



**Centre for Innovation
and Technology Transfer
Management**

WARSAW UNIVERSITY OF TECHNOLOGY

HOW TO BECOME SUCCESSFUL DIAGNOSIS OF SUCCESS FACTORS AMONG WARSAW UNIVERSITY OF TECHNOLOGY GRADUATES



ITM

How to become successful? Diagnosis of success factors among Warsaw University of Technology graduates

REPORT

as part of the study entitled

Success Stories. Warsaw University of Technology Graduates (a diagnosis of professional success factors)

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**Warsaw University
of Technology**



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INTRODUCTION

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: the definitions of success, the impact of external and internal factors on success, the importance of family in achieving success and also the question of whether WUT graduates’ successes were the product of favourable circumstances or rather the result of hard work. This report focuses on identifying the internal and external success factors among WUT graduates with particular emphasis on the role of the Warsaw University of Technology.

The five reports drawn up as part of the study entitled “Success stories. Warsaw University of Technology graduates (a diagnosis of professional success factors)” offer 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 focuses on identifying the internal and external success factors among WUT graduates with particular emphasis on the role of the Warsaw University of Technology.

1. 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 CZiITT 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.

2. METHODOLOGY

This study aimed to diagnose the factors behind the success of Warsaw University of Technology Graduates. The 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 external factors behind WUT graduates' success?**
- » **What role did WUT play in graduates' success?**

An additional objective of the study was to promote Warsaw University of Technology by creating material on WUT graduates' success stories to be published 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 respondents.¹

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.

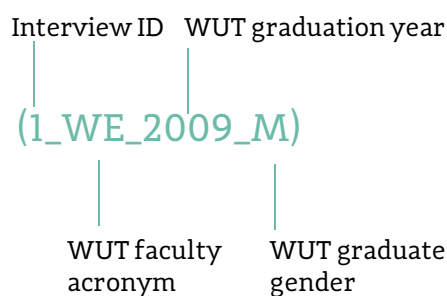
¹ Cf. Babbie, E., *The Basics of Social Research*, Fourth Edition, Thomson Wadsworth 2008, p. 335-337.

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 recorded,² 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:



² All the interviews were recorded following respondents' full consent.

DARIUSZ AKSAMIT



GRADUATE

of the Faculty of Physics
field of study: Technical Physics (2012)

scientific club at WUT Faculty of Physics

networking with the Students Union, which helped him in taking part in various workshops and sparked his interest in popularization of science

master thesis

written under the supervision of Faculty of Physics employee based on the research conducted with the Central Laboratory on Radiological Protection apparatus

SCIENTIST AND POPULARIZER

GREATEST ACCOMPLISHMENTS

- Popularizer of Science 2018 award
- founding organizations focused on popularization of science

ADVICE FOR STUDENTS

- "From time to time ask yourself ,why I am doing what I am doing?. (...) Our time is limited, so is it worth spending it on this activity?."
- "Jumping from one topic to another, from one domain to another, from institution to institution gives you broad and diverse competences. Even if they aren't that advanced in a certain specialized field, it is easier and quicker to supplement the specialist knowledge than to develop soft skills and change the attitude."

THOUGHTS ON THE CAREES

"I am at this point in my career because... of commitment and taking the initiative".

"What I appreciate most about my career... is that I am able to do interesting things".



"What we persue and what goals we set for ourselves is an individual matter. If you achieve your goals, you're successful. There is no point in comparing yourself to others."

MEMORIES FROM WUT

"First of all, definitely the scientific club. I was not only an active member of Physicists Science Club, but also a Vice-President of the Scientific Clubs Council."

TIME AT WUT - KEY ASSETS

"The ability to communicate and work in a team are the core competences I developed thanks to the involvement in the scientific club activities."

3. STUDY RESULTS

3.1 SUCCESS FACTORS IN STUDIES SO FAR

As demonstrated by the study results, achieving success depends on a number of factors, both external and internal ones. Numerous researchers have frequently analysed the biographies of successful people to identify the elements that contributed to their accomplishments in life. The results of their analyses point to a variety of success factors, while consistently proving that success is determined by a host of factors that coexist in appropriate proportions.

According to Poles, the most important factors to achieve success are being ambitious (77%), having innate abilities and luck combined with an appropriate education (73%), and also hard work (71%).³ The professional development (and the resulting success) of an individual is affected by internal factors, defined as the biological, mental and physical aspects and external factors, which include historical, technical, economic, cultural, political and social determinants.⁴ External factors also cover the work environment and one of the analysed variables in studies of the possibility of achieving success involves direct superiors – Kopmeyer pointed out that the support received from a superior contributes to success.⁵

Bernsz claims that successful people constantly pursue their goal, take up new challenges and derive a high level of satisfaction from this.⁶ It should not be surprising, therefore, that one of the most important success factors is defining the goal.⁷ Defining the goal allows people to adopt the appropriate course of action and professional development. In addition, this is connected to the ability to introduce changes and the necessity to identify one's strengths and weaknesses. Another hugely important success factor is having skills, both hard and soft,⁸ without which it is impossible to take up any job. There is a specific set of sought-after skills in every branch of industry.

Researchers also emphasise the nature of the talent defined as a set of traits which guarantee the achievement of exceptional results in the professional sphere, combining initiative, intuition, creative thinking, dedication, curiosity and diligence.⁹

The studies suggest that communication skills also form an important success factor. Interpersonal communication skills facilitate establishing relationships with people. Individuals who meet new people easily, who are good listeners and have no problems starting conversations, fare better on the job market and climb the corporate ladder faster than those who are withdrawn and insecure.¹⁰

Altmann¹¹ indicated that success depends on the optimistic approach to one's tasks, applying deliberate strategies and methods, as well as consistently working to develop one's personality. Successful people usually have extensive knowledge and analytical skills, are able to cooperate with others and make the right decisions.¹²

Researchers who focus on success factors also stress the role of the **family environment and parent attitudes** – individuals who were not expected to perform duties as children, are unable to function effectively on the job market.¹³ The following elements affecting the possibility of achieving success by an individual are identified:

³ Baczko-Dombi A., Wismulek I., "Czynniki sukcesu. Ciężka praca i talent czy pochodzenie i szczęście?", Badanie POLPAN, 2013, https://polishpanelsurvey.files.wordpress.com/2014/03/polpan_czynniki-sukcesu.pdf.

⁴ Młodawska E., "Czym jest i od czego zależy sukces zawodowy?", <http://www.psychologia.net.pl/artykul.php?level=748> [accessed on 31.07.2020].

⁵ Młodawska E., "Czym jest i od czego zależy sukces zawodowy?", <http://www.psychologia.net.pl/artykul.php?level=748> [accessed on 31.07.2020].

⁶ Młodawska E., "Czym jest i od czego zależy sukces zawodowy?", <http://www.psychologia.net.pl/artykul.php?level=748> [accessed on 31.07.2020].

⁷ Jóskowiak, P., "8 sekretów sukcesu Napoleona Hilla", Wydawnictwo Złote Myśli, Gliwice 2006.

⁸ Lenart J., "Planowanie kariery jako jeden z wyznaczników sukcesu zawodowego", in: Edukacja Dorosłych 2017 no 2.

⁹ Jabłoński M., "Istota, funkcje i praktyki zarządzania talentami pracowniczym", in: Zeszyty Naukowe Wyższej Szkoły Bankowej w Poznaniu, vol. 60, no 3, 2015.

¹⁰ Lenart J., "Planowanie kariery jako jeden z wyznaczników sukcesu zawodowego", w: Edukacja Dorosłych 2017 nr 2.

¹¹ "Strategie sukcesu. Od Temistoklesa do Gandhiego - reguły skutecznej motywacji", Altmann H.Ch., Business Press, Warsaw 1997.

¹² Młodawska E., "Czym jest i od czego zależy sukces zawodowy?", <http://www.psychologia.net.pl/artykul.php?level=748> [accessed on 31.07.2020].

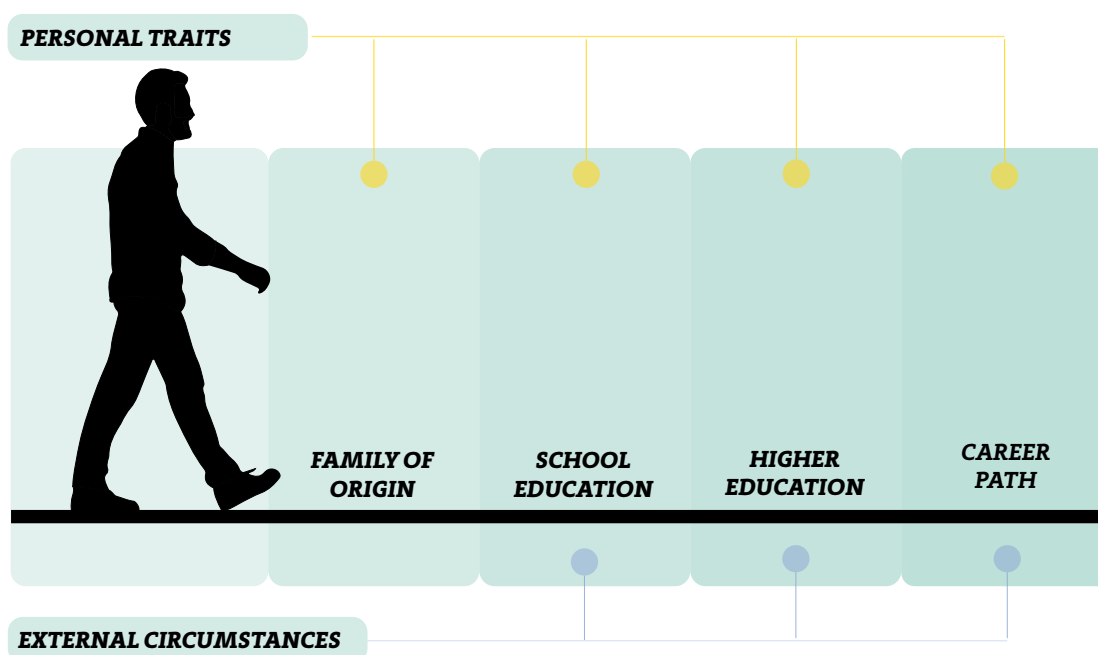
- » family-related factors, i.e.: the atmosphere at home, neglect, punishments, poor financial condition, overambitious parents, lack of aspirations, complete family, proper living and learning conditions, parents' intellectual level, parent's fairness, adequate assessment of the child's potential,
- » school-related factors, i.e.: low position in the group, pace of work, work organisation at school, obeying the rules, teacher's personality, fair treatment,
- » individual factors, i.e.: curiosity about the world, physical fitness and manual dexterity, perseverance, concentration skills, resistance to criticism.¹⁴

