

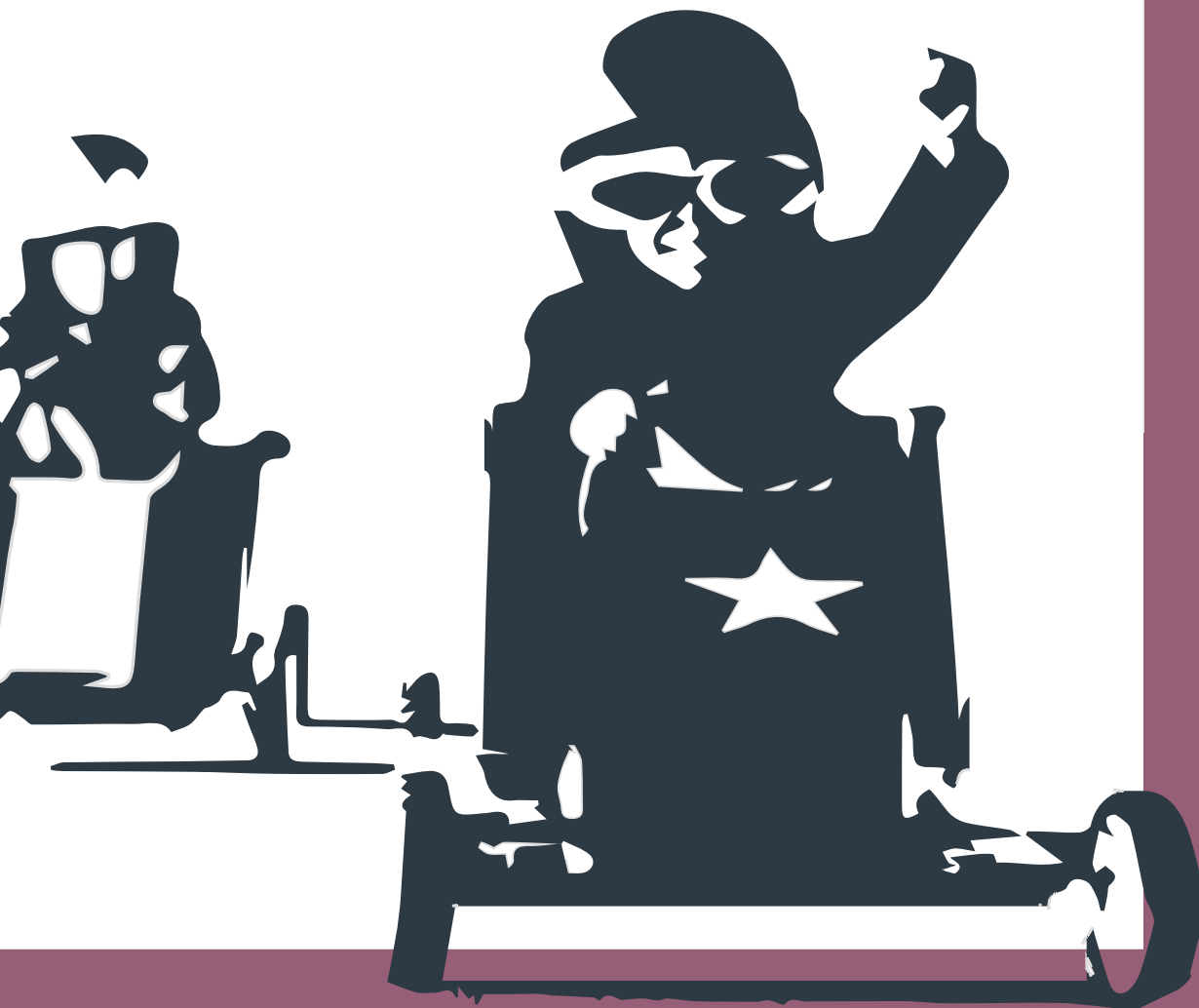


**Centre for Innovation
and Technology Transfer
Management**

WARSAW UNIVERSITY OF TECHNOLOGY

COINCIDENCE OR HARD WORK

– THE FACTORS BEHIND WARSAW UNIVERSITY
OF TECHNOLOGY GRADUATES' SUCCESS



WUT

Coincidence or hard work – the factors behind Warsaw University of Technology graduates' success

REPORT

as part of the study entitled

Success Stories. Warsaw University of Technology graduates (a diagnosis of professional success factor)

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**Warsaw University
of Technology**



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INTRODUCTION - WHAT THE REPORT IS ABOUT

Did Bill Gates, Mozart, Robert Kubica, the Beatles, and Canadian hockey players owe their success to good birth, talents or perhaps coincidence? If Bill Gates or Robert Kubica had not been in the right place at the right time, would they have been successful? Or perhaps, regardless of the circumstances, was it their talent and training that allowed them to achieve success? In analysing the success paths of prominent people, a well-known journalist and columnist Malcolm Gladwell¹ formulated the following question: to what extent is success a configuration of fortuitous events, and to what extent is it a person's consistent and hard work? A similar question was posed in the study entitled "Success Stories. Warsaw University of Technology graduates", conducted among successful WUT graduates².

The study entitled "Success stories. Warsaw University of Technology graduates (a diagnosis of professional success factors)" provided a wealth of interesting opinions, memories and recommendations from 110 Warsaw University of Technology (WUT) graduates. They offered some interesting facts about their careers and experiences related to studying at the WUT, and spoke about the difficulties they encountered and successes they had. This material was used to produce a series of five reports, offering a comprehensive discussion of a range of topics related to success:

1. "What is success for Warsaw University of Technology graduates? Analysis of study results"
2. "How to become successful? Diagnosis of success factors among Warsaw University of Technology graduates"
3. "Career in four sentences. Analysis of responses from Warsaw University of Technology graduates"
4. **"Coincidence or hard work – the factors behind Warsaw University of Technology graduates' success"**
5. "The impact of family background on the educational choices (until entry into higher education) and success of WUT graduates"

This report is to answer the question: to what extent is success a configuration of fortuitous events, and to what extent is it a person's consistent and hard work?

