DIGIGEN

Professional career guidance for women in management positions in the field of digital competence

LITERATURE REVIEW

Dutch Report

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CONTENT

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1 INTRODUCTION

Digitalisation is currently omnipresent and, at the latest, since the Corona pandemic, can no longer be ignored. The same applies to the ongoing efforts to improve the proportion of women in management positions. Therefore, at the beginning of 2020, the European Commission came up with a Gender Equality Strategy 2020-2025, placing this issue at the centre of European policy: women should be able to achieve professional and social goals in the same way as men and exploit their potential to the fullest (European Commission 2020). This goes along with an equal employment ratio across sectors, equal chances of work-life balance and an equal share of care work (European Commission 2020).

The Erasmus+ project DIGIGEN "Professional career guidance for women in management positions in the field of digital competence" focuses on designing a counselling approach for guidance professionals to support women in planning their entry, entering, and remaining in management positions by making use of the digital transformation. So far, the authors of this report have not found any widely spread and known approaches to foster female leadership, specifically under digitalisation, through an up-skilling programme for guidance professionals. This will therefore be subject to the Erasmus+ Project DIGIGEN. This report focuses on women, leadership, and digitalisation to get the needed background information. It will not specifically focus on the theory of counselling approaches because counselling itself will not be newly invented. This report aims to create a better understanding of the indirect target group of this project (women in management positions) and to understand their specific needs. The following chapters focus on digital competencies and the situation of 2022 in the Netherlands.

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2 DIGITAL COMPETENCIES

Information and communication technologies (ICTs) are an indispensable part of the continuously developing economy in the 21st century. Along with ICTs comes the general requirement for people to increase their knowledge and perform in the increasingly complex and interactive work environment (van Laar et al. 2017, p. 577). Van Laar et al. (2017) refer to such requirements as 21st-century skills, which people must acquire to enter the workforce in 2022 and the years to follow. Those 21st-century skills include "collaboration, communication, digital literacy, citizenship, problem solving, critical thinking, creativity and productivity" (van Laar et al. 2017, p. 577) and relate to the overall economic situation. Besides general 21st-century skills, people must provide digital skills to succeed in the labour market. Such digital skills are "searching and evaluating information, solving problems, exchanging information or developing ideas in a digital context" (van Laar et al. 2017, p. 578). Although both concepts (21st-century and digital skills) are crucial to the workforce, there is not yet an established combination. This deficiency led van Laar et al. (2017) to conduct a systematic literature review on 21st-century skills and digital skills and come up with a concept of 21st-century digital skills. The main objective was to "(1) examine the relation between 21st-century skills and digital skills; and (2) provide a framework of 21st-century digital skills with conceptual dimensions and key operational components aimed at the knowledge worker" (van Laar et al. 2017, p. 577).

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In general, the authors consider 21st-century digital skills as:

1. "[...] the mastery of ICT applications to solve cognitive tasks at work;
2. [...] skills that are not technology-driven, as they do not refer to the use of any particular software program;
3. [...] skills that support higher-order thinking processes; and
4. [...] skills related to cognitive processes favoring employees' continuous learning." (van Laar et al. 2017, p. 578)

In particular, and as a synthesis of 1592 screened articles, from which 75 met the predefined criteria, twelve different skills were reported either as core 21st-century digital skills or as contextual 21st-century digital skills. The following list presents those skills in descending frequency of mention (n = number of times the skills were mentioned in the reviewed literature) (van Laar et al. 2017, pp. 582–583):

Core 21st-century digital skills

- Information management (n = 31) – *skill to use ICT to efficiently search, select, or organise information and choose the most suitable source for a given task*
- Critical thinking (n = 30) – *skill to use ICT as a source for informed judgement and reflected reasoning*
- Creativity (n = 29) – *skill to create new ideas and content by the use of ICT*
- Problem solving (n = 24) – *skill to use ICT to process and understand a problem and find a solution cognitively*
- Collaboration (n = 24) – *skill to use ICT to interact with others effectively*
- Communication (n = 22) – *skill to transmit information and express effectively*
- Technical (n = 18) – *skill to use (mobile) devices and applications and orientate in online environments*

