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THE OUTCOMES OF AN INVESTIGATION ON THE FORMATION OF SOFT SKILLS AMONG PROSPECTIVE IT PROFESSIONALS

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Abstract. In the ever-evolving landscape of the Information Technology (IT) sector, the significance of soft skills has become increasingly apparent. This choice of topic stems from the realization that, while technical prowess is indispensable in the IT industry, a nuanced set of soft skills is equally critical for individual and collective success. The primary object of this study is the incorporation of soft skills into the IT sector, focusing on their role in shaping successful professionals and cultivating collaborative work environments. The subject under investigation is the nuanced spectrum of soft skills, including but not limited to communication, adaptability, problem-solving, creativity, and emotional intelligence, within the context of the IT industry. The overarching goal is to prove the thesis that the integration of soft skills is essential for success in the IT sector. Specific objectives include identifying key soft skills, understanding their relevance, and devising pedagogical strategies for effective soft skills education in IT. The research employs a comprehensive methodology, combining surveys, and analysis of job requirements to identify and categorize key soft skills. Pedagogical approaches are explored through literature review, case studies, and practical examples. We hypothesize that a well-rounded education in the IT sector, encompassing both technical and soft skills, is pivotal for producing professionals who can thrive in the dynamic and collaborative nature of the industry. This research holds theoretical significance by contributing to the understanding of the role of soft skills in the IT sector. On a practical level, it provides educators, institutions, and industry stakeholders with insights and strategies for fostering the development of soft skills, thereby addressing the current gap in IT education.

Key words: soft skills, Information Technology, survey-based research, education, career success, pedagogy, soft skills integration, top skills

Basic provisions

In exploring the significance of soft skills in the Information Technology (IT) sector, our research has provided a comprehensive understanding derived from both a meticulous literature review and a targeted survey of students enrolled in IT programs. The literature review illuminated the historical evolution of soft skills within IT, showcasing a paradigm shift towards recognizing the need for a balanced skill set in the late 20th century. Additionally, it highlighted the challenges and growing awareness of integrating soft skills into IT education. The survey, conducted among students in ICT programs, identified and analyzed key soft skills deemed essential by

students. Determination, self-management, time management, and creativity emerged as pivotal attributes, reflecting a nuanced understanding among students of the multifaceted nature of soft skills necessary for success in the IT sector.

The symbiotic relationship between technical proficiency and soft skills became increasingly evident, emphasizing the importance of cultivating both aspects for a resilient, adaptable, and future-ready IT workforce. Results presented in-depth insights into students' perspectives on the importance of soft skills and their desired qualities for personal development, offering actionable recommendations for both educational institutions and the IT industry. The research underscores the need for continued collaborative efforts to refine curricula, and recruitment strategies, and foster a culture that values and nurtures soft skills alongside technical expertise, ultimately shaping the trajectory of IT education and professional development.

Introduction

In the rapidly evolving landscape of the Information Technology (IT) sector, the demand for professionals equipped with a diverse set of skills extends beyond technical expertise. Soft skills, encompassing communication, adaptability, problem-solving, and teamwork, have emerged as indispensable attributes for success in IT careers [1]. As technology continues to advance, the intricate interplay between technical proficiency and soft skills becomes increasingly apparent. The acknowledgment of this dynamic has prompted a paradigm shift, emphasizing the need for a holistic skill set to navigate the complexities of the modern IT industry [2].

The choice to delve into the identification and analysis of key soft skills in the IT sector is substantiated by the transformative impact these skills exert on professional trajectories. Early perspectives within the IT industry predominantly focused on technical prowess, with an assumption that technical excellence alone would guarantee success. However, the experiences of predecessors underscore a critical shift in this narrative, revealing the nuanced landscape where technical proficiency intersects with soft skills, influencing career trajectories and organizational success [3].

The relevance of this research is underscored by the prevailing gap in comprehensive answers to crucial questions surrounding soft skills in the IT sector. Despite a growing interest in the subject, there exists a conspicuous absence of a consolidated and updated exploration of the evolving needs of the industry and the specific soft skills sought by employers. The industry's rapid evolution and the emergence of novel challenges amplify the urgency of addressing this gap to inform educational strategies, hiring practices, and professional development initiatives [1].

This research endeavors to define the object of study as the landscape of soft skills essential for success in the contemporary IT sector. The subject of investigation comprises the evolving needs of the industry and the specific flexible skills sought by employers. The overarching goal is to conduct an in-depth analysis that elucidates the intricate relationship between technical proficiency and soft skills, establishing a comprehensive understanding of the qualities that propel IT professionals toward success.