¹ Writer, reporter, publicist, scientist, world-famous author of best-selling books: "David and Goliath. Underdogs, Misfits, and the Art of Battling Giants", "Outliers The Story of Success", and "The Tipping Point: How Little Things Can Make a Big Difference".

² The study entitled "Success stories. Warsaw University of Technology graduates (a diagnosis of professional success factors)" was carried out as part of Action 19 Social research for improving the quality of WUT education of the NERW 2 WUT project co-financed from EU funds under the European Social Fund's Operational Programme Knowledge Education Development 2014-2020.

STUDY BACKGROUND

This is part of a series of studies to investigate the needs and expectations of WUT graduates' employers, conducted since 2016 by the Research and Analysis Department of the Centre for Innovation and Technology Transfer Management at the Warsaw University of Technology (DBA CZiIT PW). By diagnosing the professional status of WUT graduates on the labour market and identifying the circumstances that helped to achieve this status, valuable insights into the quality of education at WUT were gained. The conclusions drawn from the study have illuminated certain aspects that are useful for managing the quality of education at WUT. Research of graduates' careers forms part of the efforts by tertiary institutions to perform the broadest-possible evaluation of educational outcomes and to examine how these outcomes contribute to graduates' future careers.

HOW THE STUDY WAS CONDUCTED

This study aimed to diagnose the factors behind WUT graduates' professional success. This aim was translated into six research questions (three of which are analysed in this report):

- » How do WUT graduates define "success"?
- » What are the unique academic/scientific, commercial and social achievements of WUT graduates?
- » **What did the career paths of WUT graduates look like (milestones, motivations)?**
- » **What were the internal factors behind WUT graduates' success?**
- » **What were the internal factors behind WUT graduates' success?**
- » What role did WUT play in graduates' success?

This report presents the results of the analysis which focused on determining whether the turning points (milestones) in the graduate's career were achieved as a result of planned activities or reflected a configuration of unplanned events, and whether the success was achieved as a result of hard and consistent work of a WUT graduate.

An additional objective of the study was to promote Warsaw University of Technology by creating material on WUT graduates' success stories to be later posted on WUT's website.

The study was based on individual in-depth interviews (IDI) with successful WUT graduates, i.e. alumni with an outstanding track-record of academic or scientific achievements, professional successes, community involvement, or work in high-profile organisations. The question of whether or not a graduate became successful was ultimately left to the subjective opinion of that graduate. Individual in-depth interviews involve direct interaction between researchers and respondents. It is based on a scenario comprising a set of subjects to be addressed to gain insights into the experiences, interpretations of events and in-depth opinions of the respondents³.

The following thematic areas were discussed in the interviews:

- » success: definition, types of success, respondents' achievements;
- » professional career: what the career looks like, milestones, current position, barriers and difficulties encountered during the career;
- » education: what did education outside tertiary institutions look like, which study programme was chosen and how it was completed, the best memories from WUT, an assessment of WUT's educational services and overall activities, respondents' assessment of whether they would choose the same educational pathway, educational activities after graduating;
- » external (family, environment) and internal factors (personality traits);
- » advice for WUT students and candidates;
- » four sentences to be completed – career path summary.

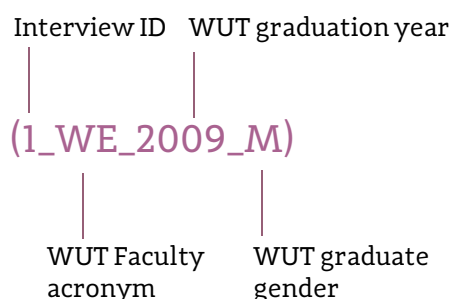
³ Cf. Babbie, E., *The Basics of Social Research*, Fourth Edition, Thomson Wadsworth 2008, p. 335-337.

A variety of channels were used to recruit respondents:

- » recommendations from the management and staff of individual WUT Faculties;
- » recommendations from WUT graduates (respondents);
- » own search using LinkedIn, <https://www.eksperci.pw.edu.pl/> and other pw.edu.pl domain websites and websites of high-profile companies in individual industries specific to profiles of WUT Faculties;
- » announcements on social media (Facebook, LinkedIn) with information about the study and a link to the registration form;
- » posters displayed within WUT's spaces.

The interviews were recorded⁴, and reflections were formulated as preliminary reports in which their authors provided tentative interpretations of the responses. Some of the interviews were also fully transcribed. Due to their structured format, the preliminary reports were the first tool to analyse individual stories. They also helped to create “personas” – graphics depicting graduates' careers and opinions, available on pw.edu.pl domain websites.

Explanation of cited sources:



HOW THE STATEMENTS OF WUT GRADUATES WERE ANALISED

The conducted qualitative analysis was aimed at identifying, among over 100 careers of WUT graduates, common elements – factors and events that had contributed to their success. The respondents' statements concerning the development of their professional careers, including individual milestones which changed their course, were subjected to a detailed analysis⁵. Of particular importance were the responses provided to the question about the career path summary, reading as follows: “I got to where I am in my career thanks to...”. In the first step, a preliminary qualitative analysis was carried out to identify the codes and groups of codes into which the respondents' statements were then assigned in the second step. The manner of coding the respondents' statements is presented in Table 1. It is worth noting that a given narrative could be assigned to several codes and that narratives from all groups of codes could appear in the graduate's story.

⁴ All the interviews were recorded following respondents' full consent.

⁵ These issues were dealt with, inter alia, in the following interview questions: Could you tell us something about your professional activity? (What are your other professional achievements? How has your career developed? Could you tell us something about how your professional career has developed (this could be your most important jobs, completed projects or courses)? Can you identify your career milestones? How often have you changed your job? What were the reasons? How do you assess these decisions retrospectively? Retrospectively, what was a defining moment in your professional/scientific career?