Personality traits also play a part in achieving success. In the context of analysing success factors, it is worth noting the concept of **career capital**, which Bańka defines as "the accumulated skills which an individual gains in the course of education, work, life, social and cultural experience."¹⁵ The skills gained are a product of the education process, interests and aptitudes of a given individual, but also his or her potential resulting from the social and economic position, lifestyle, professional activities and ways of spending free time.¹⁶

3.2 IDENTIFICATION OF SUCCESS FACTORS

Further, the report presents the results of analysis of the accumulated research material, i.e. describes the identified success factors. The diagnosed factors are presented in relation to six aspects of life of the studied WUT graduates – family of origin, school education, higher education, career path, personal traits and external circumstances.

Figure 1. Analysed aspects of WUT graduates' professional life



Source: by DBA CZliTT PW.

The study reconstructs the path to success of WUT graduates, identifying the factors influencing their success. It should be pointed out that the identified factors were not present in all studied graduates, but whenever they appeared, they played an important part in the analysed career paths. The report features example responses which accurately reflect the identified success factor. It presents the results of a qualitative analysis of data collected during interviews conducted with Warsaw University of Technology graduates conducted with Warsaw University of Technology graduates

¹³ Młodawska E., "Czym jest i od czego zależy sukces zawodowy?", <http://www.psychologia.net.pl/arttykul.php?level=748> [accessed 31.07.2020].




¹⁴ "Sukces jako zjawisko edukacyjne", Hemeniuk M., Paszenda I., Żłobicki W. (ed.), Instytut Pedagogiki Uniwersytetu Wrocławskiego, Wrocław 2017.

¹⁵ Bańka A., "Psychologiczne doradztwo karier", Stowarzyszenie Psychologia i Architektura, Poznań 2007.

¹⁶ Smolbik-Jęczmień A., "Akumulacja kapitału kariery jako istotny czynnik warunkujący osiągnięcie sukcesu w kształtowaniu własnej kariery zawodowej", in: Zarządzanie i Finanse, Vol. 14, No. 2/2/2016.

3.2.1 FAMILY OF ORIGIN

The conducted analyses led to the identification of three external factors related to a graduate's family of origin: perceiving education as a value and educationally-active and growth-oriented parents.

	<i>Education as a value in the family</i>
	<i>Educationally-active parents</i>
	<i>Growth-oriented parents</i>

Education as a value in the family **EXTERNAL FACTOR**

The responses of WUT graduates show that an important role in their paths to success was played by the values held in their families, including an appreciation of education. A high assessment of the value of education did not depend on whether the parents held or did not hold a higher education degree. The studied individuals included people with long-standing academic traditions in the family, for example a parent who was a university professor, but also people whose parents had only completed primary or secondary (including vocational) education. The manner of describing the education of family members varied. Some of those studied said that their parents had higher education as something natural and obvious, while others indicated that it was extraordinary. Some WUT graduates were proud that their parents managed to complete their education after many years. The respondents included people whose parents also graduated from the Warsaw University of Technology.

My mum got a degree at a time when it was rare for people to have higher education. She was a philologist by education. (...) My father did not go to university after graduating from secondary technical school because his family was very poor. In fact, by the time he did go to university, he was long grown-up and had kids - he majored in Information Technology at the Military University of Technology. (...) When I was in primary school, my dad was a university student.

4_WF_2012_M



My father had never studied at a university and pressed me a lot to get my masters.

8_WCh_2008_F

This was completely out of the question. Now it's fashionable to say "what do you need your studies for?", but that wasn't really up for discussion in my home.

61_WAiNS_2016_M

WUT graduates indicated that one of the values they brought from home is respect for science. The respondents emphasised that their parents wanted their children to study well from their early years and to choose schools having a high level of education. In the respondents' view, the role of their parents was to motivate and support them in their learning. It was also important for them to show trust towards the decisions taken by the respondents. This taught the graduates to be independent and take responsibility for their own decisions.

When in lower secondary school, I sometimes lost my motivation, but they helped me get it back and supported me. They had never questioned any of my educational and, later, career choices.

11_WM_2012_M

But education was not equally important in all families. Some of the respondents were graduates who indicated that learning and school achievement were not considered important in their families. One respondent pointed out that there had been no traditions in his family related to education, for example in engineering, so his parents did not guide him in this regard. At the same time, he was a high achiever, and his interests revolved around technical matters, so he decided to study at the Faculty of Mechatronics, WUT.

Educationally active parents **EXTERNAL FACTOR**

As values shape attitudes, those WUT graduates' parents who saw education as important were also educationally active. An analysis of the interviews demonstrates that the attitudes (i.e. a natural curiosity towards the world and interest in the surroundings) adopted by WUT graduates' parents played an important role in their later life. Parents characterised by an active attitude, who showed interest in the world around them and valued the pursuit of knowledge, shaped similar attitudes in their children. The theme of "the parent" was often present in the responses relating to the first memories connected with studying. Some WUT graduates mentioned situations that happened even before they started kindergarten.

I remember a book series called "Świat dziś i jutro" ("The world of today and tomorrow"). Today, I read these books with my kid. My parents would take us to cool, interesting places from our early days. I remember reading a book to my dad and him saying that this was interesting because he didn't know that. And that was great.

4_WF_2012_M

My dad was especially helpful in developing my interest in electronics.

6_WF_2012_M

Parents shaped the attitude towards learning in their children – not just by encouraging or motivating them to make an effort at school, but also by showing them on their own example that pursuing knowledge is something natural and valuable, and is also practised outside school.

Asking questions and looking for answers. Being curious about the world, that's the best way of putting it.

9_WE_2018_M

The interviewees also recounted situations of their parents studying within the formal education system, for example as part of engineering studies, bachelor and master studies, postgraduate studies and professional training courses. The respondents frequently spoke about situations in which their parents introduced elements of learning into play – for example a mother who taught her child by using dice. WUT graduates were aware that the family environment from which they

come has played a significant role in their path to success.

People who don't come from a healthy environment may manage to discover and process it, but if they fail to do it, they won't reach their full potential.

9_WE_2018_M

In some cases, other family members, such as grandparents, aunts and uncles, or older siblings, were also involved in the education of the respondents. One graduate admitted that his aunt who was a maths teacher, was involved in preparing him to his middle and secondary school leaving exams. Such situations also happened where the child's level of learning was out of their parents range – some respondents mentioned that their parents were poorly educated. However, this did not undermine their assessment of the value of education. On the contrary, they showed their children what they can gain by investing in learning.

Growth-oriented parents **EXTERNAL FACTOR**

Another factor identified in the responses of WUT graduates is also related to the family environment. The study reveals that it is important to identify talents, aptitudes and strengths of the child at an early stage. The responses included descriptions demonstrating active observation aimed at noticing and strengthening their potential in childhood. This relates both to supporting development in general and focusing on a specific area. An example of supporting development is the story of a graduate who, on his parents' initiative, had joined an individual programme class, which included the most talented students. They completed the material faster, took part in science Olympiads, educational excursions and outings.

This was amazing, I liked it a lot and it made me hungry for knowledge and eager to find my own way. (...) The crucial catalyst of these changes were my parents. It was them who found such a class and saw that I needed a little more stimulation. They organised exams, as it was not easy to get into that school.

41_WZ_2008_M

An example of fostering talent in a specific field is the story of one graduate whose parents saw her artistic talent, which led to her successful graduation from the Faculty of Architecture at the WUT. Her parents noticed that she liked to draw, so they started to enrol her for extracurricular classes very early.

I went to a children's activity centre and that's where I started learning to draw. This was before school, but I remember that I loved to go there. (...) In middle school I also attended drawing-painting classes in the Old Town. In secondary school I attended a drawing course in preparation to university exams.

23_WA_2014_F

It was my parents who spent the money so I would be able to study, they really sacrificed a lot for me to go to university.

94_WGiK_2007_M

In many cases, children's talents are developed because their parents are ready to incur the substantial costs of extracurricular classes and other activities. In the interviews, the respondents admitted that they were aware of the sacrifices made by their parents.

TOMASZ HIPSZ

- **founding an interactive agency**
specializing in the internet and e-commerce while still studying (1996)

- **GRADUATE**

Faculty of Power and Aeronautical Engineering (1998)

- **project implementation and support for the companies**

creating websites and web systems (e-commerce, CRM, CMS), implementing marketing strategies (AGFA, Lilou, Alab Laboratoria, Motoricus); supporting companies in the era of digital transformation

- **training and support for companies**

training and consulting for companies introducing their services to the Internet

- **starting to work from Great Britain**

Symposium Events, Chronix Biomedical, Advanced Cancer Diagnostics (2015)

- **CHIEF OPERATION OFFICER**

of MedTech, a company creating systems integrating the area of medical diagnostics (2018)



GREATEST ACCOMPLISHMENTS

- creating one of the first Polish online stores (1997)
- creating innovative systems (e-commerce, CRM, gamification) that were often the first ones of their kind in Poland)
- publishing the "Internet in Business" guide (Helion, 2012)

ADVICE FOR STUDENTS

- "Try to collect a variety of experiences."
- "Don't just focus on the subject matter. Learn how to work with people."
- "Always pay attention to your business goals."