In pursuit of this goal, the objectives include identifying key soft skills currently deemed essential in the IT sector, examining the historical evolution of the importance assigned to soft skills, scrutinizing the integration of soft skills into IT education, and evaluating the alignment of soft skills with employer expectations and industry trends.

The research adopts a survey-based research method, utilizing questionnaires to collect quantitative data from students enrolled in IT educational programs. This approach facilitates the systematic exploration of students' perspectives on technology awareness, essential soft skills, and self-perceived development needs.

The hypothesis underpinning this research posits that a holistic understanding of soft skills, complementing technical proficiency, is imperative for success in the IT sector. The significance of this work lies in its potential to inform educational practices, guide industry hiring strategies, and contribute to the ongoing discourse on the future-ready IT workforce.

Materials and Method

The materials for this study include a diverse range of literature, questionaries, and analysis of existing educational practices. The work progresses through a systematic review of soft skills literature, followed by the synthesis of findings to inform the development of pedagogical strategies. The methods employed include quantitative analysis of survey data, creating a robust foundation for deriving meaningful insights into the integration of soft skills in the IT sector.

The research employed a survey-based methodology, utilizing questionnaires to gather quantitative data. The survey was specifically targeted at students enrolled in the Information and Communication Technologies (ICT) educational programs at the International Kazakh-Turkish University named after Kozha Ahmet Yasawi.

The survey encompassed 2 distinct sets of questionnaires:

- A checklist-based survey featuring a list of 10 soft skills, designed to identify the qualities and skills perceived as crucial for future ICT specialists.
- Another survey, consisting of a list of 8 soft skills, was employed to assess the perceived qualities that students believed they needed to develop for themselves as future specialists.

These questionnaires and surveys were meticulously crafted based on insights obtained from a thorough literature review. The questions were designed to capture a comprehensive understanding of students' perspectives on various aspects related to technology awareness, essential soft skills, and self-perceived development needs. The survey targeted students in their 2nd to 4th years within the information and communication technologies programs. This approach allowed for a focused exploration of the perspectives and perceptions of students at different stages of their academic journey in the ICT field.

Results and Discussion

The culmination of our extensive literature review and the subsequent survey-based research unravels a multifaceted understanding of soft skills in the Information

Technology (IT) sector. In this section, we present the synthesized findings, revealing key soft skills identified as paramount for success in the IT industry. The amalgamation of historical perspectives, current industry demands, and student perceptions provides a comprehensive panorama of the intricate relationship between technical expertise and the essential soft skills requisite for thriving in the ever-evolving IT landscape.

Early literature in the field focused primarily on technical skills, but a paradigm shift occurred in the late 20th century, recognizing the need for a balanced skill set [4], [5]. The acknowledgment of the importance of soft skills gained momentum in response to the growing complexity of IT projects and the increased emphasis on teamwork and client interaction. The 21st century witnesses a consistent elevation of soft skills, aligning with the industry's shift towards collaborative, interdisciplinary work environments [6], [7]. Globalization has played a significant role in shaping the historical evolution of soft skills in IT, emphasizing the need for cross-cultural communication and understanding [8].

Current literature reveals a growing awareness of the need to integrate soft skills into IT education, with institutions experimenting with curricular modifications [1], [6], [9]. This includes introducing dedicated courses, workshops, and experiential learning opportunities to develop students' soft skills alongside technical competencies. Challenges include resistance to change, the need for faculty training, and the difficulty of assessing soft skills in a quantifiable manner. The importance of role-playing and simulations in soft skills education is highlighted, providing students with practical experiences that enhance their communication and problem-solving abilities [10], [11]. The role of mentoring programs in higher education is emphasized, showcasing their effectiveness in fostering emotional intelligence, adaptability, and communication skills among IT students [12]. Table 2 delineates the diverse approaches to integrating soft skills into IT education, providing insights into the strategies, challenges, and innovations employed by educational institutions to cultivate a well-rounded skill set among future IT professionals.

Table 1- Integration of Soft Skills in IT Education

Approach	**Description**
Curriculum Modification	Introducing dedicated courses and workshops to develop soft skills alongside technical competencies ([1], [6], [9]).
Experiential Learning	Incorporating real-world projects, internships, and industry collaborations to enhance practical soft skills [12].
Faculty Training	The need for training faculty to effectively incorporate and assess soft skills in their teaching methodologies [1].
Technological Integration	Integrating technology platforms and online tools for blended learning in soft skills education [1], [10], [11].
Role-playing and Simulations	Incorporating practical experiences through role-playing and simulations to enhance communication and problem-solving abilities [10], [11].