BŁAŻEJ ŻYLIŃSKI



GRADUATE

Faculty of Power and Aeronautical Engineering
field of study: aeronautics and astronautics (2014)

constructor of satellite systems

Space Research Centre PAS (2015)

representative of the SME sector

for the Regional Innovation Strategy at the Office of the Marshal of the Mazowieckie Voivodeship (2019)

MEMBER OF THE BOARD

TechOcean (2017)

CHIEF TECHNOLOGY OFFICER

3D Reaktor (2017)

CO-OWNER

członek zarządu, specjalista B2G (2019)
mTap Smart City

CO-OWNER, CTO

Lyncas (2020)

CO-OWNER, MEMBER OF THE BOARD

Perka (2020)

GREATEST ACCOMPLISHMENTS

- participation in international robot competitions
- initiating changes at WUT
- setting up a business in his area of interest

ADVICE FOR STUDENTS

- "Authorities are the main impediment to the development, but there is value in learning from someone else's mistakes."
- "You have to have an open mind and trust your own judgments and views. Confront them with what others suggest, and draw conclusions from it."
- "It is you who will face the consequences of your choices, not your advisers. Patience is the greatest virtue."

THOUGHTS ON THE CAREER

"I am at this point of my career because... of myself".

"What I appreciate most about my career... is interdisciplinarity".



"Success is achieving your goals, that stand out from the crowd. They must be ambitious enough to require an effort."

MEMORIES FROM WUT

"Activities in the student scientific movement, cooperation with university authorities, meeting with the Bekker family."

TIME AT WUT - KET ASSETS

- precision
- critical thinking
- patience
- knowledge in the field of the strength of materials

Tabela 1. Kody oraz grupy kodów zastosowanych w analizie narracji prowadzonych przez absolwentów PW.

FACTOR	GROUP OF CODES	CODES	DESCRIPTION
Unplanned activities	K1. Favourable circumstances	K1.1 coincidence, K1.2. favourable chain of events, K1.3. unplanned project, workplace, event, K1.4. spontaneous decisions, K1.5. recommendation by a friend/ supervisor, K1.6. encountering a person who influenced the course of one's career, K1.7. active searching for opportunities	An unplanned event which has exerted a strong impact on the graduate's career, e.g. recommendation for a job by a friend, spontaneous decisions taken on the spur of the moment, unplanned project/travel/internship, favourable chain of events, etc.
	K2. External circumstances	K2.1. changes forced by one's life situation, K2.2. company closing down, redundancy, K2.3. labour market problems, K2.4. financial or family problems	This category includes changes in the graduate's career forced by his/her life situation, which were unplanned and/or were not qualified as favourable circumstances (positive events).
Planned activities	K3. Hard work	K3.1 consistent and hard work, K3.2. single mindedness, K3.3. self-development (gaining competences), K3.4. participation in projects, internship, and foreign trips, K3.5. engagement in additional activities, e.g. a scientific circle	This category includes respondents' statements indicating the role of hard and consistent work as a factor influencing the career path and subsequent milestones achieved. This category also includes skills and competences which were developed by the graduate.
	K4. Career planning	K4.1. planning successive career levels, K4.2. conscious choice of studies	The category is associated with hard work. In the interview with the graduate, a narrative was present indicating career planning, course of study etc.
K5. Hard to say			Not all respondents' narratives allowed the statements to be assigned to given codes. In such cases the "hard to say" code was used. This means that the graduate's statement was so vague and unclear that the researcher performing the analysis found it difficult to unambiguously assign the statements to given codes.

Source: by DBA CZLiTT PW

The analysis focused on the narratives shared by WUT graduates – i.e. to what issues the respondents paid specific attention. The interviews were conducted as semi-structured biographical interviews in order to explore the career elements to which the respondents would pay attention. Failure to assign the respondent's statement to any specific category does not mean that it did not occur in his/her biography; it merely implies that during the interview this element was not present in the respondent's narrative because it was considered less important, taken for granted, concealed or completely subconscious, or in fact it did not occur in the graduate's biography.

MILESTONES IN THE CAREERS OF WUT GRADUATES

Identifying the milestones in the respondents' narratives, i.e. important events in their careers or turning points influencing their career paths, provided the background against which the question posed in the introduction was set. The most frequent milestones were:

- » workplace change;
- » promotion;
- » internship, trainship;
- » engagement in a foreign trip or project;
- » training, course;
- » engagement in a scientific circle;
- » promotion at work;
- » studies at WUT;
- » encountering a person/people who changed the respondent's career path, e.g. an inspiring teacher, a supervisor, a manager;
- » developing a diploma thesis which enabled a further career.

While analysing the milestones, we also identified some factors indicated by the responders as those which influenced their careers, and which were not milestones but personality traits that enabled them to achieve the milestones. Among these traits, the following were the most common:

- » self-development orientation,
- » leadership skills,
- » courage,
- » single mindedness.

There appears to be an interesting difference in the narratives shared by those respondents whose success was classified as scientific, in relation to those who achieved commercial or social success. In the former group, participation in projects and foreign trips was the most common milestone. The role of managerial competencies is also worth noting. This element was particularly visible among those Warsaw University of Technology graduates who achieved commercial success – most of the respondents held a managerial position and promotion to this position was often indicated by the respondents as a milestone. This was the combination of the technical knowledge acquired during the studies with the soft and managerial competences that proved decisive for getting a promotion or finding a better job.

CAREER TURNING POINT FACTORS LISTED BY THE RESPONDENTS

Focusing on the questions about whether the careers of WUT graduates were shaped by coincidences or clear-cut plans, let us begin by analysing the respondents' narratives concerning their careers. Referring to Table 1, we will present some selected narratives assigned to given groups of codes, with a view to illustrating the WUT graduates' statements perceptions of the factors behind their success.

UNPLANNED ACTIVITIES

Let us start with factors considered independent and unplanned.