THOUGHTS ON THE CAREER

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

"What I appreciate most about my career...
is acquiring new knowledge."

"Success is the possibility of ensuring a decent life for the family, the possibility of selfrealization and maintaining the work-life balance."

MEMORIES FROM WUT

"The supervisor of my individual course of study.
A very professional and outstanding specialist in his field."

TIME AT WUT - KEY ASSETS

- ability to work hard
- ability to acquire knowledge
- persistence

3.2.2 SCHOOL EDUCATION

Five factors connected with the stage of school education that contributed to WUT graduates' success were identified. Two of those were external – dedicated parents and peers with similar values. The internal factors were: picking a school meeting one's expectations, participation in extracurricular activities and internal motivation to study.

	<i>Picking a school meeting one's expectations</i>
	<i>Dedicated teachers</i>
	<i>Participation in extracurricular activities</i>
	<i>Peer environment with similar values</i>
	<i>Internal motivation to study</i>

Picking a school meeting one's expectations INTERNAL FACTOR

Taking into account the factors indicated above, it seems natural in parents' view to ensure that their children graduate from schools which provide top quality education. The results of the conducted study demonstrate that the school was specifically selected only in individual cases as early as for primary school, and, later, middle school (for people who were in that system). In addition to high level of teaching, the selection criteria of WUT graduates' parents included the way the school was organised and its declared values, location and guaranteeing an appropriate level of security to pupils.

It was definitely my parents' deliberate choice, but I don't remember it being consulted with us. I remember that my parents said we would go to this exam, but they said it was just for fun.

23_WA_2014_F

It was not the assigned school that was near our home, but one which my parents felt would be safe.

34_WMEiL_2012_M

However, most WUT graduates started their education in the primary school nearest to their home. At the same time, some of the respondents did not have a choice, as they lived in the countryside or in small towns, where the range of available schools was limited.

As for secondary school, it was an important moment for everyone on their educational path. WUT graduates pointed out that selecting the school was preceded by a lot of thought and analysis, taking into account rankings, opinions, distance, family traditions, peers going to the same school and the city or town it was located in. It follows from the interview responses that parents mostly did not interfere with the respondents' choices. However, it should be noted that WUT graduates' choices were well aligned with their parents' expectations – they were ambitious and guided by educational development. One respondent emphasised that his choices did not leave room for his parents' criticism, because he chose the best general secondary school in Warsaw.

My parents had never told me where to go. I was entirely free to decide.

38_WMEiL_2019_M

If I had chosen one of the worst ones, they would have probably said I was crazy. There was no room for conflict.

9_WE_2018_M

So, I chose the best-ranking general secondary school in the city that was the hardest to get into. I got in. I chose the class with a focus on maths and physics, because that was what I wanted.

34_WMEiL_2012_M

For those WUT graduates who lived far from the major cities, picking a secondary school was an opportunity to move to a bigger city or town. One example is the story of a respondent who decided to choose a technical secondary school of surveying after finishing middle school. She said that her motivation was to "go out into the world."¹⁷ Starting education in a technical secondary school of surveying involved going away and changing her surroundings. For respondents coming from small

¹⁷ 85_WGiK_2011_F

towns and villages, the choice of secondary school away from their place of residence was a natural decision. In some cases it was the only way to continue their education. Another reason to leave their home town was the desire to study in a school with a high level of education and a specific profile.

Some WUT graduates reflected on whether the selection of school and its profile was a subconscious way to fulfil their parents' expectations and whether it was guided by them, for example in a situation where both parents had finished school in a mathematics and physics class and they worked in that field. In isolated cases, the school was selected by parents (e.g. the best general secondary school in town), while considering their children's potential. However, the respondents who found themselves in such situations accepted their parents' decisions, recognising opportunities for their own development.

Dedicated teachers **EXTERNAL FACTOR**

Another factor involves the teachers met by the respondents along their educational path, in both primary and middle school, and in secondary school. Respondents indicated a special role of teachers who were enthusiastic about their fields while having a lively interest in how students felt at school.

It was a truly great, likeable person whom I later visited more than once just to drop in and talk for a while with someone I liked.

5_WCh_2005_M

Respondents emphasised the attitude of teacher, whose dedication made students passionate about their subjects. The most frequently mentioned were science subjects, which formed the basis for their studies and later professional career.

I had a very good physics teacher and he somehow passed his passion for physics on to me.

3_WF_1978_M

I have very positive memories, especially when it comes to maths and physics teachers who made me interested in exact sciences. (...) That's how all this started.

6_WF_2012_M

The narratives of WUT graduates also show that they started believing in themselves thanks to the guidance and support of their teachers.

It was the middle school headmaster who encouraged me to go to the "Staszic" secondary school, telling me that I was very intelligent, but lazy, and that I shouldn't waste my potential. (...) This gave me such a big faith that I could really go to a good secondary school and believe in my abilities.

23_WA_2014_F

At the same time, some of the WUT graduates spoke about teachers who made them interested in fields which are far away from their educational path. One respondent recounted a history teacher who made him interested in this field, which still remains his refuge from professional duties. On the other hand, some respondents regretted the lack of dedicated teachers and had bad memories connected with their early education.

Absolutely terrible. (...) Nobody ever told me why I was studying at all.

93_WE_2018_M

Secondary school makes you dumb (...) You learn everything by heart, it's all unimaginative and pretty uninteresting.

107_WIBHiŚ_2004_M

The graduate was referring to teachers who, after more than a dozen years of teaching lose interest in their own field and can't make their students interested in the subject.

Participation in extracurricular activities INTERNAL FACTOR

The stories of WUT graduates show that fostering a proactive attitude from the earliest years is important for achieving success. In the case of the respondents, this was expressed by participation in extracurricular classes at school and other out-of-school activities. This helped them nurture their interests and also shaped important attitudes, e.g. the skill of handling failure in the case of those respondents who took part in competitions and did sports, as well as soft skills for respondents who were involved in the student board. The range of school and out-of-school activities was varied. Some WUT graduates could take advantage of a wide variety of classes at their schools – from sports to astronomy clubs. Some respondents only had the typical extracurricular classes, such as maths clubs, and other had no such opportunities at all.

A lot of us stayed at school until evening, because we were also in the student board. (...) We spent a lot of time after school on the activities of the student board. We also joined school sports clubs and the philosophy club. If somebody was willing, there were things to choose from and people to ask for help.

4_WF_2012_M

The narratives of most respondents shows that they were active students, and their school-based and out-of-school activities included special interest clubs, science Olympiads and subject competitions, heritage exploration and tourism trips, scouting, sailing, dance and sports activities. Respondents recalled situations in which their involvement in additional activities helped them discover what they wanted to do in the future.

Once I managed to win a voivodship competition on physics at the University of Zielona Góra and it might have been what led to me taking up studies connected with physics.

104_WF_2011_M

The role of parents in encouraging children to make more effort should also be emphasised. One of the respondents recounts that she attended extracurricular classes because her parents inspired her when she talked to them about her out-of-school interests.

My parents wanted me to be well-educated. They believed it would give me an easier start in life.

47_WIP_2014_F

Not all WUT graduates as students of secondary schools participated in extracurricular classes – for a broad range of reasons, starting from no such opportunities to lack of willingness on the part of the respondents.

Peer environment with similar values EXTERNAL FACTOR

The issue of the peer group was emphasised as important in interviews with WUT graduates. Respondents pointed to the fact that their surroundings were dominated by people for whom education and a proactive attitude to life were important values.

We had a great group of friends – supporting each other and learning together. We were all up a creek without a paddle, but we had the determination to get past these challenges. (...) We were determined to be thought of highly by teachers. When someone knows physics, he's a great guy, he's somebody. It wasn't like that in middle school. (...) A friend was beaten up because he got an A in physics (they were only making fun), but he was bullied by the class.

4_WF_2012_M

Of course, you can end up in bad company, but also a good one. (...) It goes without saying that you can't do anything if your family is against it, if your closest ones are against it. (...) At the stage of middle school it was normal in a group of peers that everybody wanted to go to the best secondary school possible.

33_WA_?_K

Thanks to this, the aspirations of the respondents were similar, they did not want to be different than their peers, so they wanted to pursue the goals set by the group. This attitude was a natural extension of the values provided by parents and teachers.

Internal motivation to study INTERNAL FACTOR

Another factor identified in relation to the stage of education in a primary/middle school and secondary school, is the high level of internal motivation to study. The responses by WUT graduates show that they were characterised by an eagerness to learn about the world and broaden their knowledge, and learning was an important part of life for them.

When I started middle school the role of my parents diminished greatly. They knew that I applied myself, that this was a normal thing to me, that I had lessons and I took them seriously, that I didn't cut class and everything was going the right way. (...) I didn't need anybody to persuade me to study.

51_WEiTI_1982_M

In addition, the responses were dominated by memories of achieving good results at school, while some respondents emphasised they got very good results with little educational effort. It was indicated that the favourite subjects included those which form the basis for studying at WUT, i.e. mathematics, physics, more rarely chemistry, biology or technology.

Generally speaking, my educational life has always been biased towards technical aspects.

69_WT_2011_M

I have always been interested in biology, nature, the world around us, what it looks like, how it is all connected and how it functions.

107_WIBHiŚ_2004_M

The willingness to learn was expressed not only in high achievement, but also in an attitude to seek knowledge on a daily basis.

I would often visit my dad at work. (...) It was always so interesting to me - all those machines. Also, I used to sit in the basement all the time, fiddling with those mechanical things.

51_WEiTI_1982_M

As children, future WUT graduates were characterised by a curiosity towards the world and an eagerness to broaden their horizons at every opportunity.