Mentoring Programs	Implementing mentoring programs in higher education to foster emotional intelligence, adaptability, and communication skills among IT students ([12]).

The literature consistently highlights communication skills as a fundamental soft skill for IT professionals, emphasizing its role in conveying complex technical information and fostering collaboration within project teams [1], [13], [14], [15]. Whereas, adaptability and flexibility are recognized as essential soft skills, with scholars underscoring their significance in navigating rapid technological changes and seamlessly transitioning between diverse projects and roles [1], [7], [13]. Problem-solving is mentioned as a crucial soft skill, involving the ability to analyze and resolve complex issues, make decisions in high-pressure situations, and contribute to innovative problem-solving approaches [5], [9]. Creativity and innovation also seem to be vital for generating novel solutions and fostering a culture of innovation within IT teams, contributing to the industry's evolution [4], [8], [15]. Emotional intelligence, including understanding and managing emotions, is considered to be pivotal for building strong interpersonal relationships and positively impacting team dynamics [13],[14]. Finally, teamwork emerges as a key soft skill, essential for collaboration within diverse project teams, effective communication, and achieving collective goals [7], [11], [12]. Table 1 encapsulates a comprehensive overview of key soft skills deemed essential in the Information Technology sector, offering a nuanced understanding of their descriptions and significance based on a synthesis of scholarly perspectives.

Table 2 - Key Soft Skills in the IT Sector

Soft Skill	**Description**
Communication Skills	Conveying technical information to diverse audiences, facilitating collaboration ([1], [13], [14], [15]).
Adaptability and Flexibility	Navigating rapid technological changes, transitioning between projects and roles ([1], [7], [13]).
Problem-Solving	Analyzing and resolving complex issues, making decisions in high-pressure situations ([5], [9]).
Creativity and Innovation	Generating novel solutions, fostering a culture of innovation within IT teams ([4], [8], [15]).
Emotional Intelligence	Understanding and managing emotions, building strong interpersonal relationships [13], [14]
Teamwork	Collaborating effectively within diverse project teams, facilitating communication and achieving collective goals ([7], [11], [12]).

Commencing a quantitative investigation, the survey results shed light on the dynamic landscape of soft skills within the Information Technology sector, offering empirical insights that complement and extend the theoretical foundations established

in the literature review. The initial questionnaire was designed to discern the essential professional soft skills perceived as significant by the surveyed students. Responses revealed that students attribute importance to various qualities and skills for prospective information and communication specialists, with notable percentages assigned to time management (59.3%), determination to achieve goals (68.1%), and self-management (59.1%) among others (refer to Figure 1).