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Contextual 21st-century digital skills

- Self-direction (n = 16) – *skill to set one's goals and manage the process of reaching those goals with ICTs*
- Lifelong learning (n = 10) – *skill to constantly improve one's knowledge and capabilities by using ICTs*
- Ethical awareness (n = 9) – *skill to behave socially responsible when using ICTs*
- Cultural awareness (n = 9) – *skill to show cultural understanding when using ICTs*
- Flexibility (n = 8) – *skill to adapt one's thinking or attitude to changing ICT environments*

In a subsequent study by van Laar et al. (2018), the authors conducted cognitive interviews, a survey pilot and a survey among a large sample of professionals working within the creative industries to elaborate on a measure for 21st-century digital skills. As a result, they present a validated instrument to measure six types of 21st-century digital skills. Communication, information, collaboration, critical thinking, creativity, and problem solving are those skills. (van Laar et al. 2018, p. 2184)

After the pilot test of the predefined items to measure 21st-century skills, the following categories with specific items per skill were defined. Creativity and problem solving skills are not divided into sub-categories; they are assigned with items directly.

- Information management: *define/access, evaluate, manage*
- Communication: *appropriateness/expressiveness, content sharing, contact building, networking*
- Collaboration: *responsibilities, planning, interdependence, knowledge sharing*
- Critical thinking: *reflection, justification, novelty*

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Following this measuring instrument for 21st-century digital skills, van Laar et al. (2019a; 2019b) then conducted another study, which elaborates on the determinants of digital skills and the relation of digital skills to each other. 1.222 professionals from the Netherlands directly involved in creative work processes participated in an online survey. The survey collected data on digital skills via the predeveloped 21st-century measure and data on various determinants via selected items from different measuring instruments.

Table 1 gives an overview of selected hypothesises and their results, which show determinants for 21st-century digital skills and impact the content of the project DIGIGEN (van Laar et al. 2019b, pp. 97–99). The final and overall conclusion from the study is that each skill is explained by a unique set of determinants. Thus, highlighting the barrier to skill development "as the proposed skills vary due to the different individual background variables" (van Laar et al. 2019b, p. 100).

In addition to the previous results on determinants of 21st-century digital skills, Figure 1 shows the results on the relation of digital skills to each other. "An important finding is that, except for critical thinking digital skills, the results confirm that all skills lead directly to problem-solving digital skills" (van Laar et al. 2019a, p. 3478). In general, all given digital skills sequentially build on each other, which means that lacking one skill might likely result in lacking another (van Laar et al. 2019a, p. 3462).

The combination of determining properties and interdependent 21st-century digital skills means that special care must be taken while appropriately designing an initiative to support women in leading positions.

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Nr.	Hypothesis	Result
1	ICT attitude contributes positively to the level of 21st-century digital skill	ICT attitude contributes positively to communication expressiveness and creativity skills.
8	Personal initiative contributes positively to the level of 21st-century digital skills.	The hypothesis is accepted for all skills, except information management. Almost all 21st-century digital skills ask for a proactive working approach.
9	Formal social support contributes positively to the level of 21st-century digital skills.	The hypothesis is partially supported, as a positive contribution for support from the supervisor on problem-solving skills was found.
10	Informal social support contributes positively to the level of 21st-century digital skills.	The hypothesis is partially supported, as informal support of Internet contacts contributes positively to communication contact building and networking, content-sharing, creativity, and problem-solving skills.
11	Training contributes positively to the level of 21st-century digital skills.	Training about Internet applications and digital skills contributes positively to multiple 21st-century digital skills.
12	Men have higher level of 21st-century digital skills than women	Employed men outperform women in communication expressiveness, collaboration, critical thinking, and problem-solving skills. Self-employed women outperform men in information evaluation, communication networking and content-sharing skills.