Group of codes – “Favourable circumstances”

Some respondents suggested that their professional successes reflected a configuration of favourable circumstances, often referred to as “a coincidence” or simply “a stroke of luck”. Response examples:

My career path is a total coincidence, I would like to say it was planned, but it wasn't [about the career start and choice of the industry - editor's note].

8_WCh_2013_F

I never had to particularly fight for being involved in projects, I was very lucky to be in the right place at the right time. When I was finishing my studies, new projects popped up. Applicants were being searched for, so I applied and was accepted.

11_WM_2012_M

I'm at this point in my career because of... probably a few things - the external support I got, my education, and probably myself - the conviction that I can handle it. And a bit of luck (laughs), but I reckon it's this natural luck that you can trust enough to have it.

16_WEiTI_2016_F

Among the respondents, voices also appeared indicating that this “stroke of luck” was not a totally fortuitous event. Some WUT graduates believed that, owing to their active attitude, engagement, determination and courage, they created situations that were not planned but had a positive impact on their career development. Such a narrative was defined as “active searching for opportunities”, and is exemplified by the following quotations:

I am at this point in my career thanks to a lot of luck I had in my life, and lucky coincidences, but also thanks to my hard work and some courage.

3_WF_1987_M

I am at this point in my career thanks to a great number of coincidences which I have orchestrated many a time, mainly by being open and honest with myself.

9_WE_2018_M

Another narrative considered independent of the respondent refers to a situation where the graduate was recommended for some work (in an organisation or project). This situation was unplanned but could have resulted from the graduate’s hard work, good reputation or considerable value.

The company contacted him [editor's note - a fellow student] and he invited other colleagues, because we were all in the same study group, for a preliminary interview with the company representatives. (...) I must say that at the beginning I did not really know what to expect when I was about to be interviewed. I was only told that this concerned technical support of the sales department. That was the main message from the employer and, to be honest, I didn't really know what it entailed. At the very beginning, I even had an idea that this would be technical support such as photocopying and coffee making, but luckily it wasn't.

69_WT_2011_M

A fellow student recommended me - I realised that I wanted to function in a company which offered great opportunities and which counted on its employees, providing them with much autonomy and chances to carry out various interesting projects, and to act in a global perspective.

41_WZ_2008_M

Some respondents indicated that they had encountered a person at some point in their life who had influenced their career path. Such encounters served as a kind of turning points.

Frankly speaking, until the third year of my studies I had no idea what I wanted to do next. Fortunately, it was then that I met my thesis supervisor, I attended his classes and I instantly knew that this was what I wanted to specialise in. I just felt that it really gave me a lot during my studies, as if there was this huge number of subjects presented and I finally found the one I wanted to explore.

73_WE_2016_M

My business adventure had started before I completed my studies. The landmark event was when I met Professor [editor's note - surname removed] at the Institute of Control and Industrial Electronics. Professor (...) was a person who not only dealt with science but also did a range of application works. During the last two years of studies, we participated in numerous telecommunications and power engineering projects, and these were the ideas that were later brought from paper into real life. The professor was an unusual figure because, speaking in general and in a very colloquial way, he did not take the successes and knowledge of his students to himself but shared them with young people, which ultimately brought him extraordinary results.

105_ME_1998_M

Group of codes – „External circumstances”

In this narrative, the respondents referred to a situation in which the change was forced by some external factors and, as opposed to “a chain of events”, it was a negative or difficult situation and required additional effort, e.g. being made redundant, the company going bankrupt, returning to the labour market after parental leave, emigration, or service in the army. For example, one respondent claimed to have lost his job as a result of personnel changes in the company he worked for. This situation was a milestone for him, and he shared the following comment:

There are plenty more fish in the sea and there are more important things in life than work. (...) If you go through a crisis like this, it's a good moment to learn your lesson and see how you can change your life.

42_WAiNS_2003_M

PLANNED ACTIVITIES

Other narratives shared by WUT graduates focused on the factors that were dependent on themselves and had often been consciously planned.

Group of codes – „Hard work”

The analysed narratives indicated that not only unplanned and spontaneous situations had an impact on the successes attained by the respondents. Most respondents also referred to doing hard work, engaging in additional projects or student circles, and raising competences through participation in various training sessions and courses. Below are some narratives in which the respondents pointed to their hard work.

I got to where I am in my career thanks to my hard work.

5_WCh_2003_M

I got to where I am in my career thanks to my perseverance, ambition, pertinacity and a great amount of time dedicated to self-development.

50_WIP_2013_M

I got to where I am in my career thanks to luck, pertinacity (...), I can hardly say that one factor determined it, but if I were to choose one, it would be the experience I've gained.

6_WF_2012_M

Group of codes – „Career planning”

In their narratives, the WUT graduates also admitted that their careers had been planned, and so had the choice of studies, place of work or development path.

During my studies, I worked in a surveying company in Warsaw and, among other things, I built the Warsaw Spire skyscraper and the Marki ring road. This was where I gained experience. I wanted to participate in quite unusual investments, like the construction of a skyscraper or an expressway, because these are fairly advanced geodesic schemes, so I knew I could gain quite a lot of experience and contacts.