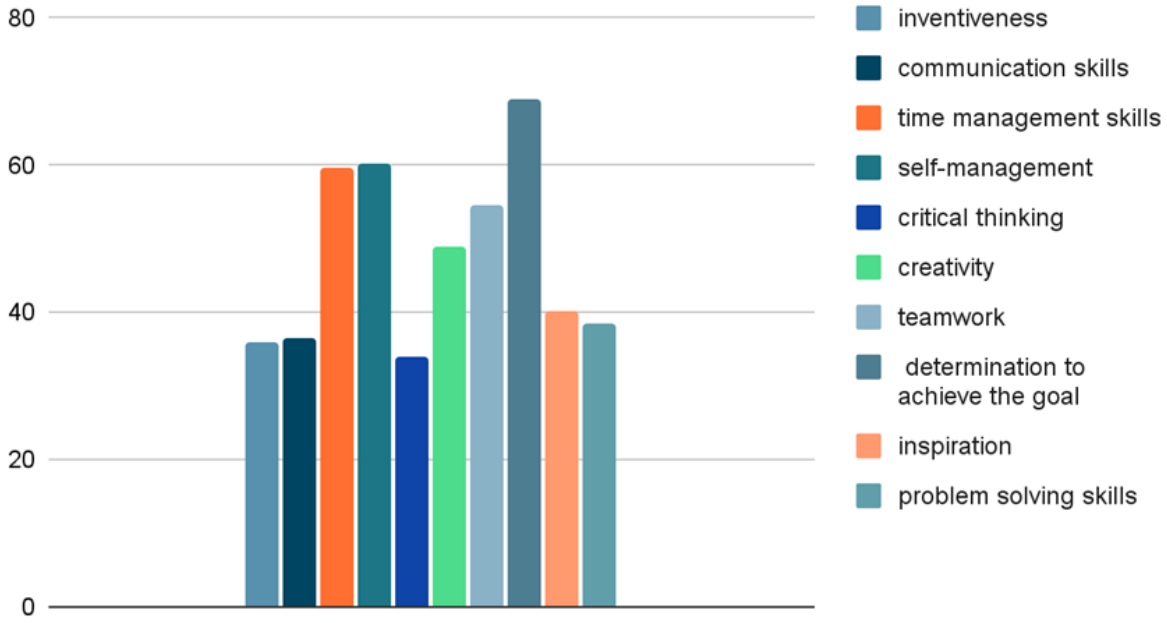

Figure 1 - Importance of Soft Skills for Future ICT Specialists

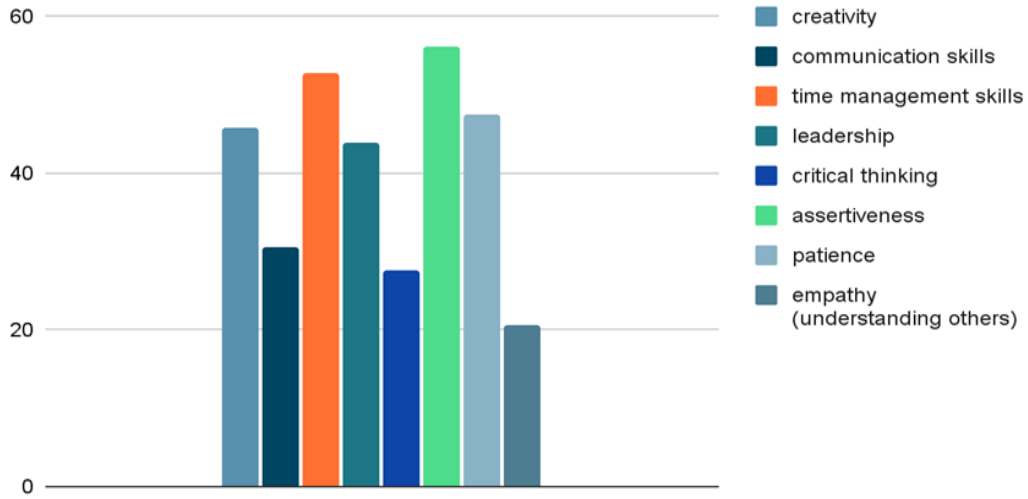

Figure 2 - Prioritized Qualities for Personal Development as Future IT Professionals

The subsequent part of the survey, detailed in Figure 2, unveiled the qualities students aspire to cultivate for their future roles, with assertiveness (55.7%), time management (52.6%), and creativity (44.8%) emerging as primary focus areas. These findings underscore a collective emphasis on both personal attributes, such as determination and self-management, and interpersonal skills, like teamwork and communication. The substantial importance attributed to determination aligns with the industry's demand for professionals who persevere in achieving goals. Additionally,

the students' recognition of assertiveness and leadership as qualities to develop indicates an awareness of the importance of proactive and influential roles in their future careers. The disparities between skills deemed important for future specialists and those intended for personal development reveal a nuanced understanding among students about the multifaceted nature of soft skills necessary for success in the Information Technology sector.

Conclusion

In conclusion, our exploration into the realm of soft skills within the Information Technology (IT) sector has uncovered a rich tapestry of insights gleaned from a meticulous literature review and a comprehensive survey of students enrolled in IT programs. Through the synthesis of theoretical foundations and empirical findings, we have identified and analyzed key soft skills that hold paramount importance for success in the ever-evolving IT landscape.

The survey results offer a nuanced understanding of students' perspectives on essential soft skills and the qualities they aim to cultivate. Noteworthy trends include the collective acknowledgment of determination, self-management, and time management as pivotal attributes for prospective IT professionals. Furthermore, the recognition of assertiveness, leadership, and creativity underscores students' awareness of the multifaceted nature of soft skills demanded by the industry.

These findings carry significant implications for both educational institutions and the IT industry. Institutions can leverage this knowledge to tailor their curricula, integrating a holistic approach that fosters both technical expertise and the identified soft skills. Industry leaders, on the other hand, can refine their recruitment strategies, placing emphasis on attributes such as determination and leadership that align with the aspirations of the emerging workforce.

As we navigate the evolving landscape of IT, characterized by rapid technological advancements and collaborative interdisciplinary endeavors, the symbiotic relationship between technical proficiency and soft skills becomes increasingly evident. This research not only contributes to the academic discourse on the subject but also provides actionable insights to shape the trajectory of IT education and professional development.