3.2.3 HIGHER EDUCATION

The factors appearing at the stage of higher education were divided into two categories: those related to the graduate and those related to the Warsaw University of Technology. The identified factors related to the graduate included: external factors – choosing studies at WUT, additional involvement during studies, gaining experience during studies and an external factor – financial support from parents during studies. As for the influence of WUT, there are five related external factors: high level of education, interdisciplinary teaching, cooperation with industry, dedicated WUT employees and WUT brand as an asset.

	Choosing studies at WUT
	Additional involvement during studies
	Gaining experience during studies
	Financial support from parents during studies
	High level of education
	Interdisciplinary teaching
	Cooperation with industry
	Dedicated WUT employees
	WUT brand as an asset

Factors related to the graduate**Choosing studies at WUT INTERNAL FACTOR**

In most cases the choice of studies at WUT was the natural continuation of the respondents' educational path. Reflecting back on that period of their lives, they spoke about difficulties in choosing a specific major and Faculty, pointing out that some majors are organised on several

Faculties, and, as outsiders, they had no knowledge on the specific nature of individual WUT units.

I always knew I would go to the Warsaw University of Technology. (...) It was part of a natural sequence for me. My dad and all of his brothers graduated from the Warsaw University of Technology. My mum graduated from the same Faculty as my dad. I was the only one in my generation in the family to go to the University of Technology, so the support of my uncles, my dad and my mum meant a lot to me.

58_WIL_2018_M

I took part in a Maths Olympiad in my fourth year at school and because I got to the finals I could choose where to study. I was exempt from the maths exam, and I only had to take the physics exam. I'm speaking about technical studies, because I was pretty sure I was going to attend technical studies.

70_WMiNI_1989_M

In their interviews, WUT graduates pointed out that they were guided by their interests, beliefs about future careers, information provided by the WUT, rankings, and the opinions of family and friends. However, there were also some respondents who decided on a specific major at the WUT without any deeper reflection, on the basis of their own perception of the studies only. One graduate pointed to two specific criteria of choosing studies – position in the ranking and the availability of a major related to aviation.

Additional involvement during studies **INTERNAL FACTOR**

The proactive attitude of WUT graduates and the willingness to develop their interests were also visible during their studies. The respondents mentioned a number of activities, such as science clubs, the student union, radio, e.g. “Radio Aktywne”, music bands, e.g. “The Engineers Band”, the Song and Dance Ensemble of Warsaw University of Technology, and conducting private lessons for school students in a more or less formal manner.

Particular attention was given to science clubs and the student union. These were indicated as places where WUT graduates could obtain subject matter knowledge, but also develop a number of skills, which, in hindsight, they saw as especially important for their professional career. One graduate (with a relatively short work experience) mentioned his involvement in the activities of the science club and student union as two of the three milestones on his way to success, which demonstrates the important role of those organisations in the respondents’ lives.

I was in the student union and in student media and we organised a lot of things. Such organisational and management skills – this has definitely come in handy.

61_WAiNS_2016_M

This was my first encounter with procuring funds and talking to contractors and sponsors.

6_WF_2012_M

Memories related to working in a science club or student union were positive. The respondents assumed responsibility for the implementation of ideas and projects, and had the opportunity to work for the benefit of their community. In addition, this commitment allowed students to take part in nationwide and even international events. The respondents participated not only in the science clubs available on their Faculties, but also in the central structures of the student union, as well as nationwide organisations of students and doctoral students – one respondent mentioned that he was involved with the doctoral student union and the establishment of the Polish Representation of Doctoral Candidates (Krajowa Reprezentacja Doktorantów).

A large number of graduates declared that they were members of science clubs from their first year of studies. The most frequently mentioned motivations for joining this organisation included: interest in a given field, friends who have already been members of the science club and a generally positive attitude to taking action in life. One of the respondents said that he got involved in the works of a science club even before he took up studies at WUT, as he met students from the science club in a field that was his passion before the academic year started.

It should be pointed out that the responses of WUT graduates demonstrate that being involved in additional activities, particularly in the activities of science clubs and the student union, was more characteristic of people who had been well-prepared to technical studies at previous stages of education.

People who struggled to keep up from the very first month didn't have this opportunity.

4_WF_2012_M

Individuals who had a backlog from secondary school had to spend more time to study from the first semester of their studies. One of the respondents admitted that because mathematics and physics at his school were taught at a high level, he was well prepared to take up studies, which allowed him to get involved in the student union and science club activities.

Gaining experience during studies INTERNAL FACTOR

Accumulating experience outside of the course of studies even before graduation is an important factor in achieving future professional success. This is not necessarily experience gained at work, which is taken up in addition to studies. WUT graduates' responses show that it is important to deliberately and purposefully choose internships and traineeships, as well as first jobs. Activity in this regard allows students to verify what they would like to do after they graduate. Additionally, a person with an extensive CV is more attractive for a future employer. The respondents included graduates who had had a specific plan as to their professional future, but had to adjust it to reality. One respondent, during the summer break, applied for an apprenticeship to the company that he wanted to work for in the future. After another year of studies he came back to the same company for another summer apprenticeship. After he completed it he was offered a job at the company after graduation.

They told me: "If you graduate from engineering studies, we want you. We just need you here. It's obvious that you're cut out for it."

93_WE_2018_M

Internships and student apprenticeships, including those organised abroad, allowed the respondents to learn about the specific aspects of a given industry and job opportunities. One of the graduates who took advantage of the opportunity to travel abroad admitted that it was that trip which was decisive for his future career.

The fact that I wanted to stay at the university was connected with the experience I had when I first went to [name of research centre] and got a taste of the world of real science, in which people don't prepare for tests, but actually do research. This made me want to stay at the university, get my PhD and so on.

104_WF_2011_M

Some WUT graduates indicated poor decisions made during studies in this respect and their consequences.

Financial support from parents during studies EXTERNAL FACTOR

Respondents mentioned the possibility of participating in additional activities in the context of not having to take up a job to earn one's living. WUT graduates' responses demonstrate that the support of their parents, living with them or receiving money, was important for their development in the early period of studies.

This allowed me to have fun and do all kinds of projects, but also to attend elective classes. (...) I know that if I had been forced to earn my living, it would've been much more difficult for me at the university, as I wouldn't have been able to spend as much time on studying and additional activities.

4_WF_2012_M

At the same time, it must be emphasised that the respondents included graduates who had not received financial support from their parents.

Factors connected with the Warsaw University of Technology

High level of education EXTERNAL FACTOR

Regardless of the Faculty from which respondents graduated, the level of education at the Warsaw University of Technology contributed to the successes achieved by the interviewed WUT graduates. All the respondents indicated a high quality of teaching at WUT, particularly in terms of subject

matter knowledge. They often referred to rankings which indicate a high position of WUT in Poland.

It teaches you analytical thinking and approaching a problem in a technical way. (...) Regardless of major, you can just go out there and look for the job of your dreams.

1_WE_2009_M

I think that what distinguishes WUT is that it maintains a certain standard. So if somebody isn't afraid of spending a lot of time and effort, I would definitely recommend WUT to them.

47_WIP_2014_F

The respondents admitted that their studies were difficult and the technical subjects required considerable effort. In this context, it was indicated that WUT is suitable for people who are willing to learn, because it provides a very high quality of education, and later, extensive development prospects. The respondents repeatedly emphasised the usefulness of not only subject matter knowledge, the teaching of which was considered obvious, but also “hardening” – the experiences connected with completing the course of studies at WUT and the effort put into studying.

It was something truly formative, it was important. This gives you a high intellectual self-esteem. I've learnt mathematical analysis, so why wouldn't I learn this?! There's nothing you can't learn and that's the important thing. Perhaps the most important – an intellectual confidence that you can handle it.

3_WF_1978_M

The respondents often mentioned that the manner and level of learning at the university were a huge surprise for them. Having come from very good secondary schools, they were convinced they were very capable.

I graduated from secondary school with straight A's, but got C's all the time during my studies.

8_WCh_2008_F

The respondents included graduates who decided to study at WUT after graduating from technical secondary schools. In these cases specific problems during the first years of studies were mentioned – secondary technical education was both a strength and a weakness. The interviewed graduates indicated that they found it very easy to handle practical and laboratory classes, but experienced difficulties with theoretical subjects, particularly those connected with mathematics and physics. One of the respondents declared that he managed to clear the backlog in his third year, which allowed him to receive scholarship.

In addition, the respondents recalled that their idea of studying at WUT had differed from reality – they were not disappointed, but they stressed that they were surprised by the number of laboratory and practical classes which they had not experienced before.

I thought that at university we'll continue doing workbook exercises, only more difficult.

4_WF_2012_M

It was also emphasised how important it is that WUT gives students the opportunity to participate in scientific projects even at the early stages of studies. Participation in research projects allows you to use the results of that research for your diploma thesis. In addition, WUT graduates recognised the value of non-technical classes provided by the University.

Also very nice were the lectures on humanities-related issues, e.g. philosophy, human resources management, management games, accounting and other such things that complemented the highly technical profile.

41_WZ_2008_M

For some of the respondents this was important to broaden their horizons.

Interdisciplinary teaching **EXTERNAL FACTOR**

A high level of education is connected with one more identified success factor among WUT

graduates – interdisciplinary teaching. The narratives of the respondents demonstrate that one of the reasons for which they did so well in their career was the fact that they had comprehensive knowledge in a range of fields and a wide range of different skills. One graduate of the Faculty of Electrical Engineering admitted that thanks to the specific nature of education at WUT, he had a wide range of choices for his career path.

We can pick telecommunications, automatics, energy, engines or programming. I'm ready for a change at any time.

93_WE_2018_M

A similar opinion was expressed by a graduate of the Faculty of Mechatronics, who recommends choosing this Faculty to his younger friends because of its wide range of knowledge taught.