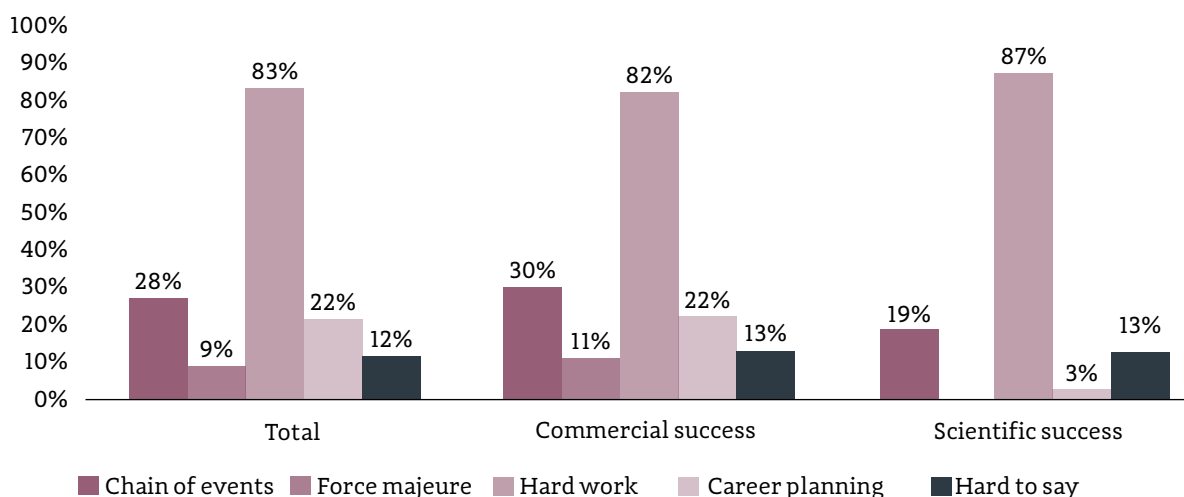
74_WGiK_2019_M

COINCIDENCE OR HARD WORK?

Having conducted an in-depth analysis of the WUT graduates' statements, we came to the conclusion that two narratives generally prevailed. The first indicated the role of external factors, often beyond the respondent's control, described by the WUT graduates simply as “favourable circumstances” or “external circumstances” that forced a change in life. The second narrative pointed to the importance of the respondents' hard work, which involved gaining new skills, experience, competences, participation in projects or foreign trips (internship, international exchange). Various types of training, involvement in scientific circles or first jobs, internship or traineeship (often below the respondents' expectations and competences) turned out to be important. In the case of some WUT graduates, these narratives were intertwined.

The most common narratives⁶ among the respondents were those classified as “hard work”; this type of a statement was particularly evident in 4 out of 5 respondents (82%). In other cases, these issues were not particularly highlighted in the completed interviews. This narrative was slightly more often present in the statements of those WUT graduates whose success was attributed to the category of scientific success. “Chain of events”, “luck”, “coincidence” and “favourable circumstances” were highlighted in the statements of more than every fourth respondent (28%), and these were more often people with commercial successes than with scientific ones. A detailed analysis is presented in Figure 1.

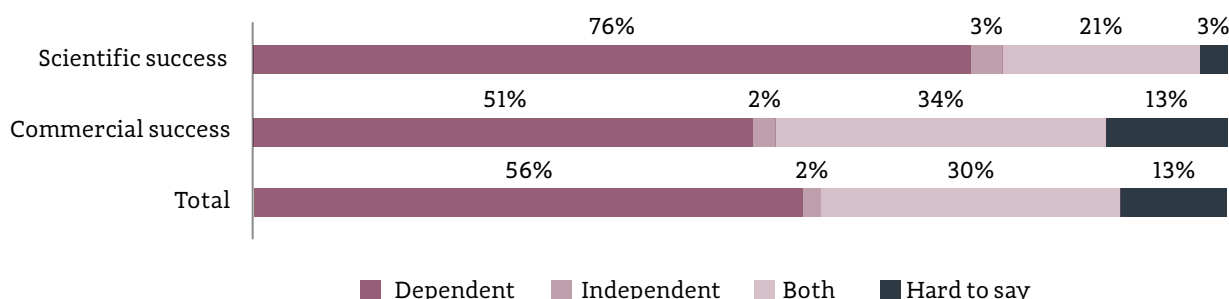
Figure 1. The presence of a given narrative in respondents' statements



Source: DBA CZiITTPW, number of respondents n=110.

Groups of codes were divided into two categories of factors: the factors dependent on the graduate, i.e. those on which the respondent had some influence and which depended on his/her attitude, and independent factors on which the respondent had no direct influence, often referred to as “a chain of events”, “a coincidence”, or those forcing the graduate to act, e.g. redundancy, company bankruptcy or a political situation. When analysing the proportions in the narratives, it can be noted that a minority of the respondents indicated only the independent factors. Less than one-third of all respondents indicated the combination of both types of factors, and in around 56% of the analysed interviews the narratives implied the occurrence of only dependent factors associated mainly with hard work, determination, career planning, competence raising, etc. These proportions are displayed in Figure 2.

Rysunek 2. Obecność danego czynnika w narracji absolwenta



Source: DBA CZiITTPW, number of respondents n=110.

⁶In order to determine the proportions of each narrative in the surveyed sample of WUT graduates, the respondents' statements were coded according to the scheme presented earlier. The number of respondents provided the basis for these proportions; different groups of codes could have been assigned to one respondent, which means that the percentages do not add up to one hundred percent.

TOMASZ DETKA



- **scientific clubs**
activity in student organizations
- **Students' Council**
activity in the organization that associates scientific clubs; becoming a member of the internal training team at WUT
- **CZiTT PW**
taking part in research projects
- **Łukasiewicz - PIMOT**
co-creating the Electromobility Department
- **GRADUATE**
Faculty of Electrical Engineering (2018)
field of study: automation and robotics
- **CHIEF**
of Department of Electromobility at Łukasiewicz Research Network - The Automotive Industry Institute (PIMOT); team management, scientific work, commercial activity

THE GREATEST ACCOMPLISHMENT

- construction of a good team at Łukasiewicz Research Network - The Automotive Industry Institute (PIMOT)

ADVICE FOR STUDENTS

- "Be honest with yourself. If you notice that what you are doing is not fun for you, have the courage to change it."
- "Look for nonmandatory forms of student activity such as scientific clubs or students' council."
- "Don't give up your own development for the sake of working full-time on developing someone else's business."

THOUGHTS ON THE CAREER

"I am at this point of my career because..."

of many coincidences (whom I have helped many times); mainly because of my openness and honesty towards myself."