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БОЛАШАҚ IT МАМАНДАРДЫҢ ИКЕМДІ ДАҒДЫЛАРЫН ҚАЛЫПТАСТЫРУДЫ ЗЕРТТЕУ НӘТИЖЕЛЕРІ

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Аңдатпа. Ақпараттық технологиялар (АТ) секторының үнемі дамып келе жатқан ландшафтында икемді дағдылардың маңыздылығы барған сайын айқын бола бастады. Бұл тақырып IT индустриясында техникалық шеберлікпен қатар икемді дағдылардың жиынтығы жеке және ұжымдық табыс үшін бірдей маңызды болғандықтан өзекті мәселе болып саналады. Бұл зерттеудің негізгі мақсаты – табысты мамандарды қалыптастырудағы және бірлескен

жұмыс ортасын дамытудағы икемді дағдылар рөліне назар аудара отырып, IT секторына бұл дағдыларды енгізу үдерісін қалыптастыру. Зерттелетін элемент- IT индустриясының контекстіндегі қарым-қатынас, бейімделу, проблемаларды шешу, шығармашылық және эмоционалдық интеллектті қоса басқа да икемді дағдылардың спектрі болып табылады. Негізгі мақсат – IT секторында табысқа жету үшін икемді дағдыларды біріктіру маңызды деген тезисті дәлелдеу. Нақты мақсаттарға негізгі икемді дағдыларды анықтау, олардың өзектілігін түсіну және АТ саласында икемді дағдыларды тиімді оқытудың педагогикалық стратегияларын құру кіреді. Зерттеу негізгі икемді дағдыларды анықтау және санаттау үшін сауалнамалар мен жұмыс талаптарын талдауды біріктіретін кешенді әдістемені пайдаланады. Педагогикалық тәсілдер әдебиеттерге шолу, жағдайлық есептер және практикалық мысалдар арқылы зерттеледі. Біз техникалық және икемді дағдыларды игеру IT секторындағы жан-жақты білім саласының серпінді және бірлескен сипатында өркендей алатын мамандарды шығару үшін маңызды болып табылады деп болжаймыз. Бұл зерттеу IT секторындағы икемді дағдылардың рөлін түсінуге ықпал ету арқылы теориялық мәнге ие. Тәжірибелік деңгейде ол мұғалімдерге, мекемелерге және салалық мүдделі тараптарға икемді дағдыларды дамытуды ынталандыру үшін түсініктер мен стратегияларды береді, осылайша IT-білім берудегі ағымдағы олқылықты шешеді.

Тірек сөздер: икемді дағдылар, ақпараттық технологиялар, сауалнама негізіндегі зерттеулер, білім беру, мансаптық табыс, педагогика, икемді дағдыларды игеру, маңызды дағдылар

РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЯ ФОРМИРОВАНИЯ МЯГКИХ НАВЫКОВ У БУДУЩИХ IT СПЕЦИАЛИСТОВ

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Аннотация. В постоянно развивающемся мире сектора информационных технологий (ИТ) значение мягких навыков становится все более очевидным. Этот выбор темы обусловлен осознанием того, что, хотя техническое мастерство незаменимо в ИТ-индустрии, тонкий набор мягких навыков одинаково важен для индивидуального и коллективного успеха. Основной целью данного исследования является внедрение мягких навыков в ИТ-сектор с упором на их роль в формировании успешных профессионалов и создании совместной рабочей среды. Предметом исследования является спектр мягких навыков, включая, помимо прочего, общение, адаптивность, решение проблем, креативность и эмоциональный интеллект в контексте ИТ-индустрии. Основная цель — доказать тезис о том, что интеграция мягких навыков необходима для успеха в ИТ-секторе. Конкретные цели включают выявление ключевых мягких навыков, понимание их актуальности и разработку педагогических стратегий для эффективного обучения мягким навыкам в сфере ИТ. В исследовании используется комплексная методология, сочетающая опросы и анализ требований к специалистам для выявления и классификации ключевых мягких навыков. Педагогические подходы изучаются посредством обзора литературы, тематических исследований и

практических примеров. Мы предполагаем, что всестороннее образование в ИТ-секторе, охватывающее как технические, так и социальные навыки, имеет решающее значение для подготовки профессионалов, которые могут преуспевать в динамичном и коллективном характере отрасли. Это исследование имеет теоретическое значение, способствуя пониманию роли мягких навыков в ИТ-секторе. На практическом уровне он предоставляет преподавателям, учреждениям и заинтересованным сторонам отрасли идеи и стратегии для содействия развитию мягких навыков, тем самым устраняя текущий пробел в ИТ-образовании.

Ключевые слова: мягкие навыки, информационные технологии, опросные исследования, образование, карьерный успех, педагогика, интеграция мягких навыков, топ-скиллы

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