We have classic technology, optics, precision manufacturing, mechanics, nanotechnology, physics, but also multimedia techniques and biochemical engineering. There's a lot to choose from and combine at will.

10_WM_2003_M

It is also worth noting that similar majors are available at various Faculties, although they put emphasis on the elements specific for a given scientific discipline. This diversity is valuable according to WUT graduates, as it facilitates choice and narrow specialisation.

Cooperation with industry EXTERNAL FACTOR

An important role in the context of improving chances of achieving professional success by WUT graduates is played by the cooperation between the University and entities representing industry. According to WUT graduates' responses, coming into contact with specific companies during their studies made it easier for them to learn about the specific nature of a given industry. One of the respondents recalled the Faculty of Civil Engineering, Mechanics and Petrochemistry in Płock, which conducts part of its curriculum in cooperation with industry.

Dedicated WUT staff EXTERNAL FACTOR

Another factor connected with WUT which is revealed by the analysis of the responses relates to the staff of the Warsaw University of Technology. WUT graduates recalled members of University staff with whom they established master-disciple relationships. Their stories show that dedicated and student-focused University staff can help instil a positive attitude to learning.

My Faculty is a relatively young one, so it's pretty cosy. There's a climate of rapport and personal understanding. (...) It was a good choice.

04_WF_2011_M

I was lucky to have great teachers. Prof. [name 1] and Prof. [name 2] took me under their wings and also helped me solve my life issues.

7_WF_2011_M

The respondents admitted that choosing the thesis supervisor was an important step. WUT graduates' narratives demonstrate that the selection of a thesis supervisor often had much more significant consequences than just cooperation during the writing of the thesis, which included further professional cooperation and a decision to choose a scientific career.

WUT staff's attitudes were also important in the context of developing attitudes in the studied WUT graduates. The respondents learned from their lecturers how to plan and follow a vision, apply critical thinking and be aware of certain aspects.

WUT brand as an asset EXTERNAL FACTOR

The last success factor of WUT graduates directly related to the Warsaw University of Technology was its brand. The respondents often referred to the strong reputation, value and prestige of the Warsaw University of Technology when compared to all other Polish universities. It was indicated that a WUT diploma "opened a lot of doors"¹⁸ on the career path.

¹⁸10_WM_2003_M

The very fact of graduating from the Faculty of Power and Aeronautical Engineering opens a lot of doors. It's a pretty prestigious Faculty.

34_WMEiL_2012_M

University of Technology... I think that the reputation of this place helps a lot. I think that the resources, knowledge, reputation, and possibilities are very positive.

50_WIP_2013_M

WUT graduates admitted that they were proud of finishing a specific Faculty at the Warsaw University of Technology. They often emphasise this in their narratives, even when they have already reached a high point in their careers and their main asset is professional experience.




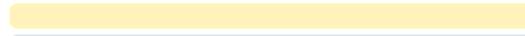

I'm afraid I'm a serious case of the Faculty pride. (...) I'm not ashamed of this Faculty. I think that you can meet fascinating people there - intelligent, inspiring ones - and that's very attractive.

38_WMEiL_2019_M

The graduate stressed that, in his opinion, the Faculty of Power and Aeronautical Engineering is chosen by people who have a passion, which is why everything functions so well.

3.2.4 CAREER PATH

Four internal factors and one external factor were identified for the career stage. The internal factors included: brand awareness, intentionally shaping one's career path, readiness to learn and commitment to develop soft skills. The external factor involved the work environment and was connected with the attitude of superiors - recognition of potential by superiors.

-  Industry awareness
-  Intentionally shaping one's career path
-  Readiness to learn
-  Improving soft skills
-  Recognition of potential by superiors

Industry awareness **INTERNAL FACTOR**

WUT graduates' professional success was facilitated by their having extensive knowledge about the industry in which they intended to work. As in many cases the choice of major resulted from the respondents' passion, they knew what course a career in their industry should take, both in the science sector and outside. Information was often provided by members of the family who worked in a given field.

I found a company in which I wanted to participate in implementing huge and top projects. (...) My father also persuaded me to do it.

93_WE_2018_M

Thanks to their knowledge about the specific nature of work in a given field even before choosing their studies, WUT graduates knew early what steps they would have to take and what career development dynamics they were to expect.

Intentionally shaping one's career path **INTERNAL FACTOR**

It is apparent from WUT graduates' narratives that the careers of most of them are not a matter of chance - even if they indicated that "they found themselves in the right place at the right time" or somebody offered them a job, this was often made possible by the effort they had put into building a strong professional standing. The comments of some respondents paint a picture of people who carefully planned the position they wanted to achieve and then consistently completed the successive stages leading up to it. However, they gained this knowledge only after they obtained their first professional experience - during their studies they did not have a specific vision of who they wanted to be in the future.

Among those WUT graduates who deliberately shaped their career paths, two strategies may be distinguished:

- **stable development within one organisation**

Some respondents decided to develop their skills and knowledge within a single organisation for several years – they developed in the internal structures of a given entity. This allowed them to establish themselves in the organisation and identify with its vision of development. This strategy of building one's career path also includes WUT graduates' starting their own business activities.

I coordinate administrative matters in our company, my role is to remember about a lot of specific requirements that the company must meet – from health and safety at work to obligations towards the Tax Office and the Social Insurance Institution.

14_WMEiL_2014_M

It should also be pointed out that not every decision about starting work on their own account was successful. One respondent admitted that he tried to run his own business twice, but his attempts failed. He emphasised that he did not regret starting his own business activity, as he had gained valuable experience from it. Individual respondents who had the opportunity to work in a family business also decided to become professionally involved with a single organisation.

- **dynamic development in multiple organisations**

Another way to gain professional experience is to change jobs frequently. The motivations to adopt this strategy as indicated by WUT graduates included the desire to gain new competencies and skills, experience different organisational cultures and meet new people, ambition and a challenge seeking mindset.

I spent two years there and if I stayed at that place now I wouldn't gain as much from it. (...) It turned out that that I could just sit back and do my thing for another ten years, which didn't seem at all promising to me.

4_WF_2012_M

A large number of respondents had set the goal of winning a job at one of the major companies in a given industry – the responses show that they were able to achieve this in many cases. The companies they have worked for include: IBM, NVIDIA, PIAP, Orlen, Samsung, Thales, LOT Polish Airlines, Łukasiewicz Research Network – Institute of Aviation or PGE Capital Group. Winning a job at such organisations was often seen as a turning point in the respondents' professional careers.

Such a huge amount of knowledge I have gained, how much I can grow and learn from various perspectives... I've learned a lot and I'm still learning.

23_WA_2014_F

It must be stressed that the mentioned strategies represent analytical categories, and most WUT graduates combined them in life.

Readiness to learn **INTERNAL FACTOR**

The studied WUT graduates are characterised by a constant readiness to improve their competencies and skills and gain new knowledge. The conducted interviews demonstrate that the respondents continue learning not only in the areas corresponding to their professional specialisation, but also care about general development. The incentive for lifelong learning is the need to play an important part in one's field (both in business and in science), but also, as indicated before, curiosity about the world.

I finish at least four courses every year – I've been doing that year after year for more than twenty years. I add at least one certificate to my CV every year. I can't say exactly how many technical and business books I read, but it's a few dozen at least. There's no such thing as sitting back and ceasing to learn. Someone who assumed that he would graduate and would always do the same thing has already lost, he won't survive – market changes will kick him out of the market.

2_WIP_1999_M

I think that it's crucial these days. You need to improve your skills at all times. Usually the lifecycle of a skill is about a few years nowadays, as the labour market changes very much, so the one thing you must have is the ability to constantly learn new things.

41_WZ_2008_M

PAWEŁ RÓŻACKI



GRADUATE

Faculty of Power and Aeronautical Engineering
field of study: power engineering (2010)

project implementation in Jordan

the first self-implemented project, which helped him gain the necessary experience

product manager

the need to focus on product development, market analysis, sales approaches and software management

head of the department

extended responsibility for software production, implementation team and service (2016)

separation of a department

from a parent company to an independent subsidiary (2017)

CHAIRMAN OF THE BOARD

of the IT company providing applications for the energy sector



GREATEST ACCOMPLISHMENTS

- exploration and monopolization of the IT applications market in the energy sector in Jordan
- obtaining 700 references by the company

ADVICE FOR STUDENTS

- "Learn what is in the study program."
- "Approach learning systematically, good grades don't depend on predispositions, but on regularity."
- "The last year of studies is a moment to do the apprenticeships and slowly start gaining professional experience."
- "Learn languages intensively."

THOUGHTS ON THE CAREER

"I am at this point of my career because...
of the professor from my university."

"What I appreciate most about my career...
is honesty in the approach to work. If someone works honestly,
he will be successful sooner or later."

"Success is the implementation of the goal - that is, if we are able to identify the right challenge and complete it, then every step leading towards it is a success that may ultimately be crowned with the achievement of the final goal."

MEMORIES FROM WUT

"Great flexibility in approach. (...) I will definitely remember the activities in the science club, because it gave me the opportunity to go further, beyond the borders of our country, and do the projects on foreign energy."

TIME AT WUT - KEY ASSETS

- ability to manage a team and organization of events (developed while being a president of a science club)

The respondents often mentioned the fields and subjects they learned and also cited the names of specific courses they participated in. These include: MBA studies, MIT online lectures, foreign languages (one graduate studied 12 foreign languages), including English (older graduates learned it from scratch outside the school system), postgraduate studies, e.g. management and marketing, PRINCE2 Practitioner certificate, specialised courses, e.g. organised by industrial bodies, first aid, advanced meteorology, sailing, IPMA – project management, foreign internships at scientific centres, scholarships, e.g. the Fulbright Program, philosophy and programming, e.g. Python. The respondents unanimously pointed out that their educational activities were very important to them. Some of them saw additional studies, training and courses as opportunities for professional development and the reason for achieving their professional standing.