"What I appreciate most about my career..."

are the people I could learn from and the people I work with now."



"Success is when you are satisfied with yourself; if you are surrounded by people whom you can trust and who have trust in you. It is when you find an emotional balance in life - then you have all you need."

MEMORIES FROM WUT

"Activity in a science club. It helped me grow. It gave me the opportunity to experience many aspects of the university that I would not experience as a regular student, for example I got to work in a team, which had its specific goals."

TIME AT WUT - KEY ASSETS

- soft skills acquired as part of the activity in a scientific club

In an attempt to interpret the above results and to present the answers synthetically, it should first be noted that the narratives of the graduates of the Warsaw University of Technology about their careers indicate that their success depended only to a small extent on favourable circumstances, and mainly on their engagement, persistent and meticulous work, dedication to their self-development, and an additional involvement in projects, trips, internship or student circles' activities. Nevertheless, some unexpected events were also reported by the respondents, which had contributed to changing their career paths. The question which remains unanswered is whether these events were a mere coincidence or the result of the graduate's earlier actions, which allowed him/her to be in the right place at the right time. While the interviews conducted did not exhaust this topic, one can assume a certain hypothesis that an indispensable success factors include broadly defined hard work and planning, which open new opportunities. In addition, some stroke of luck is also a factor that can indeed accelerate career development.

THE 10 000 HOUR RULE

In order to further explore the topic, let us once again refer to *Outliers. The Story of Success*, which gives us the answer to the question of what Bill Gates, Mozart, Robert Kubica, the Beatles, Canadian hockey players and other successful people had in common that let them achieve successes in certain domains. What they seem to have shared is the role of doing hard work and developing talents, which took a minimum of 10000 hours. The 10000 Hour Rule refers to research by Ericsson, a Swedish psychologist who studied the paths to success among violinists. The research revealed that those violinists who made it to the top had spent more hours a day training and developing their talents than their school peers. This theory also applied to the Beatles who had the opportunity to practice their talents during their trips to Hamburg. John Lennon said:

We were acquiring more and more skill and confidence. How could we not if we were playing together all night long? In Liverpool, we used to give short performances of one hour each, so only the best numbers came out for each show, usually the same ones. In Hamburg, the performances were eight-hours-long, so we had to find a new way of performing⁷.

Robert Kubica also had the opportunity to train hard. He received his first go-kart at the age of 10 and had the opportunity to develop his talents from an early age, while many of his peers did not have such a chance. The same applies to Bill Gates who had the opportunity to learn programming on one of the best computers in the world back in the 1960s at a private school in Leakeside. Most programmers of his time did not stand a chance to expand their skills, as there was a weeks-long waiting time for access to advanced computers. So, the question arises to what extent, in the biographies of great people, favourable circumstances allowed to "stand out", fostered the careers and created conditions to work 10000 hours. Referring to the successes of the most prominent Canadian hockey players one can see that the squads reaching for the highest trophies are made up of those born in the first three months of the year (January, February, March). The competitive edge of these individuals is not so much the fact that they have special talents, but the fortunate timing of their birth. When they were recruited to a hockey team at an early age, they stood out from their peers in terms of strength, height or speed, because they were a few months older, which at that age was a considerable advantage. In their case, it was the moment of birth, i.e. favourable circumstances, that gave an impulse to the development of their careers. Obviously, that was not enough. To be successful, they needed to work hard and improve their skills.

Gladwell concluded his book with a statement by Bill Gates – I was very lucky. In his opinion, this was true, just like in the case of the hockey players and other people mentioned above. There was a certain confluence of favourable circumstances that enabled them to train, acquire the right skills and "refine" their talents.

„They [editor's note – the successful people] are products of history and community, of opportunity and legacy. Their success is not exceptional or mysterious. It is grounded in a web of advantages and inheritances, some deserved, some not, some earned, some just plain lucky –but all critical to making them who they are. The outlier, in the end, is not an outlier at all”⁸.

Nonetheless, without training and dedicated (10 000) hours of practice, the success of these people would seem less probable. The same applies to our study – while favourable circumstances are important in the careers of the surveyed graduates, there must be a period of doing hard work and

⁷ M. Gladwell, *Outliers. The Story of Success*, Znak Publishing Press, Kraków, 2010, p. 59.

⁸ M. Gladwell, *Outliers. The Story of Success*, Znak Publishing Press, Kraków, 2010, p. 259.

creating opportunities for additional engagement going well above the average. The role of hard work is emphasised even in other concepts which call the 10 000 Hour Rule into question.

SUMMARY AND RECOMMENDATIONS

As usually in social research, there is no unambiguous answer to the question formulated in the title of the report. When it comes to determining whether one's success is due to coincidence or hard work, one can talk about a configuration of certain events, skills and hard work, which eventually resulted in being successful. However, the study indicates that situations described as fortuitous or lucky are not entirely coincidental – the WUT graduates created them by their own actions. The key to success, therefore, seems to be doing hard work and taking advantage of the favourable circumstances which, indeed, often result from one's well-deserved work. It also seems that in order for one's success to be recognised globally, as was that of Mozart, Kubica or Gates, there must be a combination of favourable circumstances and some socio-cultural and economic conditions.

To conclude, we wanted to offer some advice to students and those who are planning to go to university, inspired by the careers of Warsaw University of Technology graduates:

- » “There are no shortcuts which you could use. Keep developing your talent for 10000 hours” – you need to work hard, to undertake additional activities or to participate in training sessions and courses, while creating situations that will let you be in the right place at the right time, when a configuration of factors described as “a stroke of luck” occurs. A mere combination of favourable circumstances is not enough for accomplishing a success above the average.
- » “Create opportunities” – engage in additional projects and activities to create favourable circumstances for yourself which can act as a booster for your career.
- » “Don't be afraid to take the chance” – a common feature of the WUT graduates interviewed was the courage and determination to seize the opportunities they were given. The respondents pointed to engagement in various types of projects, international exchanges, internship, etc.
- » The first job, internship or traineeship may prove decisive for your further career. Make plans with caution” – the analysis of the history of WUT graduates shows that the first job or internship often had a strong influence on the career development. Even in situations where the respondents indicated that they ended up in a place that was not ideal for them, they learnt their lessons and tried to make the most of their time there.

