Name of theory
Elaboration Likelihood Model

Key reference
(Petty & Cacioppo, 1986)

Description
The Elaboration Likelihood Model is a model to explain how attitudes that people hold can change. The model proposes the existence of two routes of information processing: the central route, and the peripheral route. The **central route** is followed when people weigh the information that is provided in a rational manner, focusing on the pros and cons of the argument, and changing their attitude accordingly. The **peripheral route** is followed when it is not the content of the message that is considered when weighing its quality, but the way the message is presented (including the source of the message and other situational stimuli). It is assumed that decisions (be it attitude changes, or decisions regarding behaviour) that are the result of information processing through the central route are more stable over time compared to decisions made based on peripheral information processing. When attempting to persuade people to change their attitudes and/or behaviour, actors can decide to focus their message in such a way that the central route or the peripheral route is more likely to be taken. For instance, the bargains at the self-check outs in supermarkets are attempting to persuade people to buy them through the peripheral route, whereas decisions on home improvements that the gas and electricity bill might be attempted to be influenced through the central route.

Application within the field of cybersecurity
The Elaboration Likelihood Model can be used to explain how people fall for behavioural cyberattacks. For example, scams and phishing attempts that are designed so that people follow the peripheral route when processing the information. When they do, they use the situational factors such as the email seemingly coming from a trusted source or institute (e.g., a bank) as a way of assessing the truthfulness of the content of the message, rather than attempting to process the information through the central route. While the ELM can be used to explain these responses to phishing attacks and scams more generally, no clear research has been conducted on specifically these types of cyber attacks. In terms of research that has been carried out, the model has been used more generally in technological research, to explain why people might (not) adopt a new technology such as an app or service. This can be expanded into the realm of online persuasion (for good or bad), and for the adoption (or lack thereof) of new security measures such as 2-factor authentication.

Annotated bibliography
Khern-am-nuai et al. (2022). This paper investigated whether the Elaboration Likelihood Model could be used to improve password strength by designing a password meter (an indicator stating how weak or strong the newly created password is) based on the ELM. Across three studies, the authors shows that this password meter resulted in more people changing their password and choosing a stronger password than before.

Vo & Wu (2022). In this paper, the ELM was used to investigate the adoption of mobile shopping apps. The central route and the peripheral route were supported by focusing on

four factors: information quality, source credibility, familiarity, and personal innovativeness. Two factors from the technology acceptance model (perceived risk and perceived usefulness of the app) were then added as being predicted by these factors. All four factors showed a relationship with perceived risk, whereas only information quality and source credibility showed one with perceived usefulness.

Tam & Ho (2005). In this paper, the authors propose using the ELM to investigate personalisation in online messages when businesses interact with customers. They used the ELM concepts to test various options: preference matching, sorting cues and the concept of Need for Cognition. The evidence from three studies suggests that these factors all can influence customer behaviour in e-commerce, but that interaction effects are less clearly supported.

References

Khern-am-nuai, W., Hashim, M. J., Pinsonneault, A., Yang, W., & Li, N. (2022). Augmenting Password Strength Meter Design Using the Elaboration Likelihood Model: Evidence from Randomized Experiments. *Information Systems Research*.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In *Communication and persuasion* (pp. 1-24). Springer, New York, NY.

Tam, K. Y., & Ho, S. Y. (2005). Web personalization as a persuasion strategy: An elaboration likelihood model perspective. *Information systems research*, *16*(3), 271-291.

Vo, T. H. G., & Wu, K. W. (2022). Exploring Consumer Adoption of Mobile Shopping Apps From a Perspective of Elaboration Likelihood Model. *International Journal of E-Services and Mobile Applications (IJESMA)*, *14*(1), 1-18.