My activities after graduation were very important, because without them I wouldn't be where I am now.

89_WSiMR_2010_M

However, it is equally important for the respondents to ensure that they can broaden their horizons and catch up. One respondent declared that he would like to get back to school and use his time there more effectively.

Improving soft skills INTERNAL FACTOR

Readiness to learn is linked to another success factor, i.e. focus on developing soft skills. The issue of insufficient emphasis on shaping these skills during studies at WUT was repeated in the interviews. Realising the importance of soft skills on the labour market, the respondents took action to fill this void in their candidate profile. The respondents acknowledged that people who graduated from technical universities had a high level of technical skills and comprehensive theoretical knowledge, which makes them very good specialists, but they lack soft skills, such as interpersonal skills.

When I went to university I was a person who was very focused on my goal – technology, engineering – and the interpersonal aspect was very difficult for me, as nobody ever expected any such skills from us. And I believe that a combination of technical and interpersonal knowledge can give you amazing opportunities for development.

41_WZ_2008_M

The respondents indicated that gaining soft skills improved their work comfort while also giving them new opportunities in terms of professional development, e.g. in the field of human resources management.

Recognition of potential by superiors EXTERNAL FACTOR

For a large part of WUT graduates there was a time when their direct superior who saw their potential and supported their development played an important role in their professional careers. The responses demonstrate that the respondents are grateful to these people for their confidence in them, and are aware that they contributed to their success.

I had a great boss in my first job. He spent a lot of time with me and explained a great many things to me. It was such a boost to my skills that I could work independently in my second job.

8_WCh_2008_F

One respondent pointed out that it was a boost for his development when his superior believed in him at the beginning of his career path – he became head of construction works despite having little experience in the industry.

The person who was President of my previous company gave me the job knowing I'm a young person without experience and trusted me.

1_WE_2009_M

At the other extreme, there were people who recalled how their potential had been underestimated by employers.

3.2.5 PERSONAL TRAITS

With regard to personal traits, eight success factors were identified: proactive attitude in life, hard work and determination, courage in life, allowing oneself to make mistakes, networking skills, intellectual aptitude, ability to maintain work-life balance and readiness to make sacrifices.

	Proactive attitude in life
	Hard work and determination
	Courage in life
	Allowing oneself to make mistakes
	Networking skills
	Intellectual aptitude
	Ability to maintain work-life
	Readiness to make sacrifices

Proactive attitude in life **INTERNAL FACTOR**

The studied WUT graduates are characterised by an active attitude to life – the interviews demonstrate that they are motivated by their curiosity about the world. This refers both to the area of their professional activities and beyond. This attitude is expressed in the assumption that a human being should never stop growing.

Clearly, everybody needs to grow. If somebody stops developing his or her professional or other skills, then he or she will stop noticing a lot of things and will stagnate.

1_WE_2009_M

I think I still have it that new things inspire my curiosity, and even though there are some thoughts I dislike or fear, that curiosity always comes up on top and I like to learn new things.

34_WMEiL_2012_M

A proactive attitude in life is also connected with ambition – the studied WUT graduates are not people who would choose the easiest way to reach their goal.

I think you need to have some sort of ambition understood as a driving force to begin new subjects, reach for new fields and challenges.

70_WMiNI_1989_M

A good example is the push to develop as a scientist. Among people working outside science, the decision to take up PhD studies while working is not a rare occurrence.

A good example of the discussed feature of those WUT graduates who achieved success is the response from one of the respondents who is close to his retirement age now and graduated from the Warsaw University of Technology in the 1970s.

This may be my individual trait, but I believe that the most interesting things in my life are still to come.

3_WF_1978_M

When talking about his career and the successes he had achieved, the respondent emphasised that he did not want to withdraw from his activities, and that he had plans to become a fiction writer in the future.

Hard work and determination **INTERNAL FACTOR**

The conducted interviews paint a picture of WUT graduates as hard-working individuals who are determined to reach their goals, both in the professional and personal spheres. Some respondents see this determination and a consistent push to achieve their goals as the reason for their success.

You need to set your goals, find out what you want to achieve and then gradually work towards it. I think that in the world of science you also need a lot of determination. So if you set a goal you must really want to get it done.

104_WF_2011_M

You need to work hard, you can't be afraid and give up. Nothing is too difficult for you.

3_WF_1978_M

The respondents often emphasised that they owed their successes to their hard work. Some recalled the early stages of their lives, pointing out that studying at school required heightened efforts. Interestingly, difficulties did not cause WUT graduates to change their plans, but motivated them to try harder. It is significant that even though they had doubts, the respondents strongly believed that they were on the right path.

From the best student in school I became one of the worst. If I didn't make an effort I would barely avoid F's. (...) But it was clear that I had to grit my teeth.

4_WF_2012_M

WUT graduates also stressed that the mentioned features are sought after by employers, and they referred to their experience not only as employees, but also as employers.

Courage in life INTERNAL FACTOR

Another trait that can be ascribed to the studied WUT graduates is the courage to make important decisions. It can be concluded from the interview responses that the respondents had often been in situations when they had to make choices affecting various aspects of their lives. They usually made the decision having considered their options and were ready to face its consequences, even though it often involved considerable risks.

You must have some courage, because you sometimes need to take risks in life. Yes, it's difficult. (...) The ability to say "no" to an employer or someone else is important.

7_WF_2011_M

The bold decisions made by the respondents included: changing the major after completing a year of studies, moving to a different industry, starting one's own business activity, and also closing their business at the right moment. WUT graduates are also characterised by their ability to make deliberate choices when it comes to professional activities, which is expressed in their ability to reject various offers, even attractive ones, if they are not well aligned with their chosen development path.

Back then, I was a young employee without much experience and a bit youthfully naive. I think I wouldn't make the same decision today. I believe it was pretty much impossible, largely, but I pulled it off thanks to my perseverance and the belief that I would make it. (...) It was a risk. I rejected major companies which offered me jobs. The fact that I took the risk was a milestone.

34_WMEiL_2012_M

You definitely shouldn't be afraid of change. I was putting off the decision to change my job for a long time. I was afraid that it's been too short, that it will be worse. That's why I accepted some things I didn't like.

8_WCh_2008_F

One of the respondents decided to go abroad, even though he had built a strong position for himself in his professional circle. As he pointed out, in Poland he had a network of people who knew him, trusted him and would invite him to cooperate. After leaving the country he had to build his position from scratch. His motivation to leave was the desire to work in an area that was not present in Poland at that time. Another respondent did not work in his field after graduation – he retrained to become a programmer. This took a substantial amount of time and required effort, self-discipline and determination. The decision to retrain was frequently mentioned when WUT graduates talked about their lives. Such a step often involved investing in developing qualifications and competences which could allow working in a different industry, for example obtaining a pilot licence by a graduate of the Faculty of Electronics and Information Technology with 10 years' professional experience in IT.

Allowing oneself to make mistakes INTERNAL FACTOR

Courage is linked to another factor that fosters success – allowing oneself to fail. The studied WUT graduates allowed themselves to make mistakes and accepted them as a natural part of life.

Allowing oneself to make mistakes and accepting the idea that you can't be perfect at everything, that you will make mistakes and that's just the way it is. Don't take it personally, don't worry, don't dwell on your mistakes, because it's impossible not to make them.

8_WCh_2008_F

It doesn't matter if something goes well or not, you have to try to find the answer. (...) I believe that problems are not obstacles, but opportunities.

10_WM_2003_M

One respondent stated that an appropriate attitude to failure is the decisive factor for success. He became aware of this when he came in contact with American culture. While observing scientists from Stanford, he understood, as he pointed out, that their success didn't come from the university they graduated from or their genius, but from their ability to see failure as advice for the future rather than events that put an end to your career.

Networking skills INTERNAL FACTOR

Networking skills and openness to others are other features that were identified as important in the context of the potential to achieve success. The respondents' narratives show that it is a very important factor, which might be decisive for the success of a given project in some situations. Significantly, the respondents emphasised that they were aware of the persistent stereotype regarding the interpersonal skills of graduates of technical universities. However, they made efforts to change this perception with their attitudes.

An egghead in a flannel shirt and glasses, who sits in front of a computer screen and can't talk to people. (...) You need to have competencies that go beyond engineering, you need soft skills. You should be open to people and to cooperating with them.

69_WT_2011_M

The significance of cooperation was also highlighted by those WUT graduates who achieved success in science. It was stressed that it was particularly important nowadays, as the lone scientist type is simply non-existent.

There may be some exceptions, but more so in the exact sciences, where some brilliant mathematicians or physicians might play a crucial role. When it comes to applications, though, such as artificial intelligence, robotics, or other fields, they are dominated by teams, and very big teams at that.

70_WMiNI_1989_M

One respondent said that from a certain stage of career you switch jobs thanks to the contacts and recommendations you have, and these are possible with cooperation and shared results. He said that he had never had any problems networking with other people, so he had an extensive network of contacts, although these were not close – WUT professors, managers from various workplaces, heads of companies with which he cooperated, and even the head of a female team of Mount Everest climbers from the US. Mentioning these meetings helped him stand out during various moments of life (for example during job interviews).

Intellectual aptitude INTERNAL FACTOR

To achieve success in the fields of specialisation of the interviewed WUT graduates, it is also important to have intellectual aptitude in exact sciences, or, in other words, talent. The respondents' narratives show that they were interested in technical matters from their early years and they did not encounter any difficulties when studying mathematics, physics or chemistry. It is also important to discover your strengths and weaknesses at an early stage to be able to develop effectively.

At university, the most important thing was to decide on who I am, who I want to be and what I want to do. For me, the important thing here was that there were many elective courses, a lot of opportunities to see something different. It was really great and it helped me decide.

