *Fragmented careers? Winners and losers in young adult labour markets*. *20*(2), 205–221. https://doi.org/10.1177/0950017006064111

Furlong, A. (2006). Not a very NEET solution: Representing problematic labour market transitions among early school-leavers. *Work, Employment and Society*, *20*(3), 553–569. https://doi.org/10.1177/0950017006067001

Gargiulo, A., & Margherita, G. (2019). *of Clinical Phychology*. *7*, 1–19.

Gesthuizen, M., Solga, H., & Ku, R. (2011). *Context Matters : Economic Marginalization of Low-Educated Workers in Cross-National Perspective*. *27*(2), 264–280. https://doi.org/10.1093/esr/jcq006

Ghignoni, E., Croce, G., Ambrosio, A., Ghignoni, E., Croce, G., & Ambrosio, A. (2019). *University dropouts vs high school graduates in the school-to-work transition Who is doing better ?* https://doi.org/10.1108/IJM-02-2018-0051

Golizadeh, H., Hosseini, M. R., Martek, I., Edwards, D., Gheisari, M., Banihashemi, S., & Zhang, J. (2020). Scientometric analysis of research on “remotely piloted aircraft”: A research agenda for the construction industry. *Engineering, Construction and Architectural Management*, *27*(3), 634–657. https://doi.org/10.1108/ECAM-02-2019-0103

ISTAT. (2010). *Occupati e disoccupati IV trimestre 2009*.

Koen, J., Klehe, U.-C., & Van Vianen, A. E. M. (2012). Training career adaptability to facilitate a successful school-to-work transition. *Journal of Vocational Behavior*, *81*(3), 395–408. https://doi.org/10.1016/j.jvb.2012.10.003

Levels, M., Brzinsky-Fay, C., Holmes, C., Jongbloed, J., & Taki, H. (2022). Not in Employment, Education, or Training around the World. In *The Dynamics of Marginalized Youth*. Routledge. https://doi.org/10.4324/9781003096658-1

Luca, G. De, Mazzocchi, P., Quintano, C., & Rocca, A. (2019). *Italian NEETs in 2005 – 2016 : have the Recent Labour Market Reforms Produced Any Effect ?* 1–23. https://doi.org/10.1093/cesifo/ifz004

No, I. Z. A. D. P., Pastore, F., & Pastore, F. (2017). *DISCUSSION PAPER SERIES Why So Slow ? The School-to-Work Transition in Italy Why So Slow ? The School-to-Work Transition in Italy*. *10767*.

O'Higgins Niall , D'Amato Marcello .Caroleo Floro, B. A. (2007). *Gone for Good ? Determinants of School Dropout in Southern Italy IZA DP No . 3292 Gone for Good ? Determinants of School Dropout in Southern Italy Niall O ' Higgins Marcello D ' Amato Floro Ernesto Caroleo Adriana Barone Institute for the Study of Labor*. *May 2014*.

Parola, A. (2020). *Jurnal Psikologi Klinis Mediterania*. https://doi.org/10.6092/2282-1619/mjcp-2421

Pastore, F. (2020). *Stuck at a crossroads ? The duration of the Italian school-to-work transition Stuck at a Crossroads ? The Duration of the Italian School-To-Work Transition*. *September*. https://doi.org/10.1108/IJM-05-2020-0199

Perspective, A. C., Freeman, R. B., Wise, A., & Rees, A. (2001). *The School-to-Work Transition : XXXIX*(March), 34–92.

Quintini, G., Martin, J. P., & Martin, S. (2021). The Changing Nature of the School-to-Work Transition Process in OECD Countries. *SSRN Electronic Journal*, *2582*. https://doi.org/10.2139/ssrn.964927

Sánchez, A. D., de la Cruz Del Río Rama, M., & García, J. Á. (2017). Bibliometric analysis of publications on wine tourism in the databases Scopus and WoS. *European Research on Management and Business Economics*, *23*(1), 8–15. https://doi.org/10.1016/j.iedeen.2016.02.001

Simmons, R., Thompson, R., & Russell, L. (2014). Young People Not in Education, Employment or Training. *Education, Work and Social Change*, 39–65. https://doi.org/10.1057/9781137335944_3

Solga, H. (2002). *' Stigmatization by Negative Selection ' Explaining Less-Educated People ' s Decreasing Employment*. *18*(2), 159–178.

Struffolino, E., & Borgna, C. (2021). Who is really 'left behind'? Half a century of gender differences in the school-to-work transitions of low-educated youth. *Journal of Youth Studies*, *24*(2), 162–185. https://doi.org/10.1080/13676261.2020.1713308

Thomàs-vanrell, C., Salvà-mut, F., Thomás-vanrell, C., Quintana-murci, E., Thomás-vanrell, C., & Quintana-murci, E. (2015). *School-to-work transitions in times of crisis : the case of Spanish youth School-to-work transitions in times of crisis : the case of Spanish youth without qualifications*. *April 2018*. https://doi.org/10.1080/13676261.2015.1098768

Vries, M. R. De, & Wolbers, M. H. J. (2005). *Non-standard employment relations and wages among school leavers in the Netherlands*. *February*. https://doi.org/10.1177/0950017005055668