JANUSZ BOSAKIRSKI



● ABSOLWENT

Faculty of Automotive and Construction Machinery Engineering
Institute of Vehicles (1976)

● from intern to deputy manager

Municipal Transport Company (Miejskie Zakłady Komunikacyjne) (1972-1980)

● from technical director to chief specialist

State-owned Enterprise „Polmozbyt” (1980)

● from chief specialist to deputy technical director

Municipal Enterprise of Communal Services (Miejskie Przedsiębiorstwo Usług Komunalnych) (1981)

● from service technician to sales director

representative office of Ingersoll Rand (1983-2004)

● Member of the Board, than Board Advisor for international relations and contacts

Municipal Bus Company (Miejskie Zakłady Autobusowe) (2005-2016)

GREATEST ACCOMPLISHMENTS

- constructing a prototype of a hybrid trolleybus with a team (1976), participation in a successful hydrogen bus project (2018)
- building a market for individual (key) users of Ingersoll Rand centrifugal compressors
- creating a permanent, good partnership between his Faculty and Municipal Bus Company which helped to provide high-level student internships at WUT

ADVICE FOR STUDENTS

- "Learn, but don't avoid socializing, both in dance clubs and science clubs."
- "If you want to be a real engineer, you should go straight to the workshop or manufactory, find out more about this world."

THOUGHTS ON THE CAREER

"I am at this point of my career because..."

of predisposition, talent, diligence and family support."

"What I appreciate most about my career..."

is a possibility to constantly develop and to face new challenges."



"Success is knowing what you want to find and where to look for it. If it is combined with the ability to ask questions and set goals and with a willingness to search, it is possible to achieve success without even noticing it."

MEMORIES FROM WUT

"I have memories of kind, yet demanding lecturers who wanted to give as much as possible. I also remember the student life - freedom, which back then meant something completely different than today."

TIME AT WUT - KEY ASSETS

- analytical skills - asking the right questions and using the received answers in a right way

As an addition to the reports, we included information about organisations bringing together WUT graduates and publications focusing on WUT graduates. The list has been compiled based on online sources. WUT Faculties are welcome to expand this list.

Table 2. List of information about graduates published by WUT Faculties

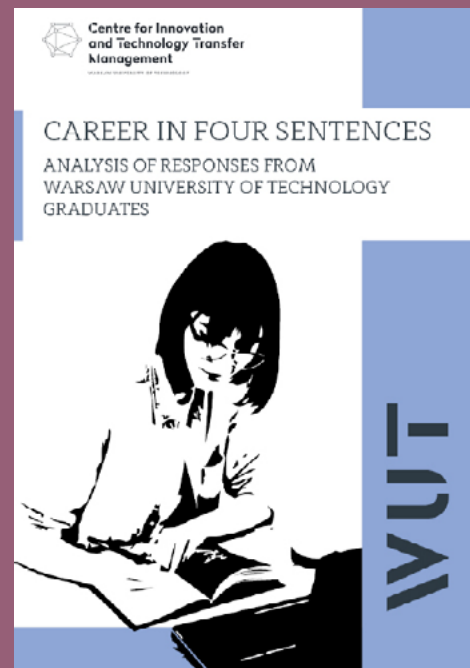
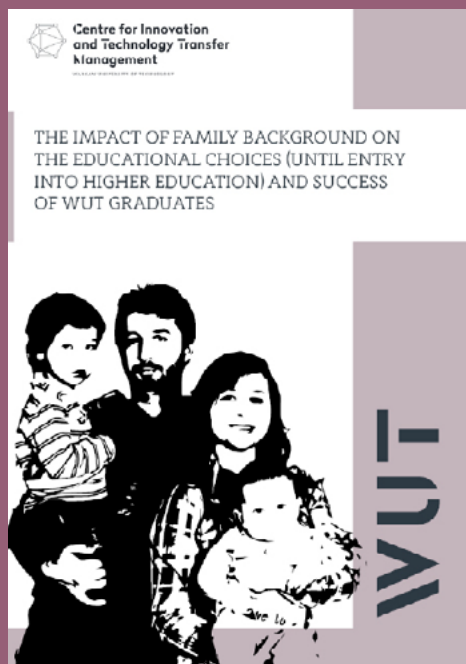
Faculty	Association/ Organisation	Publications/ Websites
Warsaw University of Technology – general	Association of Warsaw University of Technology Graduates WUT Seniors Club	WUT Golden Book WUT Golden Diplomas online: www.placpolitechniki1.wordpress.com www.wutsquare.wordpress.com
Faculty of Architecture	Academic Association of the Faculty of Architecture at the Warsaw University of Technology	W. Karczmarczyk (2018), <i>Wydział Architektury Politechniki Warszawskiej: wspomnienia, 1950-2015</i> W. Karczmarczyk (2019), <i>A'51: absolwenci WA PW rocznik'51</i>
Faculty of Automotive and Construction Machinery Engineering	WUT Faculty of Automotive and Construction Machinery Engineering Graduates Club	online: www.simr.pw.edu.pl/Strona-glowna-wydzialu-SiMR/Cooperation/graduates
Faculty of Building Services, Hydro and Environmental Engineering	Association of the Graduates of Hydraulic Engineering and Water Management at WUT Association of the Graduates of Sanitary Engineering Graduates Club of the Institute of Environmental Engineering Systems at WUT	A. Kulig, K. Wojdyga (red.) (2016), <i>Od Inżynierii wodnej przez technikę sanitarną do inżynierii środowiska w 100-letniej tradycji Politechniki Warszawskiej</i> M. Degles (1997), <i>Zjazd Absolwentów Instytutu Systemów Inżynierii Środowiska Politechniki Warszawskiej: [13/14.06.1997]</i> Faculty of Environmental Engineering (presently: Faculty of Building Services, Hydro and Environmental Engineering) (2011), <i>60-lecie Wydziału Inżynierii Środowiska Politechniki Warszawskiej. 1915/-2011</i> The „100-tu Absolwentów na 100-lecie Wydziału” (“100 graduates for the 100th Anniversary of the Faculty”) campaign – results published online on the Faculty’s Library FB account online: https://is.pw.edu.pl/absolwent
Faculty of Chemical and Process Engineering	Association of Graduates and friends of Faculty of Chemical and Process Engineering at WUT	
Faculty of Chemistry	”Klatrat” – Association of Students and Graduates of the Faculty of Chemistry at WUT	
Faculty of Civil Engineering		W. Przychoda (2014), <i>Wspomnienia zatrzymane w kadrze: absolwenci Wydziału Inżynierii Lądowej Politechniki Warszawskiej: rok rozpoczęcia studiów 1964</i> G. Jemielita (2005), <i>Jubileusz 90-lecia Wydziału Inżynierii Lądowej Politechniki Warszawskiej</i> G. Borończyk-Płaska, H. Zobel (2015), <i>100-lecie odnowienia tradycji Wydziału Inżynierii Lądowej</i>
Faculty of Civil Engineering, Mechanics and Petrochemistry in Płock		(1997), 30 lat Politechniki Warszawskiej w Płocku: zjazd absolwentów (Płock 04.X.1997 r.) (1987), Absolwenci Ośrodka Naukowo-Dydaktycznego Filii Politechniki Warszawskiej w Płocku A. Kowalski (1977), <i>Absolwenci Filii Politechniki Warszawskiej</i> M. Rutkowska (2012), <i>45 lat Politechniki Warszawskiej w Płocku, spis absolwentów 1971-2011</i> online: www.pw.plock.pl/Absolwenci