41_WZ_2008_M

This is well illustrated by the story of one graduate of the Faculty of Power and Aeronautical Engineering, whose passion was aviation. At first he planned to design planes after graduation, but during his time at university he noticed that he did not have the abilities to do it. After some time he

discovered that he was very interested in issues connected with airplane maintenance.

Some WUT graduates call this set of abilities the “engineering sense.” At the same time, some respondents indicated that there was no need to have such abilities – they believed that technical studies are within everyone’s reach.

This isn't given to you. All this must be practised. Even completing a PhD is nothing more than just training. It's not about somebody being more or less clever.

10_WM_2003_M

To be a scientist, the one that later works at a university and explores the mysteries of science, you must be born like that. But you don't need that to become a physicist. It's 10% talent, 90% hard work.

6_WF_2012_M

The stories of the respondents’ careers show that success often results from self-promotion and highlighting your strengths, which need to be identified.

Ability to maintain work-life balance INTERNAL FACTOR

Another identified success factor mentioned in the stories of the interviewed WUT graduates involves maintaining work-life balance. When speaking about their professional lives, the respondents emphasised the significance of having a private life. They often indicated that this sphere is the most important. Some WUT respondents recalled specific situations from their lives to describe what they thought was good or poor work-life balance.

I remember when I came home for Christmas – right after we ate Christmas Eve dinner I lay down on the couch and fell asleep in an instant – I was that tired. When I left my first job I slept for a week on end. This job gave me so much experience, but it drained the life out of me.

8_WCh_2008_F

Another graduate pointed out that he could not imagine having no time for his child due to his workload. He declared that he would not want to lose a good relationship with his family due to being disproportionately involved in his professional duties. In another case, the respondent decided to reject a foreign job offer due to the dynamic growth of his wife’s architectural firm.

One of the ways to maintain a healthy work-life balance is to have a passion that is an attractive way to forget about work. Admittedly, a significant proportion of respondents said that their careers were based on their passions (for example one graduate had dreamt about a job related to space and rockets since childhood and he managed to achieve it), but their interests were broad enough for them to get involved in different fields. The WUT graduates who were successful included enthusiasts of music (including a graduate of a higher school of music), sports, such as sailing, judo and volleyball, aviation, history, historical re-enactment and tourism.

The role of sports in the respondents’ lives should be emphasised. They said that they had loved sports since school. In some cases the respondents practised certain disciplines at a semi-professional level, which required a lot of sacrifice and shaped character traits that are highly valued on the labour market.

I had very little faith in myself, I didn't believe I could succeed. And that was a real university of life for me – constant travels, the need to be resourceful and disciplined, so I would definitely include sailing among the milestones.

23_WA_2014_F

This was something that probably taught me the most. It wasn't just training sessions, but also tournaments and competitions – really hard work. Being evaluated, being exposed to evaluation, then some resistance to criticism, well, not even resistance, but taking it into consideration instead of taking it personally.

34_WMEiL_2012_M

Sports helped WUT graduates develop such skills as regularity, consistency, discipline, the ability to accept deferred benefits in life and the ease of accepting evaluation and criticism.

Readiness to sacrifices INTERNAL FACTOR

The narratives of WUT graduates describe them as people who, once they set a goal, will pursue it regardless of obstacles and do not lose sight of it even when exceptional effort must be made. Readiness to make sacrifices and staying true to one's priorities should also be included among the success factors.

You needed to spend most of the summer holidays, for example two months out of three for internships or apprenticeships, when you could've gone on vacation.

9_WE_2018_M

Actually, we didn't do much besides study. (...) It was spring 1974 and FIFA World Cup was being held – I didn't watch a single match! (...) This was very painful at that time, but it was also rather obvious – either I watch or I pass the exams.

3_WF_1978_M

This is particularly true for young people, for whom various kinds of entertainment may seem more attractive than work and gaining professional experience.

3.2.6 EXTERNAL CIRCUMSTANCES

Socio-economic situation

External support

Opportunity to observe foreign practices

An analysis of the conducted interviews made it possible to identify three factors connected with external factors. These include the socio-economic situation, external support and the opportunity to observe foreign practices.

Socio-economic situation EXTERNAL FACTOR

Of all the factors included under external circumstances, the most impactful is the socio-economic situation that accompanies the career path. The respondents included people who began their career at various moments of history, which involved their specific circumstances. Some events helped young people on the labour market, while others made it difficult for them to embark on their careers. WUT graduates pointed to the impact of the political transformation, the absorption capacity of the labour market for people with higher education who know English, the economic crisis of 2008, the development of new technologies and the resultant demand for programmers, the period of technological modernisation in the oil industry and Poland's accession to the EU bringing a lot of investment projects, for example in the railway industry.

I was bringing my company to the stock market and I ran into the biggest crisis. It was very hard to do some things, which wouldn't be a problem at all just a few months before.

107_WIBHiŚ_2004_M

When I graduated in 2011 (...) it was the very time that they were starting to pump a great deal of money into this market. Those who completed this specialisation were automatically hired. Everybody who wanted to work in this field found a job. And there's still a lot of work today.

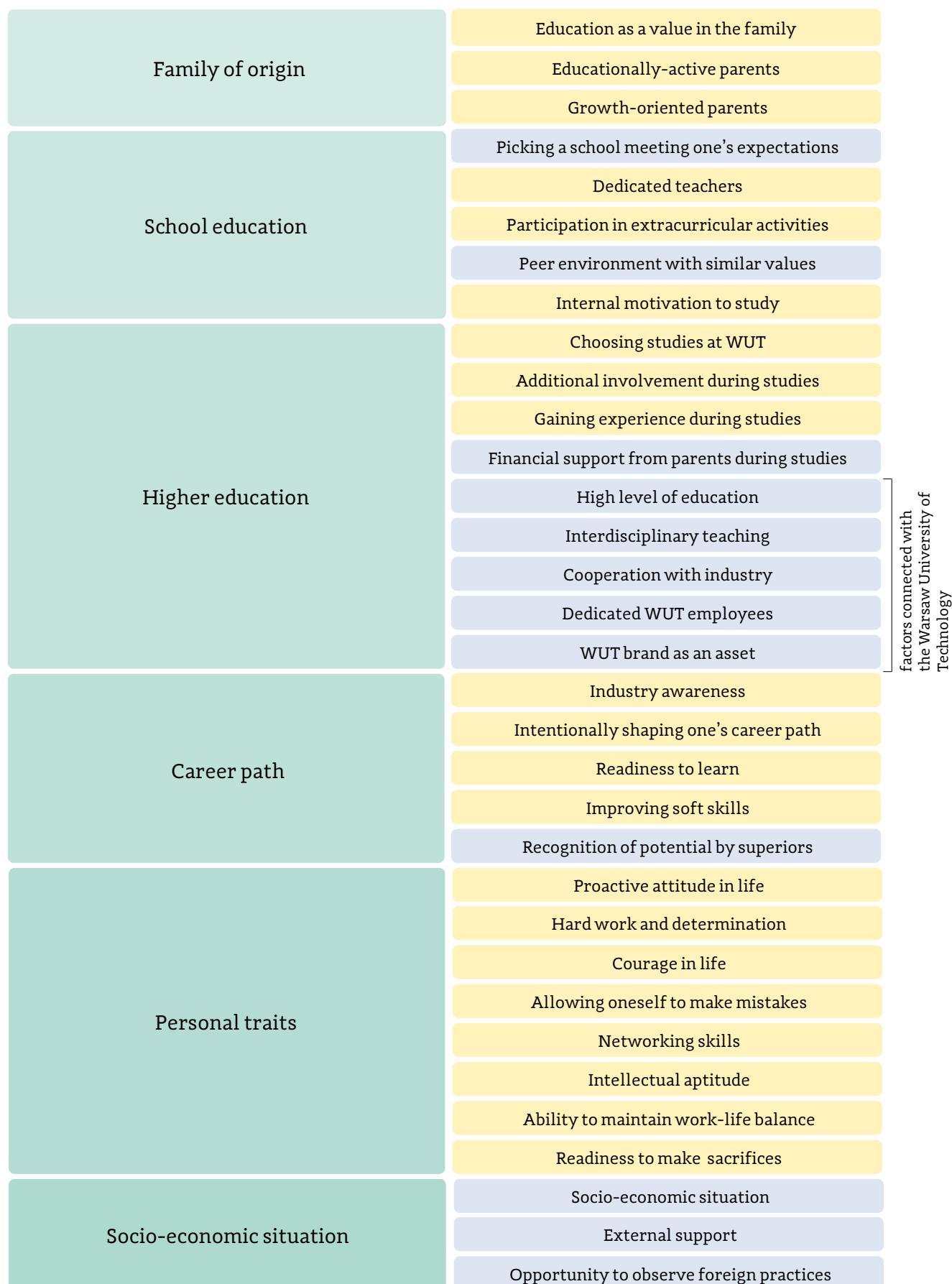
69_WT_2011_M

Regardless of whether the socio-economic situation is advantageous or not, the most important thing is to have knowledge in the field. The knowledge of the specific external circumstances allows one to gain qualifications and competencies which are competitive at a given time.

External support EXTERNAL FACTOR

The external factors contributing to success also include the support of the immediate surroundings, i.e. family members or friends and acquaintances. The responses demonstrate that being accepted and supported by those close to them were of crucial importance for the respondents in continuing their activities, especially at times when difficulties arose. The respondents pointed out that their close ones were the best advisors, critics and supporters on their path to success.