Table 1: Hypothesises and results of the study of determinants of 21st-century digital skills.
(Source: van Laar et al. 2019b, p. 100).

The study differentiates between employed professionals and self-employed professionals. The here presented results only refer to employed professionals if not indicated elsewise. 21st-century digital skills are: Information Management, Information Evaluation, Communication Expressiveness, Communication Building, Communication Networking, Communication Sharing, Collaboration, Critical Thinking, Creativity, Problem Solving.

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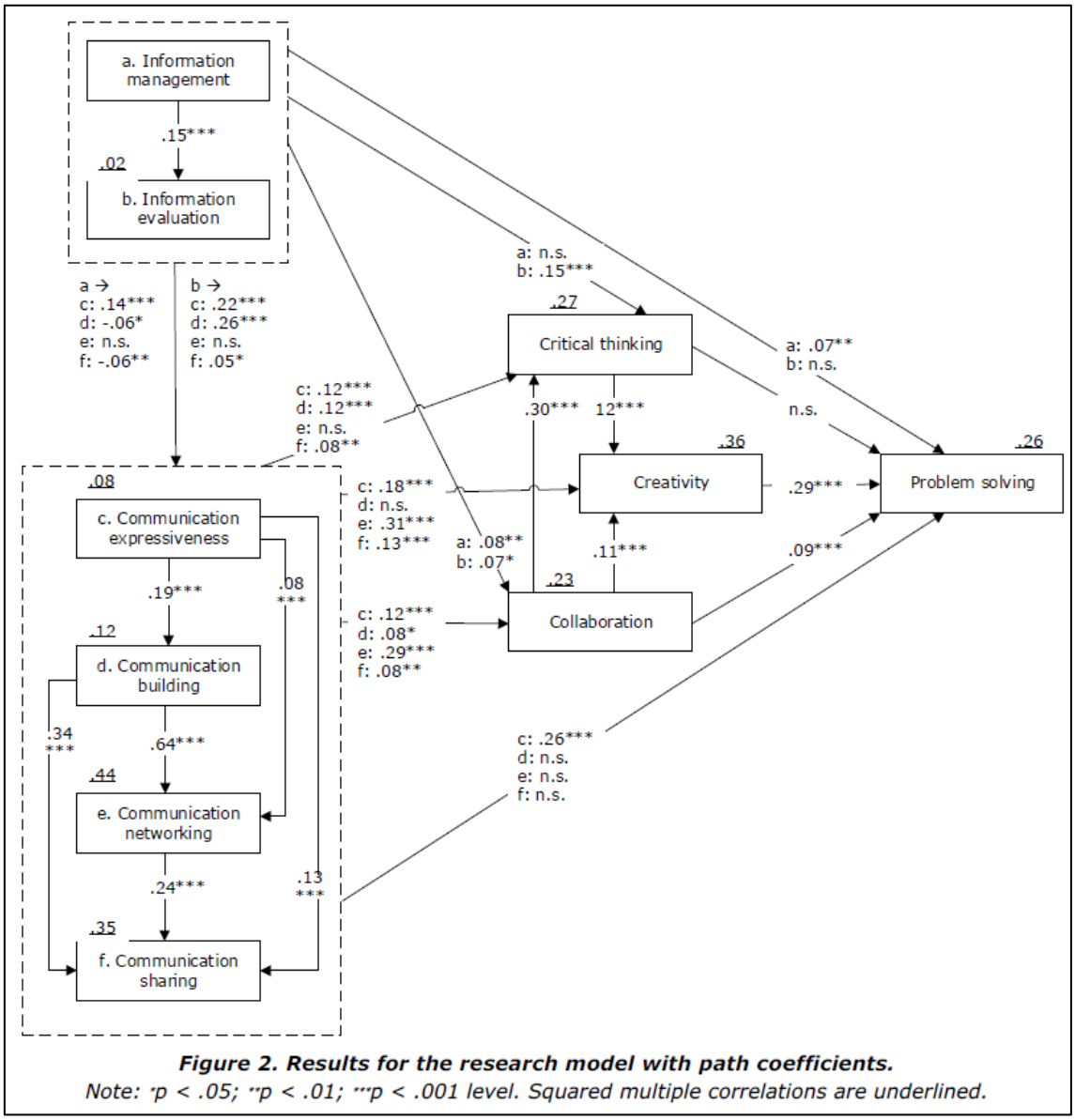