COINCIDENCE OR HARD WORK - THE FACTORS BEHIND WUT GRADUATES' SUCCESS

Faculty	Association/ Organisation	Publications/ Websites
Faculty of Electrical Engineering	Association of the Graduates of the Faculty of Electrical Engineering at the Warsaw University of Technology	Z. Grunwald (1983), <i>Zarys Historii Wydziału Elektrycznego 1921-1981</i> J. Dąbrowski et al. (2015), <i>Okruchy wspomnień absolwentów Wydziału Elektrycznego Politechniki Warszawskiej rocznik 1953-58</i> online: www.ee.pw.edu.pl/main/strefa-absolwenta/
Faculty of Electronics and Information Technology	Associations of Graduates of Electronics at the Warsaw University of Technology @ELKApw	R. Morawski (2001), <i>Wczoraj, dziś i jutro Wydziału Elektroniki i Technik Informatycznych Politechniki Warszawskiej</i> J. Modelski, K. Zaremba (2005), <i>Instytut Radioelektroniki - wczoraj, dziś, jutro</i> online: www.elka.pw.edu.pl/Spolecznosc/Absolwenci
Faculty of Management		D. Nizałek (2001), <i>Absolwenci studiów inżynieryjno- ekonomicznych, organizacji zarządzania, zarządzania i marketingu od 1955 do 2001 roku</i> D. Nizałek (2003), <i>Absolwenci studiów inżynieryjno- ekonomicznych, organizacji zarządzania, zarządzania i marketingu od 2001 do 2003 roku</i> online: www.wz.pw.edu.pl/Kandydat/Opinie-absolwentow
Faculty of Materials Science and Engineering	Association of Materials Engineering Graduates at WUT	Association of Institute of Printing Technology Graduates at WUT (2013) Institute of Typography at WUT 1968-2013 online: www.wim.pw.edu.pl/Absolwenci
Faculty of Mathematics and Information Science		online: ww2.mini.pw.edu.pl/studia/inzynierskie-i-licencjackie/rekrutacja/opinia-absolwentow/
Faculty of Mechatronics		F. Szafranski, D. Holejko (2017), <i>Księga wspomnień 1953-2017. T. 1</i> F. Szafranski, D. Holejko (2018), <i>Księga wspomnień 1953-2018. T. 2</i> S. Hawrat, E. Makowska (1997), <i>Absolwenci: 35-lecie Wydziału Mechatroniki</i> S. Hawrat(1977), <i>Wydział Mechaniki Precyzyjnej 1962-1977: absolwenci 1955-1977</i> I. Trendak, M. Stachura (2016), <i>Zarys historii i osiągnięć Instytutu Automatyki i Robotyki Politechniki Warszawskiej (1957-2015)</i> A. Szwendowski (2012), <i>Od Katedry Optyki do Zakładu Inżynierii Fotonicznej Politechniki Warszawskiej 1953-2008</i> online: www.facebook.com/HenrykTREBERT/
Faculty of Physics		online: https://absolwenci.fizyka.pw.edu.pl/lista
Faculty of Power and Aeronautical Engineering		C. Rzymkowski, K. Kędzior (2015), <i>60-lecie Katedry/Zakładu Teorii Maszyn i Mechanizmów/Robotów</i> (2000), <i>IV Zjazd Wychowanków Wydziału Mechanicznego Energetyki i Lotnictwa Politechniki Warszawskiej z okazji 40-lecia Wydziału MEiL i 175 lat kształcenia technicznego na Politechnice Warszawskiej</i> (2002), <i>V Zjazd Absolwentów Wydziału Mechanicznego Politechniki Warszawskiej immatrykulowanych w latach 1945 i 1946</i>
Faculty of Mechanical and Industrial Engineering	Association of Institute of Printing Technology Graduates	online: www.wip.pw.edu.pl/poligrafia/O-nas/Absolwenci
Faculty of Transport		online: www.wt.pw.edu.pl/Absolwenci

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