Figure 2. List of all success factors



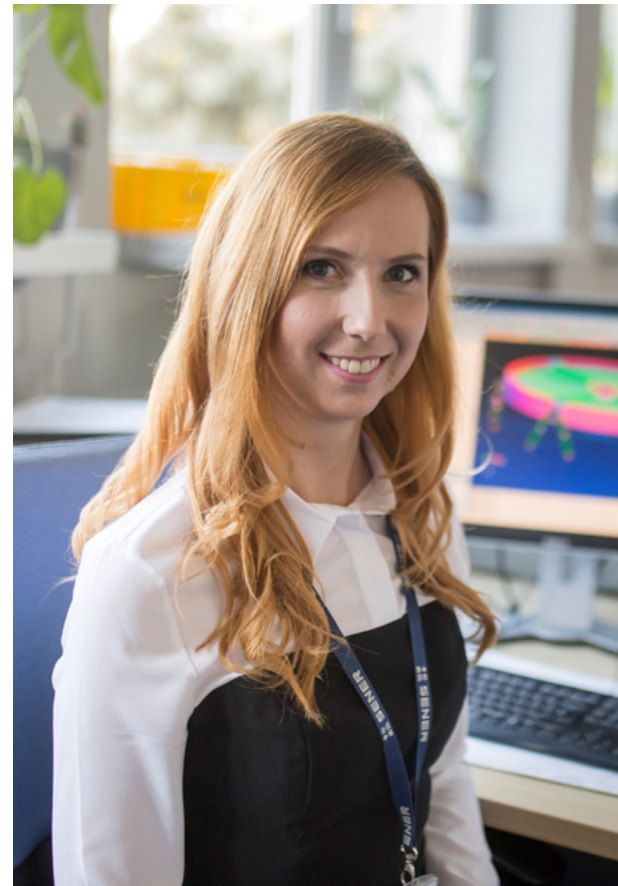
Source: by DBA CZiITT PW

Figure 3. The ideal types of paths of WUT graduates



KATARZYNA OKULSKA - GAWLIK

- **being interested in space**
inspired by her mother - a physics teacher
- **choice of high school**
preparation for the final exams
- **analyzing different studying options**
choosing a field of study that combined her interests and good prospects for finding a job
- **GRADUATE**
Faculty of Power and Aeronautical Engineering
field of study: Aerospace Engineering (2015)
- **Design Engineer at SENER**
structural analysis, design, technical documentation, vibration tests (since 2015)
project management (since 2019)
Missions: PROBA-3, SAOCOM-CS, ATHENA



"Success is a state in which a person is satisfied with what she/he does, it brings her/him joy, and at the same time she/he can afford to have a dignified life."

MEMORIES FROM WUT

"At the university, I've met many interesting and intelligent people, with whom I've always had a subject to talk about, but we could also go a little crazy and have fun together."

TIME AT WUT - KEY ASSETS

- structural strength
- English
- ability to use programs for engineers, e.g. NX, Catia, ANSYS
- solid foundations in the field of engineering

GREATEST ACCOMPLISHMENTS

- successful qualification of antenna holding and unfolding mechanisms for the SAOCOM-CS mission
- being a project manager of the ATHENA ISM project

ADVICE FOR STUDENTS

- "Invest in languages, learn practical skills, take part in the apprenticeships and internships."
- "Cherish the friendships made during studies, they are the foundations of your future professional contacts network."
- "Develop your passions outside of work, it is important to maintain a balance between work and private life."

THOUGHTS ON THE CAREER

"I am at this point of my career because..
of hard work and commitment."

"What I appreciate most about my career..
is the possibility of combining work with passion."

Opportunity to observe foreign practices **EXTERNAL FACTOR**

WUT graduates who had the opportunity to cooperate with people from outside Poland commented that this had been one of their most important academic/professional experiences. A trip abroad, even a short one, allowed them to change their surroundings, learn a different work culture, see a different perspective or meet people who represented an environment unlike their own. Some WUT graduates indicated that only after they had visited or worked/studied in another country, they became aware of the shortcomings of the solutions used in Poland.

Coming back from Denmark was a painful reality check for me.

17_WBMiP_2003_M

The respondents also emphasised that they were able to easily implement some of the observed solutions and attitudes in their surroundings, which gave them a competitive edge.

4. CONCLUSIONS

The accumulated research material served as the basis for identifying the aspects that played an important role in the lives of the studied Warsaw University of Technology graduates who achieved success. The analysis yielded a number of success factors, which were then used to construct the ideal life story of a successful WUT graduate. The factors were identified on the basis of analysing the life stories of a large number of WUT graduates collectively – none of the studied respondents individually experienced all of the identified circumstances. Some of these factors are specific for WUT graduates, and some only apply to people who are successful. In analysing the chances of achieving success, six areas of life should be taken into account: family of origin, school education, higher education, career path, personal traits, and external circumstances. The identified success factors, divided into external and internal factors, are presented on page 31.

The purpose of this study was to determine the role of the Warsaw University of Technology in the success achieved by WUT graduates. The conducted interviews reveal that the respondents see the impact that studying at the Warsaw University of Technology has had on their chances of being successful in their professional lives. The analysed responses demonstrate that an important role should be ascribed, firstly, to education in a given subject matter area, which was considered very important, secondly, to education in other non-technical aspects, and to providing numerous opportunities for development, for example as part of scientific projects, science clubs or the student union, as well as by direct contact with University staff, whose dedication was often pointed out by the respondents as significant support in shaping their path to success.

The narratives of WUT graduates show that both external and internal factors play a considerable role in achieving success. At the same time, an analysis of the respondents' stories leads to the conclusion that internal predictors, especially personal traits, are a necessary condition for professional success.

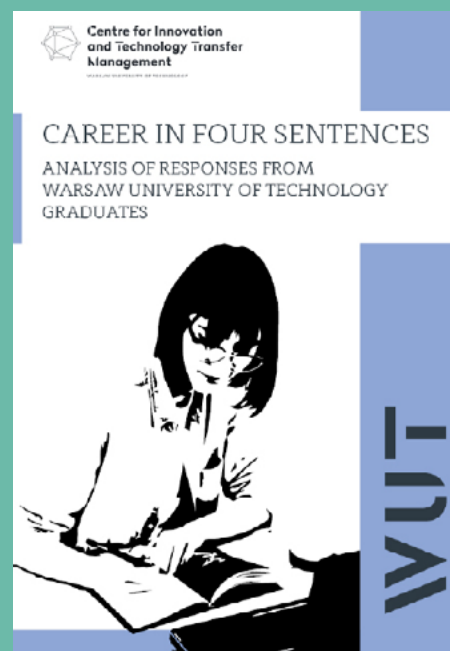
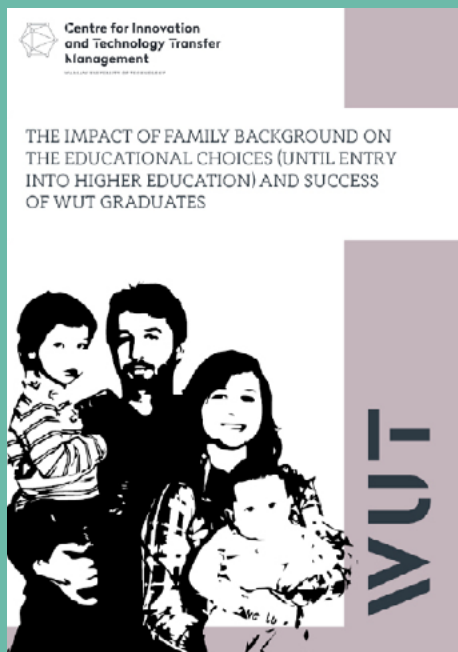
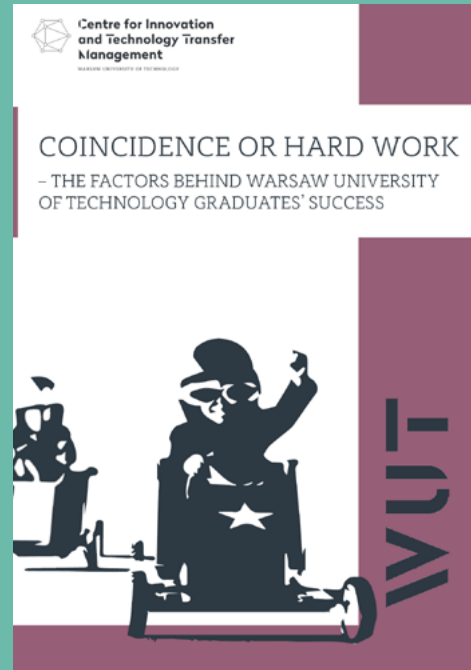
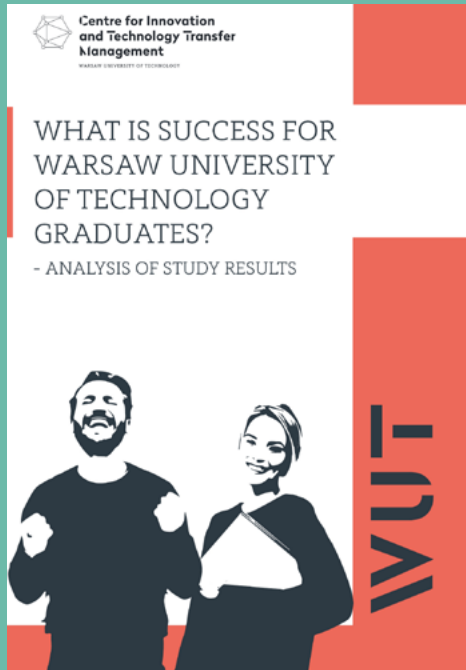
As an addition to the reports, we included information about organisations bringing together WUT graduates and publications focusing on WUT graduates. The list has been compiled based on online sources. WUT Faculties are welcome to expand this list.

Table 1. 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.placpolitechnik1.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

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

Read other reports



Project entitled “NERW 2 PW. Nauka – Edukacja – Rozwój – Współpraca” (“NERW 2 PW. Science – Education – Development – Cooperation”), co-funded by the European Union under the European Social Fund’s Operational Programme Knowledge Education Development 2014-2020, Priority Axis III, Higher Education for the Economy and Development, Measure 3.5 Comprehensive university programmes