Figure 2. Results for the research model with path coefficients.
*Note: *p < .05; **p < .01; ***p < .001 level. Squared multiple correlations are underlined.*

Figure 1: Results for the sequential dependence of 21st-century digital skills.
(Source: van Laar et al. 2019a, p. 3475)

In conclusion, digital skills range from widely known technical competencies to the often overseen contextual competencies. Those skills build on different determinants and are of a sequential and conditional nature. Therefore, counselling on such competencies/skills must not only focus on specific selections but the overall situation of a woman in a management position.

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3 LEADING WOMEN IN THE NETHERLANDS

A paper study by Non et al. (2021) takes a closer look at the demographic characteristics of people with different digital skill levels and relates those to labour market outcomes in the Netherlands. Relevant to the DIGIGEN project are the results on digital skills, employment, and labour force participation regarding the situation of women. A general, non-gender-related outcome is that with increasing digital skills, the percentage share of employment increases (Non et al. 2021, p. 21). Additionally, people with low(er) digital skills are more often older, lower educated or – which is essential for the project DIGIGEN – female (Non et al. 2021, p. 1).

In 2018 the Government of the Netherlands entered the Gender & LGBTI Equality Policy Plan of the Netherlands into force (Government of the Netherlands 2018). This policy plan aims at enabling everyone's chance to live the life they desire regarding the situation of "(i) the labour market, (ii) safety, security and acceptance, and (iii) gender diversity and equal treatment" (Government of the Netherlands 2018, p. 5).

Regarding women in management positions, the policy plan states the following:

> "The number of women in senior positions is still too low, especially at the very top of organizations, and this situation is not changing fast enough. Appointing women at this level is important not just from the perspective of social justice, but also because only then do we make the most of the abilities of the increasingly well-educated female half of the workforce. An economy thrives best when it utilizes all talents the nation has to offer. The government is committed to diversity and inclusivity in the broadest possible sense, and is promoting them actively within companies and organizations. Greater diversity in the upper echelons can also help create a more inclusive climate at every other level." (Government of the Netherlands 2018, p. 9)

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The main goal will be to increase awareness of the situation and find ways to improve the situation for women in the labour market. To archive this goal, the Dutch Senate approved a bill to maintain a quota for the number of women at the top of the business world in 2021. Starting on the 1st of January 2022, companies listed on the Dutch stock exchange must fulfil a quota for women in top management positions. "In time, the supervisory boards of these companies must be composed of at least one-third women and one-third men. Each new appointment to the board must help meet this target" (Government of the Netherlands 2022). In addition, the largest companies in the Netherlands must:

- "set appropriate and ambitious targets;
- draw up an action plan for achieving these targets;
- report their results each year to the Social and Economic Council and include this information in their directors' report." (Government of the Netherlands 2022)

In conclusion, women in management positions are strongly supported by the Dutch government to equal the existing gap between the number of male and female leaders. Since this regulation only started in 2022, the outcomes must be awaited.

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4 SUMMARY

Women still need a lot of support in the labour market to reach the same level as men, particularly in management positions. The Government of the Netherlands addresses this deficit by raising awareness of existing deficiencies and setting up regulations to improve chances for women. Still, there remains a long way to go until absolute equality. This report gave insight into the current research on digital competencies in the Netherlands. Especially the findings by van Laar et al. will be of great use for the project DIGIGEN, as they show the range of digital competencies and ways to measure those.

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